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Research Article

Parental childcare support, sibship status, and mothers' second-child plans in urban China

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Parental childcare support, sibship status, and mothers' second-child plans in urban China

Menghan Zhao¹

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Abstract

BACKGROUND

Most previous research on intergenerational impacts on childbearing behaviors has overlooked the interrelation between having siblings and the availability of childcare assistance provided by grandparents.

OBJECTIVE

This study examines how the siblings of young couples dilute the resources of grandparental childcare assistance and thus influence a mother's plans to have a second child in urban China.

METHOD

We use data from the survey on Fertility Decision-Making Processes in Chinese Families conducted in 2016 and focus on the subsample of mothers who have only one child and live in urban areas.

RESULTS

The husband's parents are less likely to take care of grandchildren if the husband has male siblings, while the probability will be higher if the wife has male siblings. The chance of receiving childcare support from the wife's parents is also associated with the sibship status of both wife and husband. The results suggest that the decision regarding primary childcare providers might be made collectively within extended families. Under the two-child policy, childcare support from parents or in-laws in raising the first child increases the probability of a mother planning a second child. Furthermore, the positive effect of childcare support from the husband's parents is lessened if the husband has siblings.

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CONTRIBUTION

This article tests the resource-dilution model in adulthood by examining the association between grandparental childcare assistance and young couples' sibship status. Siblings may compete for grandparental childcare support and thus reduce the positive influence of grandparental childcare assistance on a mother's plans for another child.

1. Introduction

There is a large body of literature portraying how siblings interact and exert their influences on one another's development and adjustment during childhood. Although early research suggests that siblings promote socio-emotional development and serve as social partners or role models, most empirical studies provide evidence that the number of siblings is negatively related to their development outcomes and well-being (Conley and Glauber 2006; Davis 1997; Öberg 2015). This can be explained by the resource dilution model – the larger the sibship size, “the more the resources are divided and hence, the lower the quality of the output” (Blake 1981: 422).

Intergenerational support (e.g., financial transfers and free grandparenting), which is deemed a source of social capital in sociological literature, shapes adult children's childbearing behaviors (Boca 2002; Bühler and Philipov 2005). However, the interrelation between sibship status and the availability of childcare assistance provided by grandparents, and its influence on adult children's fertility decisions, remain less studied. As argued by Aassve and his colleagues (2012), the childcare services that parents can offer to each adult child depend on their own characteristics and whether they need to assist other adult children. This competition among adult children (i.e., siblings) might be even more salient when public childcare services are less prevalent.

In contemporary China, where public childcare services are limited, women's parents and in-laws are important childcare providers (Chen, Liu, and Mair 2011; Chen, Short, and Entwisle 2000). Nevertheless, the impact of grandparental childcare assistance on women's fertility decisions has received less academic interest in Chinese studies. This is because the stringently enforced birth control in the past decades resulted in little variation in family size (Gu et al. 2007), and thus the influence of various family characteristics on the number of children was less likely to be observed.

The two-child policy announced in December 2015 allowed all couples in mainland China to have a second child. With the transition to a market-oriented economy, the conflict between paid work and childcare that Chinese mothers face has become one of the most important issues when deciding whether or not to have another child (Attané 2016; Zhao 2016). Thus, grandparental childcare assistance to alleviate this conflict

becomes one of the main determinants in a family's plans for a second child. In addition, sibship status might influence young couples' possibility of getting parental childcare support: Because all couples have been allowed to have a second child since the same time point, siblings may compete directly for free grandparental childcare assistance. Consequently, the siblings of both husband and wife might dilute the resources of grandparental childcare assistance.

