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Time or Money: The Relationship Between Educational Attainment, Income Contribution, and Time with Children Among Korean Fathers

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Abstract Korean parents' enthusiasm for and financial investment in children's education are well known. However, parental time with children, particularly fathers' time, and how it differs by parental education and income are not fully explored. Using the 2009 Korean Time Use Survey data, this paper examines how much time Korean fathers spend with children, how it differs by their education and income contribution to household, and which aspect Korean fathers choose to prioritize: time or money. In order to investigate a cross-couple effect, this paper also considers mothers' time with children and their level of education. The sample is limited to married couples with the youngest child aged between 0 and 12. The stepwise multivariate regression analysis indicates that fathers' education consistently shows a positive relationship with childcare time. Although fathers' income contribution to household income has a negative effect on childcare time, positive effects of fathers' education remain. Both mother's education and childcare time increase fathers' time with children. Korean fathers seem to juggle dual demands for money and time contribution and highly educated fathers tend to prioritize time over money. Given that time has become an important resource, different time investment in children by parental socioeconomic status may exacerbate social inequality.

Keywords Time use · Childcare · Korean fathers · Education · Income contribution · Cross-couple effect

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1 Introduction

Differential paternal involvement with children has been shown to generate divergent outcomes, specifically educational attainment, for children via the intergenerational transmission of human capital (Coleman 1988; Hango 2007; Kalil et al. 2012; Sarkadi et al. 2008). Therefore, researchers have focused on how the amount of time fathers spend with their children varies by socioeconomic status (Craig 2006b; Deding and Lausten 2006; England and Srivastava 2013; Gimenez-Nadal and Molina 2013). A significant body of previous literature has found that fathers' involvement in childcare varies by educational level (England and Srivastava 2013; Gimenez-Nadal and Molina 2013; Guryan et al. 2008; Sayer et al. 2004). Highly educated fathers spend more time with their children—in both developmental activities, such as reading, studying, or playing, as well as the routine physical care—than fathers with lower educational attainment (Deding and Lausten 2006; England and Srivastava 2013; Folbre 2008; Gimenez-Nadal and Molina 2013; Ramey and Ramey 2009; Sayer et al. 2004; Vincent and Ball 2007). Cross-cultural studies have indicated that the positive association between fathers' educational level and time spent on childcare exists in many societies with different cultural backgrounds (Craig and Mullan 2011).

The literature on the association between fathers' education and time spent on childcare remains limited in two specific ways. First, it remains unclear whether the fathers' income or social class of family (e.g., household income) and other contextual factors (mother's employment, mother's childcare time) influence this association. A few recent studies have begun to explore the complex relationships between aspects of fathers' socioeconomic status and involvement in childcare. For example, Craig (2006b) found that among Australian fathers, a higher educational level was associated with more time spent on childcare, and this association remained even after controlling for household income or fathers' incomes. Mullan (2010) analysed the data from UK fathers and concluded that occupational status intensified the effect of education on childcare time, specifically, among highly educated fathers, those with higher occupational status tended to spend more time with children than their counterparts. While these initial results are important, they do not constitute a complete examination of the ways in which other measures of socioeconomic status or even family context mediate the effect of fathers' education on childcare contributions.

A second limitation of the literature on fathers' education and time spent with children is that previous studies have been conducted primarily in Western societies—the issue has been rarely scrutinised in Asian countries, including Korea. The lack of empirical analysis of this relationship has emerged partly because a different set of circumstances have influenced gender and childcare in Asian countries. In Asia, particularly in Korea, the gender disparity in childcare has been pronounced. A few decades ago, Korean fathers spent a negligible amount of time on childcare, regardless of their wives' employment status (Huh 1994). Given this context, earlier studies using Korean data focused primarily on gender inequality within the family (Eun 2009; Kim and Kim 2007). The scholars who have examined the relationship between parents' socioeconomic status and involvement with children have emphasised financial investment in education rather than time spent with children (Chang 2001; Yeo 2008). This focus reflects the unique Korean context, in which parents spend a considerable amount of money on their children's education (e.g., sending children to private institutions for tutoring and extracurricular activities, such as art or piano lessons).

Korea offers a significant context for the research on the relationship between fathers' socioeconomic status and time spent with children, because it has several differences from other developed countries. First, the social norms of the mother as a primary caregiver and the father as a breadwinner have been strongly maintained, and both institutional support and public policies for childcare have been insufficient. Therefore, women's labour force participation rate drops significantly at the age of having a baby (Kostat 2015). Among all married couples, only 43 % were dual-income couples in 2013 (Kostat 2014a, b), with women assuming the main responsibility for childcare.

Second, Koreans rank second among the OECD countries in terms of long work hours (OECD 2015a, b). As a result, men come home from work late and spend little time with their families. Korean parents experience a rigidly gendered division of labour at home, despite their enthusiasm about and devotion to their children (Cho 2013). In addition, Korea has the highest private spending on education among OECD countries (OECD 2015a, b). The fierce competition starting from an early age to enter prestigious universities and the extraordinary amount of spending on education called 'education fever' (Seth 2002), which occurred in Korea, is also notable. Public obsession with education and a high financial investment in children have pressed Korean fathers to be good financial providers.

Nevertheless, gender roles have begun to change in the last several years, with the recent emergence of a novel concept of fatherhood that expects fathers to be more involved with their children. Koreans have consistently assumed that mothers' involvement with children is important, and attitudes toward fathers' involvement with children have been in flux (Kim and Lee 2014; Song 2005). Within the current Korean context, we assume that Korean fathers face a difficult dilemma, as they choose between spending time at work and spending time with their children.

Against this backdrop, we think that Korea provides a valuable setting to examine how the education and income of fathers are related to their involvement with children. Although fathers in other countries may have encountered similar circumstances, analyzing the Korean case may highlight how fathers decide to spend their time while facing conflicting demands and what influences their decisions. As parents' keen interest in children's education and a high enthusiasm for the mother spending time with children are taken for granted in Korea, examining the amount of time a father spends with his children and the characteristics explaining the time disparity between fathers and mothers will broaden our understanding of the father's use of time.

Using the data from the 2009 Korean Time-Use Survey, this study investigates how Korean fathers manage their work and family lives. Specifically, the study examines in detail how fathers manage these conflicting demands and how fathers' educational attainment and income contribution jointly affect time spent in childcare. Further, because family context is a crucial aspect of how fathers allot time to work and childcare, both father and mother's diaries, and other family variables are included in the analyses.

2 Literature Review and Research Questions

2.1 Parental Education and Ideals of Child Rearing

Childcare differs from other domestic responsibilities in that it involves one-on-one interaction and is difficult to fully outsource or purchase via a market-based substitute.

