



Duet or Solo? An Analysis of Paternal Involvement in Childcare in Korea by Couples' Co-Participation Perspective

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Abstract

This paper examines father involvement in childcare from the perspective of couples' co-participation in care tasks and factors associated with fathers' childcare time performed by fathers alone. Drawing on the Korean Time Use Survey 2014, and a sample of dual-earner parents with preschool aged children, results show that the time spent in childcare alone by the father was considerably less than that of mothers. About 80% of mothers' total childcare time was performed alone compared with 59.5% for fathers. For routine care, about 64.8% of fathers' routine care time was performed alone by fathers. OLS regression results indicate that work hours of both mothers and fathers primarily shape the context in which fathers' sole charge of care tasks occur. The egalitarian gender role attitude fathers hold was found to be another significant determinant of the total amount of time fathers spent on performing care tasks alone and the amount of time fathers spent on performing routine care tasks alone. Level of fathers' educational attainment did not make differences to their solo care time.

Keywords: childcare; solo care time; Korean fathers; time-use

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1. Introduction

The increase in fathers' time with children in recent years is a noteworthy change in Korean family (Cho & Yoon, 2014; Kim & Chin, 2016, Lee, 2012; Song, 2011), where patriarchal norms and practices are deeply rooted within the society (Kang, 2011). The social interest in father engagement in childcare and their actual participation have grown fast over the last decade (Cho & Yoon, 2014: 6; Kim & Kwon, 2017). Sharing care between mothers and fathers, however, can be more complicated than what is indicated by the overall amounts of time.

Studies have found gender differences in the type of care tasks parents perform (Lambs, 1997; Lee, 2012; Starrels, 1994) and the amount of care performed alone (Craig, 2006). By performing more routine care and solo care, mothers' caregiving can be more intense, time-constrained, and stressful (Craig, 2006; Roeters & Gracia, 2016). In some recent studies on the childcare experiences of Korean mothers also find that mothers who perform long hours of

solo care are reported to often suffer from a high level of stress, a sense of isolation, and depression (Choi & Ahn, 2019; Jeong & Park, 2019).

In this respect, this research raises a question on the context of Korean fathers' childcare time. If the increased participation of paternal care in Korea is mostly through joining the time when mothers are responsible for children, the current increase of father involvement in childcare may have limitations in realizing a more equal division of parental care. Thus, exploring the extent to which the time and constituent activities of caregiving are shared between parents and what factors are associated with fathers' solo care time – time that care is performed by fathers alone – will deepen our understanding on the paternal care and parents' share of care in Korea. Using the 2014 Korean Time Use Survey (KTUS), this study decomposes parents' childcare time by their co-participation. Then it analyses factors associated with father's care time alone. By focusing on dual-income couples with young children who juggle the competing demands of work and family and therefore are time stretched (Jacobs & Gerson, 2004; Voydanoff, 1988), it examines the context of paternal care of children among a group that may have relatively greater demand for childcare.

2. Literature review

2.1. Parents' Solo Care of Children

While a vast amount of prior literature on childcare mainly focused on investigating the absolute time parents spend on childcare (Bianchi, Robinson & Milkie, 2006; Lee, 2012; Sayer, Bianchi & Robinson, 2004; Song, 2011), scholars have continued to bring into focus on the context of parental care of children. According to their findings, not only the overall amount of childcare but also the amount of solo care mothers perform is greater than that of fathers, in all types of care activities (Barnett & Baruch, 1987; Fuligni & Brooks-Gunn, 2004). Craig's (2006) analysis on the Australian Time Use Survey find that fathers participated in childcare mostly while the mother was present. They are likely to assist mothers rather than to play as an independent and involved caregiver, which in turn may contribute less to substituting mothers' time that can be allocated to other activities (Craig, 2006).

These findings demonstrate that measuring parents' care time from their co-participation perspective can address the matters of uneven distribution of parental care in quality that cannot be captured by simply counting the total number of hours. Hence, this study attempts to examine the amount of time and by the type of care activities parents perform care tasks solitarily or jointly with mothers, as well as to explore factors associated with the amount of childcare time fathers perform solitarily in Korea. In keeping with previous findings that fathers are more likely to engage in fun activities with children than providing physical care (Craig, 2006; Guryan, Hurst & Kearney, 2008; Lee, 2012; Sullivan, 1997), not only in terms of absolute time but also in terms of solo time (Fuligni & Brooks-Gunn, 2004), associations of factors with father's sole charge of providing routine care are further examined along with their total solo care time.