Using survey data collected in 2016 in twelve cities across six provinces, this study tests the resource-dilution model on siblings' sharing of grandparental childcare assistance. Specifically, in the analyses we distinguish the wife's sibship status from her husband's and discuss how the extended families of both husband and wife make decisions collectively in the face of external constraints. Thus, this study extends the general literature on siblings by examining the resource-dilution model in China's sociocultural context, where siblings interact and exert their impact on the larger family system. We then examine the influence of intergenerational childcare support on urban Chinese women's second-child plans in the era of the two-child policy, providing insights into factors influencing future fertility trends in China.

We begin by reviewing previous literature about sibship status and the dilution of parental resources among siblings. We then discuss the influence of grandparental childcare assistance, viewed as an important parental resource for young couples, on adult children's fertility behavior. Based on this literature, we sketch the Chinese context and introduce our hypotheses. Next, we describe our data, measures, and analytical strategy. We then present the results of our models testing the proposed hypotheses. In the last section we discuss our findings and their societal relevance.

2. Literature review

2.1 Sibship status and resource dilution

The significance of siblings in youth development and adjustment is well documented in extant literature. In prior studies, mostly in the context of the United States, the negative influence of a large number of siblings is more widely recognized (Blake 1989; Steelman et al. 2002). As suggested by the resource-dilution model, more children might lead to fewer family investments in each child due to finite parental resources, especially for the later-born children (Blake 1981; Hertwig, Davis, and Sullnwav 2002). This is in line with the quantity-quality trade-off model developed by Gary Becker and his colleagues (Becker 1960, 1991; Becker and Lewis 1973). From an economic perspective, this model posits that the marginal cost of child outcomes increases with the number of children. Social scientists have found this relationship particularly interesting, because it will lead

to a trade-off between children's quantity and quality within budget constraints. A body of empirical studies supports this prediction, revealing that investments in one offspring generally detract from resources available for other children under parental care, including families' unpaid time (Vargha and Donehower 2019). The negative impacts of having siblings have been observed in various aspects of child outcomes, including height, years of education, intellectual development, adult earnings, and employment (Black, Devereux, and Salvanes 2005; Blau and Duncan 1967; Downey 2001; Öberg 2015; Steelman et al. 2002).

Other studies further emphasize the variation of sibship effects in different social contexts (Downey 2001; Maralani 2008). Using twin births as an instrument for family size, Rosenzweig and Wolpin (1980) find that exogenous increases in fertility lead to lower levels of schooling in rural India. Studies in mainland China, where no comprehensive welfare system has been built to support families' childbearing and childcare, also find evidence that family size is negatively correlated with children's education after controlling for parental characteristics in rural areas (Li, Zhang, and Zhu 2008). Using data in 20 OECD countries, Park (2008) uses hierarchical linear models to show that strong family-supportive policies mediate the relationship between sibship size and educational achievement. Gibbs and colleagues (2016) also argue that expansion of state-sponsored investment in education has weakened the linkage between family background and educational opportunity in the United States.

Yet, the dilution of parental resources among siblings in adulthood remains less studied. Using longitudinal data on sibling samples in the United State, Siennick (2013) finds that the adolescent siblings who are emotionally closer to their parents get more material support from their parents after the transition to adulthood, suggesting a continuity of resource dilution over the family life course. In this study we look at how sibship status relates to the young couple's resources of grandparental childcare assistance, and thus affects their decisions regarding having a second child in the era of China's two-child policy. Before that, we review the literature on the relationship between grandparental childcare support and adult children's childbearing decisions.

2.2 Intergenerational childcare support and childbearing decisions

The family is an active participant in the larger society (Moen and Wethington 1992), and intergenerational childcare assistance reflects a collective adaptation of extended families to changing external constraints and opportunities. The extant literature has well documented the importance of intergenerational support in childcare. Specifically, when public childcare services are inadequate, free grandparental childcare assistance serves as an important source of social capital for couples (Boca 2002; Bühler and Philipov 2005;

Tanskanen and Rotkirch 2014) and can reduce women's opportunity costs of reproduction. This sharing of childrearing costs thus enables mothers to better balance paid work and family life (Hoppmann and Klumb 2010), encouraging fertility.