Unlike housework, which research has shown that almost all individuals want to avoid (Baxter 1992; Bittman et al. 2003; Greenstein 2000), childcare has become a responsibility that parents are not willing to delegate; indeed, some parents actively bargain to engage in childcare rather than to avoid it (Craig 2007). Such trend may have emerged due to the rise of the concept of 'intensive mothering (or parenting)' (Hays 1996) in the context of low fertility. Specifically, a decrease in the average number of children per family and an increased emphasis on the importance of parents in children's education have culminated in the idea of childcare as child-centred, emotionally absorbing, labour-intensive, and highly demanding work (Hays 1996).

Researchers have found that the idea of intensive parenting and childcare is especially prevalent among highly educated and middle-class parents (Cho 2013; Lareau 2011; Vincent and Ball 2007). Lareau (2011) outlined the ways in which the education of children varies by social class, and referred to the child rearing practices of the middle class as 'concerted cultivation'. Based on the qualitative data analysis, Vincent and Ball (2007) argued that middle-class parents view child-rearing as a project, and believe that children are malleable, with potential for development and improvement. In addition, these parents are aware of the importance of education, and therefore seek to provide their children with diverse opportunities to experience constant stimulation. Thus, middle-class parents convey their social and cultural capital to children through these specific learning processes (Reay 2000; Vincent and Ball 2007).

Scholars have also argued that highly educated parents are more aware of the association between time investments and positive outcomes among children (Guryan et al. 2008). Therefore, relative to their counterparts with less education, these parents are more motivated to engage in intensive parenting and devote time to children at the expense of personal time. Some researchers have contended that highly educated parents may view the outcomes associated with investment in their children as a luxury good, considering market-purchased childcare a poor substitute (Gimenez-Nadal and Molina 2013; Guryan et al. 2008). They also firmly believe that time spent with children will increase the children's human capital, highly value time with their children, and take a great deal of pleasure in spending time with their children (Craig 2006a).

Given this context, it is not surprising to find that the amount of time parents spend with their children is positively associated with parents' educational level (Bonke and Esping-Andersen 2011; Deding and Lausten 2006; England and Srivastava 2013; Folbre 2008; Gimenez-Nadal and Molina 2013; Ramey and Ramey 2009; Sayer et al. 2004; Vincent and Ball 2007). This pattern holds for both mothers and fathers.

Despite the overall positive association between parental education and time spent on childcare, scholars also have acknowledged that education may have contradictory effects on childcare involvement: Highly educated parents experience both a 'pull to work' and a 'pull to care' and therefore face dual demands on their time (Craig 2006b).

2.2 Changing Conceptions of Fatherhood

Just as overall ideals of child rearing have changed, the conception of the ideal father has changed as well. The new concept of fatherhood is that fathers not only play the role of a provider, but also act as engaged and involved parents, spending a significant amount of time with their children (Cooke 2004; Deutsch et al. 2001; Eggebeen and Knoester 2001; Goldscheider and Waite 1993; Lamb 1987; Snarey 1993).

Townsend (2010) argued that given the newly emergent concept of fatherhood, being a father involves reconciling competing ideas, demands, and responsibilities. To realise all

the demands of fatherhood—being married, having children, holding a steady job, and owning a house—fathers must make many difficult decisions in terms of resources allocation, including trade-offs: such as time spent with children versus the amount of money earned, the type of house to live in versus the length of commute, and responsibilities as a father versus as a husband. Employers' demands, like devotion and long work hours, often reinforce traditional gender roles and conflict with the demands associated with the new idea of fatherhood. Based on in-depth interviews, Townsend (2010) found that fathers define the four elements of fatherhood as provision, protection, endowment, and emotional closeness; among these, fathers consider provision to be the most important.

Hence, the contradictory effects of high educational attainment, the simultaneous 'pull to work' and 'pull to care' (Craig 2006b) may pose a significant challenge for fathers. As raising a child requires parental time as well as monetary investment for private tutoring and extracurricular activities, we raise a question of whether Korean fathers choose to spend more time with their children, concentrate on their role as a breadwinner, or try to juggle the conflicting demands.

2.3 The Role of Father's Income Power

As higher educational attainment is associated with higher income and greater opportunities for employment, many assume that highly educated individuals are attached to the paid workforce and experience a high demand in terms of long work hours and full commitment to their employers (Craig 2006a, b; Hays 1996). At the same time, higher education is associated with greater acceptance of the idea of gender equity and intensive parenting (Craig 2006a, b). Indeed, the new concept of fatherhood has become more pervasive, and fathers, particularly those with high education levels and income, are likely to face a significant dilemma. Thus, it is important to explore the role of income-earning power in the relationship between fathers' education level and father's involvement in childcare.

The existing literature on economics has utilized the concept of opportunity cost (Beblo 2001) to examine the relationship between income level and time spent on childcare. Those who earn high incomes may choose to work more rather than devote their time to other activities, such as childcare (Bittman et al. 2003). Other scholars have used the exchange hypothesis to analyse these decisions (Lundberg and Pollak 1996). Proponents of the exchange hypothesis argue that couples divide their family roles in terms of relative income: those who earn less devote more time to unpaid work at home whereas those who earn more concentrate on paid work. Hence, higher income is associated with more devotion to paid work that leads to fewer hours spent on childcare.

Against these economic hypotheses, some recent studies have found that higher income has a positive linear association with childcare involvement for both mothers and fathers (Guryan et al. 2008). The work of Craig (2006b) emphasized that both father's high education and high income were strong determinants of father's childcare time. These studies indicate that parents seem to favour childcare over other activities including paid work, which is in sharp contrast to their desires pertaining to other unpaid work (i.e., housework).

England and Srivastava (2013) highlighted the joint relationship between father's education level and income. They suggested that highly educated parents tend to have high incomes, which enable them to outsource other unpaid work (e.g., cooking and cleaning) and devote more of their discretionary time to childcare, while poor parents are unable to afford these time-saving services. However, in their study, the education gradient was

found to have a stronger influence on fathers' time with children compared to their income. In addition, mother's education, rather than fathers' own education, exerted a stronger effect to account for fathers' time with children (England and Srivastava 2013).

The inconsistent findings pertaining to the income effect on fathers' time with children raise an issue of operationalizing income in the analysis. Income should be differentiated between total household income and the proportion of fathers' income to household income. Household income often indicates the social class of a family. As Lareau (2011) argued, parents in a higher social class tend to be aware of the importance of time with children and outsource other domestic work to leave spare time for children. The proportion of fathers' income to household income may reflect their devotion to paid work and the gendered division of roles in each family. As fathers' income contribution to household income increases, their time at work tends to increase, which leaves limited time to spend with children. Accordingly, to clarify the income effects, the analyses need to determine whether household income and the proportion of fathers' income to household income exert contrasting effects on fathers' time with children–and if so, the strength of these effects should be compared.