2.2. Factors Associated with Parents' Childcare Time

This research adopts the time availability perspective (Presser, 1994). One of the possible reasons fathers' childcare time is still significantly lower than that of mothers is because of their long work hours which does not allow them to be at home. Korea is well-known for its long work hours in the world (OECD, 2019), and these long work hours have been identified as a hindrance to paternal involvement in childcare in Korea (Son, 2005; Song, 2014). A lack

of time available to spend with children itself will likely be associated with fathers' insufficient time to perform childcare tasks alone, either. The first hypotheses are as follows:

H1a: Longer work hours of fathers is associated with less time fathers spend performing childcare tasks alone.

H1b: Longer work hours of fathers is associated with less time fathers spend performing routine care tasks alone.

Fathers' solo care time, however, can increase if there is a demand for care generated by the absence of a mother. The demand/response perspective explains that the increase in the participation of fathers in childcare is in response to the demand caused by an employed mother or by raising young children (Coverman, 1985). Care demand such as dropping a child to care facilities or school, or preparing meals is assumed to be higher for fathers with employed partners. Several studies presented evidence on the increased amount of time fathers spent on sole charge of care tasks when mother is employed (Raley, Bianchi & Wang, 2012; Russel, 1983). Weinschenker (2013) also found fathers participate in more solo care when mothers have non-standard work schedules. Hence, this research posits its second hypotheses as follows:

H2a: A longer work hours of mothers is associated with a larger amount of time fathers spend on performing childcare tasks alone.

H2b: A longer work hours of mothers is associated with a larger amount of time fathers spend on performing routine care tasks alone.

Fathers' education is another factor that can positively influence their solo care time (Dotti Sani & Trees, 2016; England & Strivastava, 2013; Sayer, Bianchi & Robinson, 2004; Sullivan, 2010). Higher levels of education are assumed to be relevant to a better acquisition of knowledge on changing values and norms in the social construction, which drives fathers to accept the changed value of children and the new role of father differentiated from the traditional gender role. Prior Korean literature has also reported parents' time with children gets amplified by the levels of their educational attainment (Cho & Yoon, 2014; Kim & Chin, 2016; Song, 2011). Cha and Song's research (2017) analyzed 2009 Korea Time Use Survey and found that the level of father's educational attainment is a strong determinant of their time spent on childcare, even when controlled for their work hours and their contribution to household income. In a society with high expectations on parents' role of child outcomes (Kang, 2008) and with fast-growing interest on an intimate fatherhood, levels of education Korean fathers attained may covariate with the degree to which they accept these roles and thus participate in all forms of caregiving more actively. Hence, it is hypothesized as follows:

H3a: A higher level of education fathers received is associated with a larger amount of time fathers spend on performing childcare tasks alone.

H3b: A higher level of education fathers received is associated with a larger amount of time fathers spend on performing routine care tasks alone.

The last factor salient to explaining fathers' care of children is gender ideology (Bulanda, 2004; Davis & Greenstein, 2009). Korea is a country in which the traditional gender norm continues to persist (Kim & Ok, 2000). Yet, signs of a substantial change in this belief have also been reported in the recent years. The proportion of respondents in the Korean General Survey who disagreed on the traditional gender role increased from 38% in 2008 to 56% in 2018. Kim and Kwon (2017) estimated the change of paternal time with children with four waves of Korean time use data (1999, 2004, 2009, 2014), and found that the impact of gender role fathers hold was significant on their amount of time spent on childcare in 2014, but

not in the previous surveys. These findings demonstrate a higher possibility of the effect of the gender norm fathers hold on their allocation of time for childcare in the current times of Korea. Hence, this research posits that fathers with an egalitarian gender role attitude may also participate in more solo care than fathers with a traditional gender role attitude because they view childcare as an equally shared duty of parents, which encourages themselves to perform care and share care tasks with mothers with greater endeavor.

H4a: An equal gender norm fathers hold is associated with a larger amount of time fathers spend on performing childcare tasks alone.

H4b: An equal gender norm fathers hold is associated with a larger amount of time fathers spend on performing routine care tasks alone.

3. Methodology

3.1. Data and method

This study uses the 2014 Korea Time Use Survey (KTUS) data. The sample of this study is restricted to dual-earner parents, fathers who work full time, and with pre-school children aged between 0-6 years old. These families are composed of two generations, parents and their child(ren). A total of 696 diary days of couples was extracted as a final sample of this study.

The estimation of the time parents allocated to childcare is restricted to childcare activities recorded as a primary activity. These activities include physical care, teaching, reading books to and playing with children, nursing, and other. Physical care includes activities such as feeding, giving a child bath, changing diapers, helping with dress up, etc. These are the activities that occur on a daily basis so physical care was regarded as routine care in this research.