There are many recent empirical studies on childcare by grandparents, especially in the context of European countries, but conclusions regarding its impact on adult couples' childbearing decisions are mixed and elusive. In the Netherlands, childcare support from grandparents is an important factor shaping people's fertility decisions and increases the probability of having children (Kaptijn et al. 2010). One study using data from Bulgaria, as a case from Central and Eastern Europe, documents the effects of grandparents' support on the intention to have a first or second child (Bühler and Philipov 2005). Using data from the Generations and Gender Surveys in four European countries with different levels of wealth, public childcare services, and fertility, Tanskanen and Rotkirch (2014) find that childcare help from a maternal father is positively correlated with a woman's intention to have a second or third child. Nevertheless, grandparental childcare help is found to be negatively associated with women's fertility intentions in Lithuania. Drawing on longitudinal data for the 1970 British birth cohort, Waynforth (2012) argues that it is the physical presence of grandparents rather than grandparents' childcare help that increases the chance of having a child.

Historically, the extended family has dominated in East Asian societies, where patriarchal and patrilineal norms derived from Confucian doctrine are prevalent. Typically, adult sons, their wives, and their descendants live under the same roof as their parents. Yet, literature on the relationship between grandparental childcare and young adults' fertility behavior is rather limited. Prior research in Taiwan reveals that the spacing between the first and the second birth is shorter when coresiding parents-in-laws act as free childcare providers (Chi and Hsin 1996). Data from South Korea suggests that women with childcare assistance from coresiding parents or in-laws have 2.7 times odds of having a second child compared to women not living with parents or in-laws and not receiving childcare support from them (Yoon 2017).

2.3 Chinese context and hypotheses

After reviewing the resource-dilution model and the previously discussed associations between grandparental childcare support and adult children's childbearing behavior, in this section we provide an overview of the Chinese setting on which our hypotheses are based.

As in other East Asian societies, Chinese adult children share the Confucian norm of filial piety, so that even after marriage they used to be obligated to prioritize their parents' needs above all other family responsibilities. Consequently, even with prevalent

intergenerational coresidence, in traditional Chinese culture it was not a formal obligation for young adults' parents to take care of grandchildren (Chen, Liu, and Mair 2011). However, the founding of the People's Republic of China and the implementation of the 1950 Marriage Law expanded the rights of women and increased the autonomy of the conjugal pair. The passage of the 1980 Marriage Law further accelerated the privatization of marriage in post-socialist China (Davis 2014). In contrast to the simple obedience to older generations of the past, it is now more common for adults' parents to provide assistance to their children, such as care for grandchildren. As argued by Croll (2006), parental care for adult children's offspring is both part of a reciprocal cycle of care and a bargaining strategy that guarantees support from adult children as the parents age.

More importantly, grandparental childcare support serves as a family adaptive strategy to maximize the well-being of the extended family in contemporary urban China. During the last several decades, mainland China has transitioned from a socialist to a market-oriented economy. In the socialist era, support which previously had come from the family was provided by the *danwei* (state-owned enterprise work-unit) system, which helped organize social production and supplied publicly subsidized facilities, including dining halls and childcare centers in urban areas. During the transition to a market economy the *danwei* system gradually collapsed, and its publicly subsidized services were not replaced by a well-established welfare system to support families and individuals (Ji et al. 2017). Because of these constraining institutional and social realities, "family members (thus) have to stick together as a safety net, to some degree through their obligations towards each other as defined by Confucian tradition" (Ji 2017: 3). Typically, with rising living expenses and housing prices, the young generations of Chinese, especially those living in urban areas, have become more dependent on their parents in recent years than in the socialist times (Yan 2013). As a result, decisions made within Chinese families are affected by resource demands and power relations among family members (Chen and Korinek 2010).