2.4 The Korean Context

Koreans place a high value on, and invest heavily on education. Among OECD countries, Korea has the highest proportion of the population aged 25–34 with post-secondary education, and the nation has the third highest share of private expenditures on education (OECD 2007). In 2013, the average Korean household spent $250 per child per month on extracurricular activities (e.g., art or sports) and private educational institutions (i.e., tutoring) (Kostat 2014a, b). Because of this large financial investment in children's education in Korea, the importance of parents' time with children have not been well recognized; instead, previous studies have attributed differences in children's educational achievement to parents' financial investment (Chang 2001; Yeo 2008). However, in recent years, scholars have initiated discussions on the importance of parents' time investment in their children and examined differences in various approaches to educate children according to parents' socioeconomic status (Song 2011).

Based on a comparative analysis of Korean time-use data collected between 1999 and 2009, Song (2011) argued that the amount of time Korean parents spent with their children increased during this period, and the growth was particularly dramatic for highly educated parents. However, this growth did not occur at the same rate for mothers and fathers. Korean mothers increased their time with children more than fathers did, and thus the gender gap in time spent on childcare increased. Drawing on the in-depth interview data, Cho (2013) found that middle-class Korean mothers felt pressure resulting from this gender gap, as these mothers took responsibility for managing their children's education and experienced stress related to lack of time.

The concept of an engaged and involved father first emerged in Korea in the late 1990s in the aftermath of the financial crisis (Kim and Lee 2014; Song 2005). Unstable employment and sudden layoffs led fathers to reflect on their roles and identities in the context of both family and society. As a result, Korean fathers redefined their roles to include not only providing income but also serving as an engaged and involved parent. With an increase in the number of dual-income couples and a reduction in fertility rates in recent years, the importance of fathers' sharing the burden of childcare emerged as a way for families to balance work and childcare responsibilities (Song 2005).

As a result of such change, most Korean fathers now believe that spending time with their children is just as important as monetary investment (Kim and Lee 2014). Recent time-use data suggest that these attitudinal changes have engendered behavioural changes. Specifically, the amount of time men in Korea spend on childcare has increased gradually during the last decade, and their involvement in childcare has contributed to the time pressure felt by fathers (Cha 2010a, 2011; Song 2011).

However, these behavioural changes have been quite limited because the new notion of fatherhood and fathers' traditional role as breadwinners are at odds; therefore, long working hours and the continued gendered division of labour at home tend to hamper Korean fathers in their efforts to spend more time with their children. For example, in 2009, married Korean men spent approximately 20 min per day on housework and even less time on childcare, regardless of wives' employment status (Kostat 2010). Researchers have attributed these low levels of time spent with children to a lack of family-friendly policies in the labour market, employers' demand for long working hours, and the prevalence of traditional gender roles (Kim and Lee 2014; Kwon and Lee 2009; Lee 2001; Song 2005).

In recent Korean context, father's main role is still that of a breadwinner, and a great deal of significance is attached to a father's income, that provides financial support for children's education. In addition, Korean mothers assume the primary responsibility for childcare, and as a result, they experience sleep deprivation, time pressure, feelings of being rushed, and the burden of managing the dual responsibilities of family and work (Cha 2010a, 2011; Cha and Eun 2014).

2.5 Cross-Couple Effects

Because fathers usually make time-management decisions in conjunction with their wives, any study of the relationship between fathers' characteristics and time spent with their children must consider cross-couple effects. Recent studies have analysed how couple dynamics affect parental time spent on childcare via examinations of couples' employment status (e.g., dual-earner, one full-time and one part-time earner, or single earner). Bonke and Esping-Andersen (2011) reported that when both partners in a couple are highly educated, they share values and preferences for their children and are more likely than their counterparts to pool their resources and to actively participate in childcare. Indeed, the authors' data showed that when both parents are highly educated, time spent on childcare is higher for both parents (Bonke and Esping-Andersen 2011).

Using 2003–2011 American Time-Use data, England and Srivastava (2013) found support for a cross-couple effect: couple's dynamics affect the amount of time that fathers spend on childcare. Indeed, the results indicated that mothers' rather than fathers' characteristics were the primary driver of how much time fathers spent with their children. Other studies argued that even when mother's education is considered, father's education gradient of childcare time was valid (Craig 2006b). A study from the United States, Cha (2010b) noted that higher income families are more able to embody the traditional division of gender roles not because fathers' earning power is strong enough to bargain out of childcare but because fathers' high and steady incomes allow mothers to specialise in unpaid work, such as childcare and children's education.

This cross-couple effect can be understood as part of a family-based strategy. Parents tend to pool their resources and bargain for the best that the father or mother can provide. Therefore, the particular circumstances of a family can influence the expectations placed on a father (Cha 2013). Some families may favour the father's income more than his time with children, while others may require both some money and some time from the father.

Despite the initial evidence of the importance of cross-couple effects, few studies have examined the effects of couple dynamics on fathers' time spent on childcare in part because most time-use data have been collected at the individual level rather than the household level. Only recently have a limited number of studies used household-level time-use data to analyse couple dynamics (Craig 2006b; Craig and Mullan 2011; England and Srivastava 2013). Moreover, those small numbers of prior studies diverge on the effect of mother's characteristics. To the best of our knowledge, no studies have examined the effect of couple dynamics on fathers' involvement with children in Asia.

2.6 Research Questions

The changing circumstances described above—shifts in both child rearing ideals and the role of fathers—raise questions about how Korean fathers with high levels of education and income manage their time and fulfil the conflicting work-family demands, specifically childcare. When the demands of work and family cannot easily be reconciled, which aspect, time or money, do Korean fathers prioritise? To address this question, this paper examines how the potentially conflicting effects of education and income jointly influence fathers' time with children. In addition, we will test whether the mothers' characteristics (mothers' education and mothers' childcare time) influence fathers' time with children, and if so, to what extent.

3 Methods

3.1 Data and Sample Characteristics

This study utilises the data from the Multinational Time-Use Survey (MTUS) version of the 2009 Korean Time-Use Survey (KTUS). We choose this harmonized MTUS version (rather than the original KTUS version) because it contains a more detailed information on time spent with children. In KTUS, respondents recorded their current activity in a time diary every 10 min for two successive days.

Because the research focuses on fathers' time spent with children and couple dynamics, the analytical sample includes only married couples with children. In addition, we limit the sample to couples whose youngest child is in elementary school or younger (ages 0–12). When children enter middle school, they tend to spend much less time with parents because they dedicate more time to extracurricular activities and private education, and they prefer to be with friends in their free time. All the basic information about spouse (in this case mothers' characteristics) is matched with husbands' data using household identification number (HID). The resulting sample includes 3922 couples in 1961 households. Although KTUS requests that respondents report time they devote to multitasking, this study deals mainly with time spent on primary activities.