The question on with whom the respondent conducted the activity was used to assess the time parents spent on childcare solitarily and jointly. One additional activity included in paternal time of childcare besides these primary activities is the time parents spent on transporting children. Although this activity does not fall into the category of “childcare” in the codebook but is under the category of “transportation”, it still reports the time parents spend on taking care of children. This study utilized the sub-activity of this transportation listed as “transportation related with caring for family members living together” in the codebook. The time when parents reported this activity as their primary activity and reported children as with whom they performed the activity was sorted out. Childcare tasks such as dropping and picking up children at/from school, daycare, and after-school programs belong to this activity.

To sum up, parents’ childcare time consists of a total of six different care tasks listed in the codebook. OLS regression analysis was employed to examine the associations between independent variables and the amount of time fathers spent on performing these care tasks alone.

3.2. Variables

3.2.1. Conception of Parents’ Solo Care and Joint Care of this Research

Different views can exist in defining parents’ solo care. Premberg and his colleagues (2008) assumed that fathers’ solo care must take place in the absence of mother in the same space, which also excludes the situation when a father takes care of children at home while a mother is in sleep in a different room, explaining that the presence of mother at home still gives an emotional support to father and the father tends to think his participation in childcare is to assist

with mother while she engages in a different activity. This perspective points out the important issues on the relations between taking full responsibility for children and performing solo care. However, such recognition of paternal care of children not as an independent form of care but as a peripheral care support for mother has a possibility of underestimating father's caregiving. One of the complaints of Korean mothers (Choi & Ahn, 2019) was that husbands do not perform care tasks even when he comes home from work or during the weekend but takes time to rest himself by taking a nap or watching TV. It demonstrates that father's participation in solo care by picking up care tasks alone while having a mother nearby conducting other activities still delivers a crucial aspect of their engagement in caregiving and care share. In that sense, this research attempts to measure parents' solo care time in terms of performing care tasks alone or together with spouse, not considering the physical presence nearby. The focus is the aspect of "sharing care" between mother and father, the details of their division of work that is taking place not only when they are away from each other but when they are close.

Korean time use survey asks respondents to record with whom they performed the activity with. While this question generally asks whether the respondent wasw alone or with someone else in a near distance when conducting activities (Craig, 2006; Eurostat, 2009; U.S. Bureau of Labor Statistics, 2021), Korean time use survey asks respondents whom they performed the same activity together with. And if childcare is reported as their primary activity, children are not reported for with whom respondent performed the activity (Statistics Korea, 2019). Based on these rules, parents' solo care time was estimated by calculating the amount of time each parent performed childcare activity and reported no one else as the person with whom they performed that childcare activity with, and when mothers reported to perform non-childcare activity during the same episode of time. Information on the space in which parents performed the care activities was not considered in the estimation for the reason explained above.

Parents' joint care time was estimated by calculating the amount of time both parents reported to perform care activities in the same episode of time. This includes three different situations by the details of the context: The first situation is when both parents performed the same kind of care activity and report each other as the person they performed the activity with. The second and the third situations can occur among parents with more than two children. The second situation is when one parent feeds one child and the other parent helps the other child dress up, for example. Since both activities are categorized as "physical care" in the codebook, both parents reported to perform physical care but performed it alone. Although it is still a different kind of activity each parent performed and was reported to be performed alone, this research classified such cases as parents' joint care because they share the care responsibility by distributing specific tasks within themselves. The third situation is when one parent feeds one child and the other parent plays a game with the other child. Feeding children is categorized as "physical care" and playing a game with children is categorized as "playing with children" in the data. Each parent engages in a different kind of care activities alone, but from a bigger picture, they share care by dividing multiple care tasks in the same episode of time. From this standpoint, these cases were also counted as parents' joint care. The table below (see Table 1) summarizes the concept of solo care and joint care of parents in this research.

Table 1. Conception of Parents' Solo Care and Joint Care by the Type of Activity Performed and With Whom Activity was Performed

	One parent		The other parent	
	Type of activity performed	With whom performed the activity with	Type of activity performed	With whom performed the activity with
Solo Care	Childcare activities	Alone	Non-childcare activities	Anyone except the spouse
Joint Care	Case 1	Same kind of childcare activities	Same kind of childcare activities	Spouse
	Case 2	Same kind of childcare activities	Same kind of childcare activities	Alone
	Case 3	Different kind of childcare activities	Different kind of childcare activities	Alone

Note: Estimates of parents' solo care time and joint care time are provided with descriptive statistics. Since the focus is to peer into the division of childcare between parents, the time parents performed childcare with additional individuals besides the spouse was not reported in the findings.