Parental support, as an important resource for young couples, is also coordinated among extended family members, including siblings. That is, as implied by the resource-dilution model, if a couple has siblings, their parents might have to also help take care of their siblings' children. As a result, the childcare assistance from parents might be limited. Further, in the face of external constraints, the extended families of both the husband and wife form a mutual benefit relationship through interaction, negotiation, and even compromise. After marriage, grandparental childcare support also needs to be arranged and allocated jointly, considering the family structure of both husband and wife. Based on these realities, we propose two sets of testable hypotheses:

Hypothesis Ia: The husband's parents are less likely to take care of very young children if the husband has siblings.

Hypothesis Ib: The husband's parents are more likely to take care of very young children if the wife has siblings.

Hypothesis IIa: The wife's parents are less likely to take care of very young children if the wife has siblings.

Hypothesis IIb: The wife's parents are more likely to take care of very young children if the husband has siblings.

As pointed out in previous literature, grandparental childcare is likely to encourage young couples' fertility intentions, especially in societies with limited public support (e.g., mainland China). However, diluted grandparental childcare assistance in extended families might lead to a mother's lower intention of having a second child in the era of China's two-child policy. Thus, based on recent socioeconomic changes, we develop further hypotheses regarding grandparental childcare support, the sibling status of wives and husbands, and mothers' second-child plans in urban China.

Recent studies have pointed to the deteriorating position of Chinese women in the urban labor market during the economic transition (He and Wu 2018; Zhang and Hannum 2015; Zhao 2018). With the collapse of the *danwei* system the protections and assistance for women in the workplace have disappeared. Now, in urban China, women are expected to accept most of the responsibility for childrearing and household chores while also having full-time jobs, leading to greater work–family conflict and lower fertility intentions. Some studies argue that the increasing conflict faced by women prevents mothers from having a second child in the era of China's two-child policy (Attané 2016). As a result, seeking childcare assistance from parents has become a family strategy to resolve the conflict that mothers face between paid work and childrearing responsibilities. Using data from a province with the lowest-low fertility in mainland China, Ji et al. (2015) find that potential (or actual) childcare support from parents is related to higher fertility intentions of women. Wang and Yang (2017) also find that in 2015 in Beijing, those who receive temporary parental assistance in caring for young children show 20% higher odds of wanting a second child compared to couples who care for first children by themselves. One recent study, using data from a 2016 fertility survey conducted in 12 cities of 6 provinces in mainland China, finds that the odds of having a second-child plan are 86.3% higher for mothers who might get childcare assistance from parents or in-laws compared to those who might not (Jin, Zhao, and Song 2018). Thus, we formulate a third hypothesis:

Hypothesis III: A mother with childcare support from parents or in-laws is more likely to plan a second child.

As proposed by previous literature, adult children's sibship status might affect their possibility of getting childcare support from their parents. The introduction of China's two-child policy, which can be seen as a shock in the life course trajectory of Chinese families, allowed all couples to have a second child at the same time point. As a result, siblings of childbearing age, regardless of the age difference between them, became potential competitors for childcare assistance from their parents, thus affecting young adults' childbearing behavior. Aassve and colleagues (2012) argue that women's probability of having a child is lower if their parents are looking after the young children of siblings, because their parents' time and energy for taking care of all grandchildren is limited. In the Netherlands, parents who frequently care for the children of childless adults' siblings also negatively (although not significantly) affect the likelihood of the childless adults entering into parenthood (Kaptijn et al. 2010). Based on this new context and on findings from other societies, we further develop a fourth set of hypotheses:

Hypothesis IVa: The influence of parental childcare support on a mother's plan to have a second child will be smaller if she has siblings.

Hypothesis IVb: The influence of childcare support from parents-in-law on a mother's plan to have a second child will be smaller if her husband has siblings.