3.2 Major Variables

3.2.1 Dependent Variables

Time use. The major dependent variable is fathers' childcare time, which includes time spent rendering physical care, playing with children, reading books to children, assisting with children's schoolwork, attending school activities, and travelling for care-related needs. We combine all aspects of childcare into a single category because Korean fathers' care time for children is very limited.

We also examine time spent on activities other than childcare to obtain an overall understanding of how fathers with different socioeconomic statuses construct their days. Based on diary data, we categorise respondents' primary activities into six domains: childcare, domestic chores, paid work, personal care, sleep, and free time. Domestic chores include cooking, washing dishes, housework (e.g., cleaning, washing clothes, home repairs), miscellaneous house-related activities (e.g., obtaining house-related services and other family-related chores), shopping, and travelling time for domestic needs. Paid work includes main work hours, secondary work hours, work-related activities (e.g., education or training), working at home, and commuting.

Personal care includes dining, taking a shower, getting dressed, and obtaining medical and physical care (e.g., hygiene). Sleeping time (the sum of primary sleep hours and naps) is considered separately from personal care because sleep inequality or sleep deprivation is an emerging issue, and it can differ by education and income level in the Korean context (Cha and Eun 2014). Free time comprises all other activities beyond childcare, domestic chores, paid work, personal care, and sleeping. General leisure activities (e.g., watching television, travel, hobbies), social gatherings, and religious activities are included in free time. The sum of time spent on six main activities is equal to exactly 24 h (1440 min).

3.2.2 Primary Independent Variables

Education and Income. Two of the key independent variables are fathers' and mothers' educational level. Educational attainment of fathers is divided into four groups: high school and below, two-year college degree, university/bachelor's degree, and graduate school degree. Mother's educational level is categorised into three groups: high school and below, two-year college degree and university graduates or above, because very few of those in the sample completed a graduate school degree, as shown in Tables 1, 2.

Another key independent variable is income. If we use father's income as an independent variable jointly with father's educational level, interactions may occur due to the correlation between fathers' education level and income (Pearson's $r = 0.23$, $p < .01$). Therefore, in this research, we measure the father's monetary contribution to the household by calculating the proportion of father's income to total household income instead of using the amount of fathers' income from paid work. For unemployed respondents, income is set to zero because KTUS data does not include government income transfers (e.g., social welfare assistance), personal assets, or money received from the family of origin. As father's income contribution (FIC) to the household income is in the form of a proportion, the variable ranges from 0 to 1. This exhibits the income contribution of father to the total household income relative to the income of spouse.

3.2.3 Other Related Variables

Age of father, weekly working hours of both father and mother, and mother's time with children are included as control variables. These variables are used as continuous. Weekly working hours are measured using the following question, 'How long do you work at your main job on a weekly basis?' The same question was asked for side jobs. By adding weekly working hours of the main and side jobs, we use total work hours per week for both parents. For those who are unemployed, weekly working hours are considered zero.

Recognising that children have different needs and demands for care at different ages, we divide the samples into two groups (life cycle), respondents whose youngest child is aged between 0 and 4 and those whose youngest child is aged between 5 and 12. The number of children is also considered. In this research, household income is included to consider the social class of each household. Given that two-generation households (e.g., parents and children) are most prevalent, the household income comprises mainly fathers' and mothers' income. We construct the household income variable (HI) by pooling both parents' income and creating three categories depending on the income distribution: less than 25 % (low), 25–74 % (mid-range), and above 75 % (high). Father's childcare time tends to differ by day of the week. Therefore, a variable indicating weekday versus weekend is included as a control variable.

3.3 Analytical Procedures

In the first step of the analysis, we explore whether fathers' education and income are associated with the time fathers spent on each of the six main activities, while controlling for other abovementioned variables. The key independent variables include father's education, mother's education, and fathers' income contribution (FIC) to household income. As described above, father's education is classified into four categories, whereas mother's education is classified into three categories. A separate OLS regression analysis is run for each of the six main activities and then the marginal means of each independent variable are calculated (refer to the note in Tables 3 and 4). We examine father's time allocation by education and his income contribution to household income in Table 3. Although FIC is used as a continuous variable in multivariate regression analysis, we divide it into four groups to show father's different times that fathers devote to childcare, as seen in Table 3. In Table 4, mothers' time use by educational level is presented. The series of simple associations show the relation of time spent on each activity with parental education and income while controlling for other variables.

Next, we conduct a stepwise multivariate regression analysis to determine in more detail how fathers' childcare time differs by education and income level. We run both Tobit analyses and OLS models, which yield similar results; thus, we report only OLS results. Model 1 in Table 5 is used to test the main effect of fathers' education on their childcare time. In Model 2, we examine the main effect of FIC on fathers' childcare time. In Model 3, we consider fathers' education and FIC simultaneously to determine whether the effect of education remains after adding FIC to the model. If the educational gradient on childcare time is driven primarily by different attitudes toward childcare and fatherhood, the education coefficient will remain strong. If FIC mediates the influence of education, the education coefficient will decrease or disappear. In Model 4, mother's childcare time is added to determine the association of mother's childcare time with fathers' childcare time. Finally, in Model 5, we include mothers' education and compare the results with those of

Model 3. This successive comparison may clarify whether mothers' time with children or their educational level drives the spousal effect.

Before running the multivariate regression analysis, we check correlations and variance inflation factor (VIF) for the sample. Couples' educational level shows a moderate correlation (Pearson's $r = 0.61$) without collinearity (see full correlation matrix in "Appendix"). Still, some may argue that both father's and mother's level of education correlate with each other and the error terms. To address this problem, we try two different methods. First, because couples' data come from the same household, we set out the option to allow error terms to be correlated with each other at the household level while running Model 5, which enables us to adjust within group correlation. Second, we examine how father's childcare time differs by his educational level as well as that of his spouse in order to see if there is an interaction between both fathers' and mothers' education (refer to Fig. 1).

In addition, in order to look at possible collinearity between some control variables, for example, household income and fathers' weekly working hours, with key independent variables, we divide household income into 3 categories (<25 %, 25–75 %, above 25 %) and run a series of separate multivariate analyses for each category. Fathers' weekly working hours are categorized into three groups (below single standard deviation, standard deviation, above 1 standard deviation), and the same procedure is applied. Each stratified analysis reveals that father's education level and FIC are similar to those reported in Table 5, only except for low household income group and fathers who work extremely long working hours. Therefore, we believe that we have addressed the collinearity issues.