3.2.2. Dependent Variables

This research regresses the amount of time fathers spent on childcare activities per day. Three dependent variables are set as follows: 1) the total amount of time fathers spent on childcare activities, 2) the total amount of time fathers spent on childcare activities alone, and 3) the total amount of time fathers spent on providing routine care to children alone.

3.2.3. Independent Variables

Four independent variables include: 1) father's average weekly work hours, 2) mother's average weekly work hours, 3) father's education level, and 4) father's gender role attitude. Weekly work hours are categorized into four groups. These categories slightly differ for fathers and mothers because a larger number of fathers is concentrated more in working longer hours. The categories for fathers are: 40 hours per week or below, 41-50 hours per week, 51-60 hours per week, and more than 60 hours per week. The categories for mothers are: less than 40 hours per week, 40 hours per week, 41-50 hours per week, and more than 50 hours per week. Level of fathers' educational attainment was categorized into three groups; the group that received high school education or lower, the group that held a college diploma (including both four years of university education and community college education less than four years), and those who received a graduate-level education. Fathers' gender role attitude was estimated by the responses on the following statement, "Man's responsibility is to earn money and woman's responsibility is to take care of the household". Those who responded as "strongly agree" and "slightly agree" to this statement were combined as holding a conservative gender role attitude, and those of "strongly disagree" and "slightly disagree" were combined as holding an egalitarian gender role attitude.

3.2.4. Control Variables

Age of father, level of household income, age of the youngest child, total number of children, and day type were included as control variables. Age of father was included as a continuous variable. Household income was estimated by the sum of individual income of both mother and father. The logged estimate was included in the model to correct the skewness values ± 1 (Joo, 2018). Age of the youngest child was categorized as the infant group (age 0-2) and the toddler group (age 3-6). Total number of children was reflected by the group with one child and the other group with more than two children. Table 2 below describes the general characteristics of the sample.

Table 2: Demographic and Socio-economic Characteristics of the Respondents

					Obs	%
Father's Average Weekly Work Hours				40 hours or below (reference group)	34	4.8
				41-50 hours	270	38.8
				51-60 hours	207	29.8
				61+ hours	185	26.6
Mother's Average Weekly Work Hours				<40 hours (reference group)	218	31.3
				40 hours	389	55.9
				41-50 hours	43	6.2
				51+ hours	46	6.6
Father's Education Level				High School (reference group)	143	20.5
				Undergraduate	500	71.9
				Graduate Education	53	7.6
Father's Gender Role Attitude				Traditional Attitude (reference group)	255	36.7
				Egalitarian Attitude	441	63.3
Age of Father				Mean (SD)	36.3	(4.9)
Household Income				Mean (SD)	499.3	(180.3)
Number of Children under Age 7				1 (reference group)	398	57.2
				2+	298	42.8
Age Group of the Youngest Child				0-2 (infant) (reference group)	384	55.2
				3-6 (toddler)	312	44.8
Day Type				Weekday (reference group)	508	73.0
				Weekend	188	27.0

4. Findings and discussion

Table 3 disaggregates parental time spent on caring for children by their con-joint participation status. Mothers on average spent 117.9 minutes per day on childcare, which is about twice as high as that of fathers (58 minutes per day). Approximately 94.4 minutes out of mothers' total

care time was performed alone, which takes 80% out of their total amount of care. The average time mothers spent in performing care together with father was 12.1 minutes on average per day, which takes about 10.3% of their total amount of care. Fathers' sole charge of care tasks was a lot smaller than that of mothers, averaging 34.5 minutes per day. But its proportion was found to be more than half of fathers' total care time (59.5%), meaning more than majority of fathers' participation in primary childcare tasks were conducted alone. Fathers' care time jointly performed with mother took about 20.9% of their total care. It tells us that the rest of another 20% of father care was conducted jointly with others, whereas that of mothers is 10%.