3. Data and methods

3.1 Data

This study used survey data from the Fertility Decision-Making Processes in Chinese Families project conducted by Renmin University of China in 2016.³ This survey samples twelve cities in six provinces (Zhejiang, Sichuan, Shandong, Guangdong, Liaoning, and Hubei) in mainland China, covering diverse geographical locations with different levels of economic development, fertility, sex ratio at birth, and population size. In each city about 500 households were sampled using a multistage probability sampling design. First, three counties were randomly selected from each city. Second, two subdistricts (*jiedao*) in urban areas or townships (*xiangzhen*) in rural areas were sampled from each county. Third, from subdistricts or townships, four to ten communities

³ China's National Social Science Foundation [15BRK010, 15ZDC036, 16CRK003] funded the collection of the data used in this study.

(*juweihui*) or administrative villages (*cunweihui*) were selected. Finally, eight to ten households were sampled from each community or administrative village. Because urban people are the primary target group of the two-child policy, households living in urban areas were oversampled in the sampling process. The original sample size was 6,013, with 86% coming from the urban areas.

Because we focused on the target group of the two-child policy, we limited our sample to Han⁴ (the main ethnic group in mainland China) women aged 20 to 45 living in urban areas (N = 4,820). To examine the association between childcare support from parents or in-laws for the first child under age 3, and the probability of having plans for a second child, we further limited the analytical sample to those who had one child, deleting 1,651 observations. Because of our focus on intergenerational influence, we only kept women who had at least one parent or parent-in-law, dropping 295 observations, and excluded 80 observations whose first child was primarily taken care of by someone other than the couple, their parents, or in-laws. Finally, we dropped observations with missing values in the variables of interest, excluding 196 observations.⁵ The final analytical sample size was 2,598.

3.2 Measures

Corresponding to the hypotheses, there were two dependent variables in this study: main childcare providers for the first child under age 3 and whether a mother planned to have a second child.

To test the first two sets of hypotheses, the dependent variable was the primary childcare providers for the first child under age 3, because childcare demand is most intensive when a child is very young (Du and Dong 2013; Zhao 2018). This variable had three categories: the young couple (reference group), the wife's parents, and the husband's parents (i.e., wife's parents-in-law). About 61% of the respondents reported that the couple was the primary childcare provider for their first child when the child was

⁴ This is because, even before the implementation of the universal two-child policy, there were exceptions for a second or even a third child (Gu et al. 2007). Specifically, Han people were the ones most affected by the one-child policy, while other ethnic minorities (except for Man and Zhuang) could have two children. The minority in Xinjiang and Qinghai province could have three children. Therefore, in this study we only focused on Han people, who are most likely to have been affected by the policy change.

⁵ About 90 observations had missing values in dependent variables and 106 observations had missing values in independent variables. As a robustness check we also conducted regression models (in Appendix Tables A-1 and A-2) based on data with independent and control variables imputed by multiple imputation by chained equations (MICE) (N = 2,704). Because we had two dependent variables in the analyses, when we performed MICE, we removed observations with any missing values in these two dependent variables and imputed missing values for independent and control variables. The results were consistent.

under age 3. The wives' parents were the primary childcare provider for 13% of the respondents, and the parents-in-law for 27%.

To test the third and fourth sets of hypotheses, the main childcare providers for the first child were treated as one of the independent variables, and a mother's plan for a second child was the dependent variable. To simplify the interpretation of the results, two dummy variables indicating the main childcare providers were used in this part of the analyses (i.e., the wife's parents were the main childcare providers versus the wife's parents were not the main childcare providers, and the husband's parents were the main childcare providers versus the husband's parents were not the main childcare providers). The dependent variable regarding a mother's second-child plan was constructed from responses to the following question: "How many children are you planning to have?" A mother who planned two or more children was considered as planning a second child. We used fertility plans rather than fertility intentions in this study because a fertility plan is a better proxy for individual fertility behavior in the near future. Although some early studies propose fertility intentions as the most proximate proxy of actual fertility behavior (Ajzen 1991; Barber 2001; Bongaarts 1992), Bongaarts (2001) argues that there are multiple mediating factors that result in the gap between fertility intention and fertility behavior. Compared to fertility intentions, the question about fertility plans asked respondents to think about a specific agenda for having another child when answering the question. Thus, mothers' fertility plans were adopted in the analyses. As shown in Table 1, about one-third of the mothers in our analytical sample had planned a second child.