4 Results

4.1 Description of Sample and Variables

Tables 1, 2 present the basic characteristics of the sample. Employment status varies widely by gender: 97 % of fathers and 47 % of mothers are employed, and these proportions are almost consistent with national statistics. As for the educational level of fathers in the sample, approximately 42 % have a high school degree or less education, 21 % complete a two-year-college degree, 30 % have some university education, and 8 % complete graduate level education. Among mothers, almost 52 % fall into the high school-and-below group, 23 % have 2-year-college education, and 25 % have a university degree or above.

On average, fathers spend approximately 28 min per day in childcare activities. If we calculate father's childcare time by day of the week, which is not presented in the table, fathers spend only 24.8 min per day in childcare activities on weekdays, but on the weekends, this time increases to 32.8 min per day, on average. As shown in Table 2, the sample contains about 59 % of weekday diaries and 41 % of weekend diaries. This may be one reason that the average father's childcare time is rather small. Table 1 also depicts mothers' childcare time, which is more than 2 h per day: In this sample, mothers tend to spend five times more on childcare compared to fathers.

The mean age of fathers is 39.23, and the mean age of mothers is 36.47. In our sample, fathers work about 51 h per week, on average. Mothers work 20 h on average, which is rather short because mothers' weekly working hour variables include those who are not employed. The proportion of fathers' income contribution is 0.85 on average. Although our

Table 1 Sample characteristics

Categorical variables	Father		Mother	
	Frequency	(%)	Frequency	(%)
Employment status				
In paid work	3796	96.79	1844	47.02
Not in paid work	126	3.21	2078	52.98
Education				
High school or below	1630	41.56	2020	51.5
Some college	824	21.01	920	23.46
Bachelor degree	1172	29.88	862	21.98
Post-graduates	296	7.55	120	3.06
N	3922	100.00	3922	100.00
Continuous variables	Mean	S.D.	Mean	S.D.
Childcare hours per day (min)	28.17	51.88	147.51	141.49
Age	39.23	5.43	36.47	5.06
Weekly working hours	51.48	17.84	20.5	24.91
Proportion of father's income contribution (FIC)	84.62	20.76	–	–

Table 2 Family characteristics

Categorical variables	Family Level	
	Frequency	(%)
Number of children		
One	554	28.25
Two	1157	59.00
Three and more	255	12.74
Life cycle		
Kids aged 0–4	795	40.54
Kids aged 5–12	1166	59.46
Household income		
Low	167	8.52
Middle	1302	66.39
High	492	25.09
Day of diary kept		
Weekday	1151	58.69
Weekend	810	41.31
N	1961	100.00

sample includes 45 % of dual-earner couples, it reflects the fact that most fathers in our sample are the primary breadwinner in each household.

The average number of children is 1.85, showing that the majority (59 %) have two children, about 28 % have one child, and the rest have three or more children. About 40 %

of respondents have a youngest child aged between 0 and 4 years and 59 % have a youngest child aged between 5 and 12 years. In the analytical sample, 25 % of families fall in the highest household income category, roughly 66 % are in the middle category, and 9 % are in the lowest category. Thus, the analytical sample has a relatively higher household income in part because the sample includes primarily young, working-age individuals.

4.2 Variations in Parental Time Allocation

The first row of Table 3 contains estimated means and standard errors of the average daily time-use pattern among Korean fathers. On average, fathers sleep approximately 8 h a day and spend almost 7 h in paid work. They report having approximately 6 h of free time and spending just under 2 h in personal care each day. As for domestic chores, fathers spend 54 min in these responsibilities. Korean fathers in our sample spend the least amount of time in childcare, only 28 min on average per day.

Considering the prevalence of long work hours in Korea, the mean time for paid work seems short and the amount of free time seems long. These results may emerge because the average time per day for each activity is calculated by including weekends and a few outliers (e.g., non-working day). The large standard deviations for paid work and free time reflect a wide range of time that fathers spent in these two activities.

The upper part of Table 3 shows the marginal means and standard errors of fathers' daily time use for six main activities by the education level while controlling for other variables. Some models, such as time for domestic chores, personal care, and sleep, show low R square scores, indicating that differences in time spent in six activities by educational level may not be pronounced. However, according to Table 3, we can identify how fathers with high education allocate time per day.

The results show that as fathers' educational levels increase, the time spent on childcare and domestic work increases. This is possible because more educated fathers tend to work less and sleep less than fathers in the reference group (e.g., fathers with high school degree or less education). Results show that fathers with higher levels of education, on average, have more free time than those in the reference group, although the leisure hour gap is more evident among those with two-year college education. In sum, these models suggest that highly educated fathers make their childcare time possible by working less and sleeping less, and cutting down their free time.

In the bottom part of Table 3, we examine the association between FIC and time use for main activities. As we calculate the marginal means, we group FIC into four groups, as shown in the Table 3. In contrast to educational gradient, FIC gradients show an opposite pattern. With increases in the level of FIC, time spent on childcare and domestic chores decreases significantly. High level of FIC is associated with more time spent on paid work. Hence, the results indicate that fathers with high FIC tend to be a main breadwinner. The remaining results show that time spent on personal care, sleeping, and free time decreases as FIC increases, although none of those difference is statistically significant.

The same analyses of time allocation by educational level are conducted for mothers while controlling for other variables (see Table 4). On average, mothers spend about 2 h in childcare and slightly more than 4 h in domestic chores, which is five times longer than fathers' time spent on these activities. Mothers spend more than 2 h both in paid work and in personal care. They sleep around 8 h and have 5 h of free time. Different time spent in various activities by mothers' education shows a pattern similar to that observed in Table 3. Highly educated mothers (e.g., bachelor degree) spend about 30 min more in

Table 3 Marginal means of father's time allocation by the level of father's education and father's income contribution (FIC) (Unit: min)

	Childcare		Domestic chores		Paid work		Personal care		Sleep		Free time	
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.
All father's mean time spent per day (min)	28.17	(51.87)	54.04	(80.44)	407.80	(265.22)	117.46	(50.45)	471.87	(99.82)	360.62	(180.49)
Father's education												
High school or below	24.94	(1.24)	50.51	(2.02)	420.28	(6.18)	117.31	(1.26)	475.99	(2.51)	350.95	(4.35)
Some college	26.11	(1.69)	50.64	(2.76)	394.34	(8.45)	120.68	(1.73)	475.16	(3.44)	373.06	(5.95)
Bachelor degree	31.58	(1.44)	58.50	(2.34)	402.95	(7.17)	115.45	(1.47)	467.39	(2.92)	364.14	(5.05)
Graduate school	38.26	(2.87)	65.37	(4.68)	395.79	(14.33)	117.30	(2.93)	457.83	(5.83)	365.43	(10.09)
OLS model R^2	0.14***		0.05***		0.18***		0.05***		0.04***		0.12***	
Group differences (F)	8.37***		4.04**		3.00*		1.83		3.79**		3.40*	