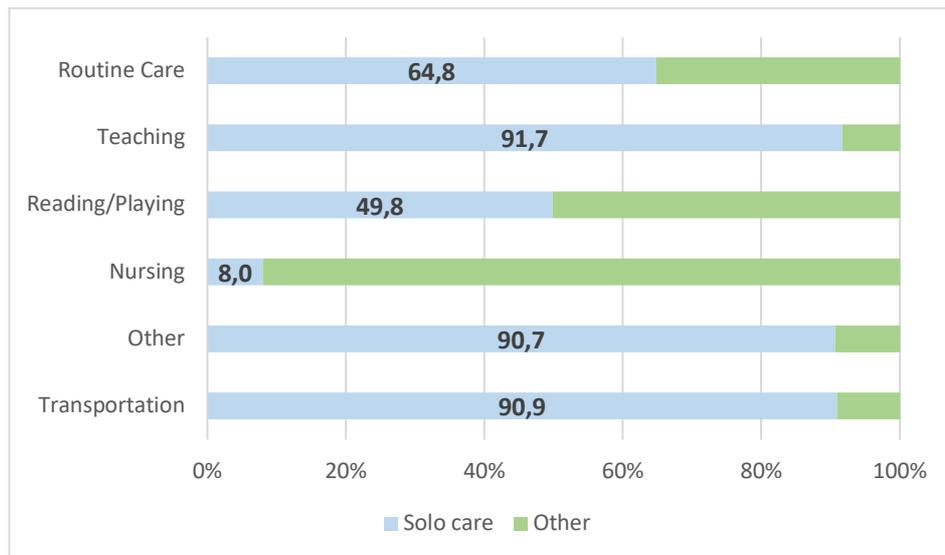
These findings show the unequal distribution of childcare between couples, which exists not only in their total amount of time spent on childcare but also in the context of their caregiving. Mothers performed childcare twice as much as fathers do, which is mostly conducted without anyone with whom they can share the tasks with. This reaffirms previous findings that compared to fathers, mothers may experience childcare in a more intensive way, and be timely constrained (Craig, 2006; Fuligni & Brooks-Gunn, 2004).

Table 3: Decomposition of Mothers' and Fathers' Time Spent in Childcare per Day from a Shared Perspective (Unit: minutes)

	Mother			Father		
	Mean	(SD)	%	Mean	(SD)	%
Total Care Time	117.9	(89.4)	100.0	58.0	(74.3)	100.0
Solo Care Time	94.4	(77.1)	80.0	34.5	(48.7)	59.5
Joint Care Time	12.1	(27.4)	10.3	12.1	(27.4)	20.9

Note: Total amount of time is the sum of childcare performed alone, performed with spouse, and the rest of time not defined as performed alone or together. The mean and standard deviation of this time are not presented in the table.

However, contrary to expectations that father's involvement in childcare would mostly take place through joining the care mothers perform (Choi & Ahn, 2019; Craig, 2006; Jung & Park, 2019; Kim & Lee, 2005; Lee, 2003), these fathers were found to spend more than half of their daily care time conducting care tasks alone. One explanation can be that because they are exposed to greater needs of care by the absence of their employed wives. However, these mothers may work shorter hours than average due to larger demand for care from raising young children. Albeit titled as dual earners, in many cases mothers work part-time jobs to meet the needs of childcare, especially when they have young children (Dex et al., 2005; Folk & Beller, 1993; Kim, 2015). While different factors can influence in various ways fathers' solo care, further decomposition by each type of care tasks they perform are needed (see Figure 1).

Figure 1: Proportion of Fathers' Solo Care Time by Types of Care Activities (unit: %)

This graph shows the proportion of the amount of fathers' care time alone out of their total amount of time spent on childcare activities. For routine care, fathers performed 64.8% alone, which is quite higher than one may expect. For reading books to children and playing with children, fathers performed half of it alone (49.8%). The amount of time fathers spent on teaching children, helping children with transportation, and other activities alone took more than 90% of their total care time. Fathers' sole charge of care task was least on nursing, in which only 8% was spent alone. It seems that nursing is the area fathers cannot take full responsibility of by themselves but can only perform as the hands of mother or others. These findings show that fathers are performing at least half of their childcare alone, without anyone joining the care including mothers. This is maybe because dual-income fathers are more likely to partake in childcare solitarily than fathers from single-income families do, but it still demonstrates that paternal involvement in childcare does not heavily depend on assisting with mothers as one of the assumptions.

Table 4 shows the OLS regression results of associations between independent variables and the total amount of time fathers spent on childcare, total amount of time fathers performed care tasks alone, and the amount of time fathers performed routine care alone. Findings show that fathers' weekly work hours is significantly associated with their time spent on performing childcare tasks alone, both the total solo care time and solo routine care. It is also correlated with fathers' total amount of time spent on childcare. When fathers work more than 50 hours per week, their total amount of time spent on childcare decreases by more than 30 minutes per day ($p=0.041$, $p=0.010$), compared to their counterparts who work 40 hours per week or below.

For solo care, compared to fathers working 40 hours per week or below, those working 41-50 hours per week spent about 29 minutes less ($p=0.008$) in total childcare alone and 22 minutes less ($p=0.000$) in total routine care alone. Those working 51-60 hours and 61+ hours per week spent about 48 minutes less ($p=0.000$ for both) in total care time alone and 32 minutes less ($p=0.000$) in routine care alone. This reiterates the importance of the availability of time to allocate to childcare for Korean fathers as addressed in prior literature (Kim & Chin, 2016; Lee, Choi & Kim, 2017). Having little time to spend on taking care of children would mean they have less chance to take sole charge of care activities as well, and findings from this table proves that time constraint fathers daily face plays as a hindrance to engage in any forms of

caregiving, not only by the absolute terms but also the way which they participate in care tasks. This in turn may further increase the intensity of mothers' care work. The first hypotheses that explain fathers' childcare time alone by their time availability are thus accepted.

The effect of mothers' weekly work hours on fathers' solo care time showed mixed results. It was significantly associated with fathers' time spent on providing routine care alone, but not with their total care time alone. Compared to fathers whose spouse (mother) worked less than 40 hours per week, fathers with spouse worked 40 hours per week spent about 4.8 minutes more on performing routine care to children alone per day ($p=0.033$), fathers with spouse worked 41-50 hours per week spent 13.7 minutes more ($p=0.001$), and fathers with spouse worked 51+ hours per week spent 14.3 minutes more on routine care alone ($p=0.001$). For fathers' total amount of solo care time, only the group of fathers whose spouse worked 51+ hours per week showed a statistically significant increase (29.9 minutes more ($p=0.000$)), than their counterparts whose spouse worked less than 40 hours per week. It means the amount of fathers' total care time alone increases only when mothers work for extremely extended hours of work. Strong associations between mothers' work hours and fathers' routine care alone provides counter evidence supporting routine care is typically done by mothers (Fuligni & Brooks-Gunn, 2004; Starrels, 1994; Sullivan, 1997), which in turn results in fathers' participation in childcare is in response to the demand that is not met by the absence of mother. Since routine care such as feeding and giving a bath must be done on a regular basis and cannot be postponed, they need to be filled somehow if not by mother, and fathers in dual-income families seem to take on the responsibility. When mothers work for an extended number of hours, more than 51 hours per week in this finding, the scope of care tasks fathers cover alone may expand to greater areas, leading to the increase in the total amount of time they perform care alone. The second hypotheses are partially supported in this case.

The impact of fathers' education level on their solo care time did not predict either the total amount of time fathers performed care alone or performed routine care alone. The results also show that education level was not strongly associated with their total amount of time spent on childcare, contradictory to previous studies (Kim & Chin, 2016; Kim & Kwon, 2017; Song, 2011). The effect of education level on fathers' total care time was only significant between fathers with bachelor's degree and with high school degree or below, the former spending more time on childcare than the latter. These results presumably mean no matter what their education level is, fathers of dual-income couples with pre-school children participate in childcare to meet the everyday demand that is comparably higher than those with school-aged children or with a staying-at-home wife (Drago, 2009; Lee & Ahn, 2017; Wang & Bianchi, 2008). The hypotheses that assumed positive relations between levels of fathers' educational attainment and their time spent on childcare alone were not accepted.

The last factor, fathers' gender role attitude showed strong correlations with all types of fathers' childcare time. Fathers who hold an egalitarian gender role attitude spent about 11.8 minutes more on total care alone per day ($p=0.003$) and 4.5 minutes more on routine care alone ($p=0.026$), so well as 11.6 minutes more on the total care ($p=0.045$) than those who hold a traditional gender role attitude, *ceteris paribus*. This result indicates that the gender norm fathers hold at the individual level can make a significant impact on their behavioral change, a more proactive participation in childcare by performing care tasks alone. In line with previous findings that ascertain the association of Korean father's gender role attitude with their time spent in childcare (Kim & Chin, 2016; Kim & Kwon, 2017), this finding further supports the argument that father's gender role attitude is a significant factor in explaining patterns of paternal care of children in the recent Korea. This is a notable finding considering that

providing routine care to children is the activity least preferred by fathers among a variety of tasks that childcare entails (Guryan, Hurst & Kearney, 2008; Hook & Wolfe, 2011; Lee, 2012).