	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.
Father's income contribution (FIC)												
0–49.9 %	44.81	(3.71)	77.03	(6.01)	371.77	(18.49)	117.68	(3.78)	452.78	(7.54)	375.96	(13.02)
50.0–74.9 %	29.04	(1.57)	60.46	(2.54)	406.07	(7.80)	117.48	(1.60)	474.92	(3.18)	352.04	(5.49)
75.0–99.9 %	25.14	(2.04)	57.66	(3.31)	407.57	(10.18)	112.55	(2.08)	470.41	(4.15)	366.66	(7.17)
100 %	27.24	(1.05)	48.20	(1.70)	412.59	(5.22)	118.58	(1.07)	472.32	(2.13)	361.05	(3.67)
OLS model R^2	0.14***		0.05***		0.18***		0.05***		0.04***		0.12***	
Group differences (F)	6.12***		9.85***		7.33***		1.68		1.81		1.26	

R-square represents the model fit of each regression analysis. All twelve regression models are statistically significant, although models show relatively low R-square scores. Group F scores exhibit the statistical significance of group differences of father's mean time for each activities by educational attainment (or FIC level). Some F scores with no asterisks mean that there are no significant group differences in certain activities. The presented mean scores for each education group or FIC group are marginal means and estimated standard errors. Each analysis controls father's age, numbers of children in the households, lifecycle, weekends, and father's weekly work hours

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 4 Marginal means of mother's time allocation by the level of mother's education (Unit: min)

	Childcare		Domestic chores		Paid work		Personal care		Sleep		Free time	
	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.	Mean	S.E.
All mothers mean time spent per day (min)	125.44	(119.09)	257.49	(124.95)	146.95	(225.29)	130.72	(50.54)	473.44	(84.64)	305.95	(153.41)
High school or below	117.46	(2.08)	259.92	(2.57)	153.44	(3.52)	130.90	(1.13)	476.59	(1.78)	301.68	(3.21)
Some college	125.83	(3.03)	255.12	(3.74)	139.70	(5.12)	130.56	(1.65)	476.76	(2.59)	312.01	(4.68)
Bachelor degree	141.48	(2.99)	254.71	(3.69)	140.36	(5.04)	130.52	(1.63)	463.87	(2.55)	309.03	(4.61)
OLS model R^2	0.41***		0.19***		0.53***		0.04***		0.16***		0.16***	
Group differences (F)	18.71***		0.95		3.99***		0.14		9.99***		2.41	

R-square represents the model fit of each regression analysis. All six regression models are statistically significant, although models show relatively low R-square scores. Group F scores exhibit the statistical significance of group differences of mother's mean time for each activities by educational attainment. Some F scores with no asterisks mean that there are no significant group differences in certain activities. The presented mean scores for each education group are marginal means and estimated standard errors. Each analysis controls mother's age, numbers of children in the households, lifecycle, weekends, and mother's employment status

* $p < .05$; ** $p < .01$; *** $p < .001$

childcare than mothers with high school education, even after controlling for the mother's employment status in the model. Mothers who are more educated tend to spend less time in paid work and sleep. However, there is no educational difference in time spent on domestic chores, personal care, or free time.

The results in Table 3 show the *independent* effects of fathers' education and income, but do not reveal how fathers' education and FIC offset or mutually influence one another. Next, we employ stepwise multivariate regression analysis to examine how education and income power *jointly* influence the way in which fathers manage their time as well as how their spouses' characteristics, such as mothers' childcare time and their education level, affect fathers' childcare time.

4.3 Joint Effect of Fathers' Education and Income Contribution to Household Income on Childcare Time

The results of the stepwise multivariate regression analyses are presented in Table 5.[1] The models include a series of control variables, and we add the key independent variables successively into each model. Because correlations among the employment status of mother, mother's weekly working hours, and the proportion of FIC to household are high, we exclude both mothers' employment status and working hours from the analytic equation. FIC are included in the form of continuous variables, while education—both father and mother's education attainment—is included in categorical form.

Before we discuss the main results, we briefly address the relationship between fathers' childcare time and control variables. Fathers' ages are negatively associated with childcare time. Although the number of children does not have a significant effect, it has a consistently negative association with fathers' time with children. Life cycle stage, which reflects the age of the youngest child, is also negatively associated with fathers' childcare time. Fathers whose youngest child is 5 years old or older spend less time on childcare than those whose youngest child is four or younger. This result is not surprising, as younger children require more care.

Fathers tend to spend more time with children on the weekends than on the weekdays. Fathers' working time is negatively associated with time spent with children. Household income is significantly related to fathers' childcare time, except in Models 1 and 2, showing that fathers with higher household income tend to spend more time with children.

In the next step, we examine how both fathers' and mothers' education levels and FIC are associated with fathers' childcare time across the five models. In Model 1, the effect of father's education on childcare time is analysed, which shows a positive association. Specifically, when compared to fathers who have high school degree or less education, both university- and graduate school-educated fathers spend more time with their children while those with 2-year college education do not significantly differ from the reference group.

In Model 2, we test whether FIC is associated with father's time with children. The results show that, as FIC increases, father's childcare time decreases, indicating that the negative effect of FIC is valid. If a father earns more compared to his wife, he tends to

[1] The equation of multivariate regression analysis is as follows. $Y = \alpha + \beta_i X_i + \text{control} + \varepsilon$ (Y = father's childcare time, α = constant, β_i = coefficient, X_i = independent variables (father's education, FIC, mother's education, mother's childcare time), control variables (father's age, numbers of children in the household, lifecycle, weekends, and father's weekly work hours), ε = error term).

Table 5 Multivariate regression analysis of childcare time for fathers with young children (0–12 years old)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Age	−0.99	0.20***	−0.99	0.20	−1.01	0.20***	−0.76	0.21***	−1.00	0.20***
Numbers of Child	−1.79	1.48	−1.86	1.49	−1.55	1.48	−1.57	1.46	−1.41	1.47
Lifecycle	−28.12	2.43***	−29.49	2.41	−28.61	2.42***	−20.04	2.74***	−28.35	2.42***
Weekend	8.07	1.72***	8.21	1.72	8.21	1.72***	10.79	1.87***	8.12	1.72***
Father's weekly paidwork hours	−0.33	0.06***	−0.35	0.06	−0.32	0.06***	−0.32	0.06***	−0.32	0.06***
Household income level (ref. low)										
Mid-range	3.48	3.16	4.37	3.20	2.71	3.20*	2.96	3.17**	2.63	3.20*
High	3.54	3.50	5.93	3.46	1.16	3.58**	2.08	3.56***	0.70	3.59*
Father's education (ref. high school or below)										
Some college	1.21	2.50			1.42	2.51	0.43	2.42	0.99	2.64
Bachelor	**6.67**	2.24*			**7.02**	2.25***	**5.50**	2.18***	**4.78**	2.46*
Graduate school+	**13.35**	3.80*			**13.82**	3.79***	**11.66**	3.75***	**9.26**	4.15**
Proportion of father's income contribution (FIC)			**−0.13**	0.05*	**−0.14**	0.05**	**−0.27**	0.05***	**−0.14**	0.05**
Mother's childcare time							0.08	0.02***	–	–
Mother's education (ref. high school or below)										
Some college									**0.26**	2.36
Bachelor									**5.40**	2.75*
_cons	94.48	8.67	109.52	10.14	107.37	10.15	92.63	10.78	105.80	10.12
# of case	3922									
# of cluster	1961									
R^2	0.14		0.14		0.14		0.16		0.15	
F (model *df*)	48.09 (10)***		47.17 (8)***		36.13 (11)***		34.81 (12)***		30.89 (13)***	

Bold values indicate the coefficients of father's education across the model

* $p < .05$; ** $p < .01$; *** $p < .001$

spend less time on childcare while he may spend more time on paid work, as suggested in Table 3.

When testing both fathers' education and FIC jointly in Model 3, the educational gap on father's childcare time is statistically significant, and the positive association remains. A negative association between fathers' FIC and their childcare time also remain significant ($\beta = -.14$, $p < .05$). The important point is that, even if a father's FIC shows a negative association with childcare time, the coefficient of education slightly increases, which indicates that fathers' income reinforces the educational disparities.

In Model 4, we add mother's childcare time to Model 3 and examine the changes in coefficients of both the education gradient and FIC on father's childcare time. A mother's childcare time shows a positive effect on father's childcare time. We assume that fathers synchronise their care time with that of their wives. Although the positive effect of fathers' education and the negative effect of FIC on fathers' childcare time are maintained, mothers' childcare time seems to mediate the effect of paternal childcare time based on slight changes in the coefficients of fathers' education and FIC. As mothers' childcare times are entered into the model, the relationship between FIC and fathers' childcare time shows a stronger negative association ($\beta = -.27$, $p < .001$) compared to the coefficient presented in Model 3 ($\beta = -.14$, $p < .01$). This implies that the father's breadwinner role is emphasised more when considering mothers' childcare time. Although mother's childcare time is positively associated with father's childcare time, it seems that couples divide their specialties rather than share, that is, fathers tend to substitute money for their time while their spouses spend more time on childcare.

Given the analytical results, what is the main stimulator of fathers' time with children? Our results confirm that father's education is the main driver of increasing father's childcare time. This positive effect of fathers' educational levels remain even after taking into account the negative effects of FIC to household income and the positive effect of mother's childcare time.

In addition, our results also demonstrate that at the individual level, education and income may have contradictory effects on father's childcare time. This suggests that fathers with higher education have strong intentions to spend time with their children, but their role as breadwinners hampers their time for childcare. Such results are different from prior findings, which argued that fathers' education and income reinforce each other to enhance childcare time (Guryan et al. 2008). Our results may reflect circumstances in Korea in which the gendered division of roles at home is strongly maintained and long work hours are a norm.

4.4 The Associations Between Father's Education and Income, Mother's Education, and Father's Childcare Time

In Model 5, we enter the level of mother's education into the model. The result shows that as mothers' educational level increases, fathers tend to spend more time on childcare. This indicates the spousal effect that fathers with higher educated wives are more likely than their counterparts to spend more time on childcare. Highly educated mothers may demand that their spouses spend time with children. Moreover, mothers' educational levels have an effect on the association between fathers' education and fathers' childcare time. Fathers' educational gradient decreases only slightly compared to Model 1 through Model 3. However, in Model 4, when we enter mother's childcare time, the gradient decreases significantly. The gradient narrows even more in Model 5 than Model 4. It suggests that

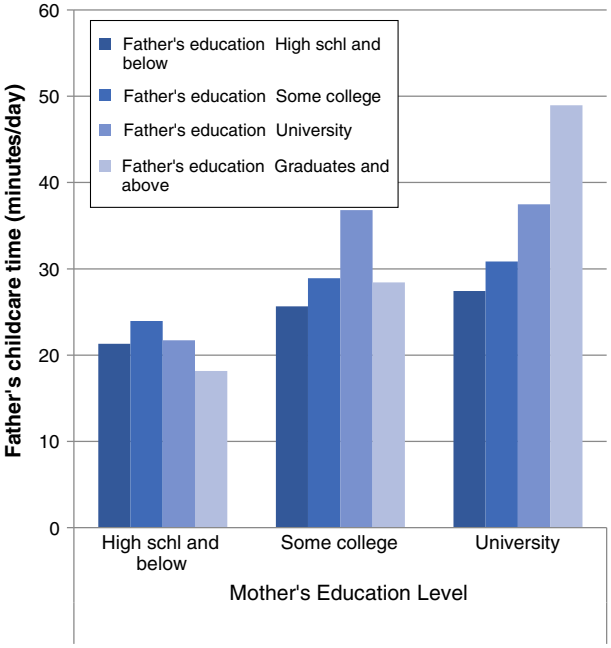

Fig. 1 Father's child care time by father and mother's education attaintment

mother's education is partly mediating the relationship between father's education level and their childcare time.

We further examine the education gradients of father's childcare time by mother's educational levels, which is categorised into three groups. Figure 1 shows the results of the stratified estimation.

In each group, father's time in childcare by their education is presented in different ways. When mother's education level is relatively low (high school or below), father's childcare time does not show a clear pattern. Fathers spend approximately 20 min per day on childcare, irrespective of their level of education. For mothers who graduated from university and above, however, father's childcare time is positively associated with their education level, as highly educated fathers spend more time on childcare. The results indicate that highly educated mothers may amplify the positive effect of fathers' education on their childcare time. However, what makes a difference in fathers' time devotion to children is the fathers' education levels rather than education level of mothers alone. Our results are different from England and Srivastava's findings (2013), which suggest that fathers' childcare hours are driven mostly by their wives' education level.

5 Conclusion

Korean fathers' commitment to spending time with their children has not been thoroughly explored, in part because of a lack of data and in part because Korean fathers spend a minimal amount of time with their children. With the increasing recognition of time as an important resource and the shifts in ideas about fatherhood in Korea, researchers have begun to focus on how fathers make decisions about spending time with their children and how variations in education and income level affect these decisions. Even in previous

studies that examined the effect of parental education on childcare time, fathers' time has not been the focus and the effect of fathers' income or spousal characteristics has often been overlooked. To compensate for the limitations of previous research, this study examines Korean fathers' time spent with children, focusing on the effect of fathers' education and FIC to the household, and considers the intervening effects of mothers' care time and mother's education level.