Prior research has pointed out that a discrepancy exists between father’s holding a non-traditional gender role attitude and their actual participation in childcare (Yang, 2013). With the evolvement of the new role of father, fathers in the contemporary era are illustrated as struggling between their old role as a breadwinner and a new role as an active caregiver (Na, 2014; Paik, 2009), which results in failing to bring what fathers believe in into action. Holding a non-traditional gender role belief is considered not necessary or not sufficient for explaining gender division of unpaid work in this reason (Deutsch, 1999). But this finding reveals that possessing a non-traditional gender role attitude can make differences on how fathers engage in childcare. The fourth hypotheses are accepted.

To briefly explain the effect of control variables, age of father and household income were not found to be significantly associated with fathers’ care time alone, nor their total amount of time spent on childcare. The configuration of children was found to be only associated with fathers’ total care time, but not with their solo care time. Having more children or younger children at home did not lead fathers to perform more care tasks alone. The effect of the day type also showed inconsistent results. Paternal time with children is often concentrated on the weekends (Cho & Yoon, 2014; Lee, 2012; Yeung et al., 2001), and findings of this research show fathers increase their solo care time for children during the weekend, but not specifically the routine care time alone.

Table 4: Decomposition of Mothers’ and Fathers’ Time Spent in Childcare from a Shared Perspective (unit: min/day)

Variables	Total Care Time	Childcare Time Alone	Routine Care Time Alone
Father’s Weekly Work Hours (ref: 40 hrs or below)			
41-50 hrs	-22.87 (16.25)	-29.07*** (11.00)	-22.91*** (5.609)
51-60 hrs	-34.04** (16.63)	-47.98*** (11.26)	-32.00*** (5.739)
61+ hrs	-42.93**	-47.49***	-32.09***
Mother’s Weekly Work Hours (ref: <40 hrs)			
40 hrs	1.036 (6.549)	7.212 (4.434)	4.833** (2.260)
41-50 hrs	-6.872 (12.00)	12.28 (8.124)	13.74*** (4.141)
51+ hrs	18.86 1.036	29.86*** 7.212	14.29*** 4.833**

Variables	Total Care Time	Childcare Time Alone	Routine Care Time Alone
Father's Education Level (ref: high school)			
Bachelor's degree	15.64** (7.488)	3.876 (5.070)	4.016 (2.585)
Graduate education	15.73 (11.79)	8.709 (7.981)	4.164 (4.069)
Father's Gender Role Attitude (ref: traditional)			
Egalitarian gender role	11.64** (5.807)	11.78*** (3.932)	4.484** (2.005)
Age of father	0.523 (0.635)	0.279 (0.430)	0.0154 (0.219)
Household income (unit: 10,000 KRW)	4.959 (8.156)	6.906 (5.523)	-0.534 (2.815)
Total number of children (ref: 1 child)			
2+ children	18.45*** (5.666)	2.727 (3.837)	2.052 (1.956)
Age of the youngest child (ref: 0-2 years old)			
3-6 years old	-12.76** (5.974)	-0.525 (4.045)	-2.823 (2.062)
Day (ref: weekday)			
Weekend	29.38*** (5.694)	14.90*** (3.855)	2.940 (1.965)
Constant	-21.36 (52.37)	-16.04 (35.46)	29.01 (18.08)
Observations	696	696	696
R-squared	0.103	0.115	0.112

* $p < 0.1$; ** $p < 0.05$, *** $p < 0.01$

5. Conclusion

This paper attempted to explore the details of Korean fathers' engagement in childcare, by decomposing their childcare time from the couple's co-participation perspective and examining factors associated with fathers' sole charge of childcare tasks. Findings from the disaggregation of parents' childcare time show that not only the total amount of time mothers spent on childcare but also the proportion of the time they performed care tasks alone was considerably higher than that of fathers, meaning the intensity of mother's care work is higher in both quantitative and qualitative aspects. To our surprise, however, more than half of fathers' care time as well as of their routine care time were performed by fathers alone, which demonstrates Korean fathers in dual-income families with pre-school aged children are in fact more actively participating in childcare than are assumed. This dismantles previous notion that the engagement of Korean fathers in childcare is limited to play only supporting roles of mothers (Na, 2014; Yoo, 2017).

OLS Regression results reveal the amount of fathers' routine care alone is in response to the demand of care in the household generated by the absence of employed mothers. Further, longer work hours of fathers showed a reduced amount of their time spent on total care, total care alone, and routine care alone, which may be an expected result in Korea which is notorious for its long work hours (Park, Kwon & Kim, 2012). Thus, these results suggest that reserving time available for childcare is the key in redistributing the disproportionate share of care tasks between parents.