Using the 2009 KTUS data on couples, this study examines how Korean fathers and mothers construct their days. On average, Korean fathers spend the largest amount of time working and sleeping; however, fathers who are more educated tend to work less and sleep less compared to their counterparts. The remaining hours are distributed to childcare, domestic chores, personal care, and free time. Despite the relatively small amount of time spent on childcare, the relationship between fathers' education and time spent with children is positive in that those with highest educational attainment allow themselves to spend more time on domestic chores or childcare. Fathers' income contributions are positively associated with working hours, and negatively associated with time spent on childcare and domestic chores.

Stepwise multivariate regression analyses confirm the positive effect of education and the negative effect of income on fathers' time with children. This result is consistent with most previous studies in Western countries. Our results add to the existing literature in two ways. First, we find that father's education has consistently a stable positive relationship with childcare time, *ceteris paribus*. Thus, highly educated fathers are more likely than their counterparts to devote time to childcare, and this behaviour is a result of child-centric attitudes. Father's high income contribution to the household, in contrast, tends to redirect fathers from spending time on childcare. Although mother's high devotion to childcare time contributes to an increase in father's time for childcare, mother's care time also reinforces the negative effect of father's income on his childcare time. It suggests that Korean fathers face dilemmas between their own desires as well as demand from their spouses to spend more time with children and social pressure to be a good breadwinner spending long hours in paid work. The effects of fathers' education and income contradict each other, despite the weaker effects of income than of education on father's childcare time, which is different from the findings in previous research (Guryan et al. 2008).

Second, the result tells us that mother's education level is an important factor that influences fathers' time differences in childcare by their educational level. For instance, when mother's education level is low, father's care time remains minimal, regardless of their educational level. In contrast, among mothers with higher education, positive educational gradient among fathers is observed. However, mothers' education alone is not associated with fathers spending more time with children. Rather, highly educated couples, and in particular highly educated fathers, are fully aware that with regard to their children's development, time is as important as money. These fathers are willing to spend time with their children at the expense of spending time on other activities, even under significant time constraints.

In the context of the Korean emphasis on education, fathers who are more educated may understand the importance of children's education, even at an early age, and attempt to devote more time to their children. This is consistent with Lareau's research findings (2003) that middle-class parents in the US put more time and energy (i.e., 'concerted cultivation') into children's education compared to parents who are in lower social class. In addition, given that high education tends to be related to attitudes toward gender equity, highly educated fathers are willing to share childcare responsibilities and accept the new idea of fatherhood. When both fathers and mothers have high education levels, this attitude

may be amplified. The obstacle for Korean fathers to spending more time with children is labour market circumstances. Surprisingly, highly educated fathers spend less time on paid work than their counterparts, probably because fathers who are more educated may have better job position or chances to manage their work-life balance.

While increasing fathers' time with children may help achieve gender equity and confirm to the new idea of fatherhood, the significant effect of education on fathers' time with their children may increase inequality among families of different socioeconomic status. Given that the father's role as a breadwinner is still emphasised in Korea, the FIC may be more important than his time with children in households with a single-earner father; in this case, money trumps time. Such tendency can be more pronounced for fathers with low education. In contrast, in the case of a household with dual-earner couples or single-earner fathers with high education, fathers try to juggle their income contribution with time spent with children, and mothers demand fathers to balance their time distribution to paid work and childcare. Based on the conflict between education and income effects, each family uses a different strategy to realise what is the best fit for them, choosing father's monetary contribution over his time or vice versa.

This study has several limitations. First, we do not differentiate various childcare activities (e.g., physical care, playing, and reading) because of the small amount of father's time spent in each activity. However, we believe that fathers' engagement with children in and of itself facilitates children's education and development. Particularly in Korea, where mothers devote themselves to children regardless of their employment status, the addition of a father's involvement can make a difference in children's outcomes.

Second, because we do not capture how fathers make up for their time with children during leisure time, it is possible that father's time spent with children is underestimated in this study, considering a recent trend to go for family camping or day trips during the weekends in Korea. Third, father's occupation, one of the major indicators of father's socioeconomic status, may have played a role in explaining the effect of education and income gradient on father's childcare time. In 2009 KTUS, unfortunately, the information on fathers' occupations was not complete enough to verify socioeconomic status. Although we use household income to control the standard of living in the household, including father's occupation may have shown us a different picture of their childcare time involvement.

As time has become highly valued and is often a scarce resource, time inequality by both gender and socioeconomic status has emerged as an additional social concern. Most scholars have focused on time inequality by gender. Recognising time inequality by gender, particularly in Korea, we attempt to highlight different time allocations by socioeconomic status and the possible consequences of these differences. In addition, we highlight the need for increased attention to this issue and its social implications. That is, variations in parental time devoted to children from an early age may generate differences in children's educational achievement and, in turn, differences in children's future career trajectories.

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Appendix

See the Table 6.

Table 6 Correlation matrix for variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1.00													
2	0.83*	1.00												
3	0.27*	0.20*	1.00											
4	0.57*	0.58*	0.11*	1.00										
5	0.16*	0.17*	0.05*	0.12*	1.00									
6	−0.03	−0.03	−0.03	0.00	0.02	1.00								
7	−0.02	−0.03*	0.00	0.00	0.09*	0.04*	1.00							
8	0.17*	0.16*	0.05*	0.21*	0.20*	0.00	0.10*	1.00						
9	0.18*	0.16*	0.06*	0.20*	0.21*	0.00	0.08*	0.90*	1.00					
10	−0.03	0.03	−0.06*	−0.09*	0.32*	0.00	−0.10*	−0.06*	−0.03	1.00				
11	−0.12*	−0.12*	0.00	−0.14*	−0.21*	0.01	0.09*	−0.75*	−0.75*	−0.04	1.00			
12	−0.11*	−0.07*	−0.12*	−0.14*	0.26*	0.03	−0.08*	−0.04*	0.00	0.61*	−0.06*	1.00		
13	−0.41*	−0.40*	−0.08*	−0.54*	−0.13*	−0.1*	0.02	−0.42*	−0.41*	0.09*	0.35*	0.13*	1.00	
14	−0.26*	−0.26*	−0.08*	−0.33*	−0.02	0.08*	−0.11*	−0.05*	−0.05*	0.12*	−0.02	0.14*	0.28*	1.00

(1) Father's age, (2) mother's age, (3) numbers of children in the household, (4) lifecycle, (5) household income, (6) weekend, (7) father's weekly work hours, (8) mother's weekly work hours, (9) mother's employment, (10) father's education, (11) father's income contribution, (12) mother's education, (13) mother's childcare time, (14) father's childcare time (dependent variable)

* $p < .05$

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