While parents share care upon their rational choice of meeting the care needs, which is arranged in conjunction with their work schedules, findings that fathers' own gender role attitude was associated with their solo care time including routine care alone suggest that social norm also serves as a crucial influencer in father's involvement in childcare, to play as a more involved caregiver. Studies argue that the influence of gender ideology is intertwined with a large portion of the society (Coltrane, 2000; Davis & Greenstein, 2009), meaning that gender ideology also accounts for the influence of a range of factors, such as work hours, income, earning types of households, or education on childcare in all stages. But finding of this paper reaffirms the importance of gender ideology at the micro-level by showing that fathers who held a non-traditional gender role attitude were more likely to perform childcare alone than their counterparts, especially in routine care. This is a noticeable finding pertaining to the pattern of paternal care of children in today's Korea. Routine care needs to be performed at certain times of the day, which could be not only physically intense but also mentally stressful. Conducting these tasks alone can help mothers allocate their time to other activities and provide fathers opportunities to share and understand the intensity of routine care.

This research provided that although employed mothers carry a bulk of childcare work disproportionately, performing 80% of care alone, fathers are also found to endeavor taking parts in childcare, not like they are assumed to serve only as an assistant of mothers. It reasserts the importance of building the structure that enables fathers to take time to spend with children, to implement their attitudes into action (e.g., work flexibility). Continuous social encouragement of egalitarian gender roles and co-parenting is necessary. The next step would be to compare couples with different types of households earning. Fathers in single-income families may show different patterns in their participation in caregiving than fathers in dual-income families. Several studies point out the positive impact of fathers' solo care of children that fathers can achieve greater competence and confidence, and can create a deeper contact with their child when they perform care solitarily and not mediated by mothers (Premberg et al., 2008; Russell, 1983; Wilson & Prior, 2010). Thus, the psychological effect of fathers' solo

care or its effect on father-child relationships would be an additional area that can be navigated through, to explore the meaning of fathers' solo care more thoroughly.

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Appendix

Table A1: Mean Childcare Time Spent by Fathers

		Childcare Time Alone		Routine Care Time Alone		Total Care Time	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Father's Average Weekly Work Hours	40 hrs or below	49.6	(59.7)	20.2	(37.5)	74.1	(77.3)
	41-50 hrs	31.6	(43.9)	10.5	(18.4)	59.1	(79.5)
	51-60 hrs	24.9	(37.0)	7.9	(15.3)	41.0	(52.8)
	61+ hrs	27.6	(46.3)	10.0	(21.4)	52.4	(80.1)
<i>F</i>		9.80***		8.92***		6.33**	
Mother's Average Weekly Work Hours	Below 40 hrs	28.1	(37.0)	8.3	(14.8)	55.9	(67.3)
	40 hrs	34.0	(47.7)	12.6	(26.0)	60.3	(83.0)
	41-50 hrs	38.9	(61.7)	16.4	(35.5)	55.0	(74.6)
	51+ hrs	47.0	(52.6)	17.2	(25.2)	61.8	(59.4)
<i>F</i>		3.28*		3.87**		0.29	
Father's Education Level	High School	27.4	(43.4)	7.4	(17.8)	39.8	(56.8)
	College Diploma	34.9	(49.8)	13.4	(26.7)	62.2	(78.7)
	Graduate Education	49.4	(48.8)	18.0	(30.6)	67.4	(65.2)
<i>F</i>		4.05*		4.39*		5.61**	
Father's Gender Role Attitude	Traditional Attitude	24.4	(40.0)	8.0	(17.3)	43.3	(59.0)
	Egalitarian Attitude	40.3	(52.2)	15.1	(29.0)	66.5	(80.7)
<i>t</i>		-3.54**		-2.78*		-2.71*	
Number of Children under Age 7	1	32.5	(48.6)	11.4	(25.3)	49.8	(63.1)
	2+	37.2	(48.7)	14.1	(25.9)	69.0	(86.0)
<i>t</i>		-1.28		-1.45		-3.85**	
Age of the Youngest Child	0-2 years old	35.2	(50.1)	14.3	(28.5)	66.7	(83.0)
	3-6 years old	33.6	(47.0)	10.3	(21.3)	47.2	(60.3)
<i>t</i>		0.30		1.63		2.62*	

		Childcare Time Alone		Routine Care Time Alone		Total Care Time	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Day Type	Weekday	30.4	(43.9)	11.8	(22.7)	50.6	(67.7)
	Weekend	45.5	(58.5)	14.3	(32.1)	78.1	(86.7)
<i>t</i>		-3.79**		-1.42		-5.16***	