The main variables of interest in both parts of the analyses were the sibship statuses. We distinguished the wives' sibship status from their husbands' by using two sets of dummy variables: wife/husband had male siblings, had only female siblings, did not have siblings (reference group). Siblings' gender was also considered because son preference is still prevalent in mainland China (Yeung and Hu 2013). In the tradition of patriarchal norms, male offspring play a major role in funerary rituals and are responsible for perpetuating the patrilineage (Croll 2000; Tao 2012). Thus, we expected that the resources of parental childcare assistance were more likely to be diluted if there were male siblings. Approximately 47% of mothers and 35% of their husbands had male siblings; 17% of mothers and 27% of their husbands had only female siblings.

Table 1: Descriptive statistics

Variable	Mean (SD) or %
Primary childcare providers for the first child under age 3	
Young couple (wife and husband)	60.55
Wife's parents	12.70
Husband's parents	26.75
Wife's second-child plan	
Having a plan for a second child	31.95
Having no plan for a second child	68.05
Wife's sibship status	
Wife had male siblings	46.92
Wife had only female siblings	17.21
Wife did not have siblings	35.87
Husband's sibship status	
Husband had male siblings	35.18
Husband had only female siblings	26.60
Husband did not have siblings	38.22
The first child was a boy	57.08
Wife's age	33.01 (6.09)
Wife's age at first birth	22.62 (3.43)
Wife was employed	90.03
Wife's <i>hukou</i>	
Agricultural <i>hukou</i>	34.64
Non-agricultural <i>hukou</i>	29.79
Resident <i>hukou</i>	35.57
Husband's <i>hukou</i>	
Agricultural <i>hukou</i>	32.26
Non-agricultural <i>hukou</i>	31.64
Resident <i>hukou</i>	36.10
Wife's educational attainment	
Primary school or lower	5.50
Middle school	28.52
High school/Secondary school	38.18
College or above	27.79
Household income (10,000 <i>yuan</i>)	10.05 (6.42)
Household income (logged)	2.16 (0.53)
Age of the youngest parent of wife	58.86 (7.34)
Age of the youngest parent of wife (logged)	4.07 (0.13)
Age of the youngest parent of husband	60.50 (7.61)
Age of the youngest parent of husband (logged)	4.10 (0.13)
Health status of wife's least healthy parent	
Not healthy	29.21
Healthy	70.79
Health status of husband's least healthy parent	
Not healthy	34.99
Healthy	65.01
Living arrangement with wife's parents	
Coreside occasionally	7.20
Coreside long-term	7.54
Not coresident	85.26
Living arrangement with husband's parents	
Coreside occasionally	7.81
Coreside long-term	22.40
Not coresident	69.78

Table 1: (Continued)

Variable	Mean (SD) or %
Province	
Zhejiang	22.63
Sichuan	17.40
Shandong	9.39
Guangdong	13.66
Liaoning	16.90
Hubei	20.02
N = 2,598	

In all the statistical models we controlled for respondents' characteristics, including age, educational attainment, age at first birth, employment status, and *hukou* status. Age, measured in years, was included because older women are less likely to plan a second child, due to biological constraints. Educational attainment has been found to be negatively related to fertility intentions (Axinn and Barber 2001). We measured education through a set of dummy variables: primary school or lower, middle school (reference group), high school or secondary school, and college or above. Previous studies suggest that women's younger age at first birth is associated with rapid subsequent fertility (Bumpass, Rindfuss, and Jamosik 1978), so we also controlled for women's age at first birth. We also included mothers' employment status in the model because it is an indicator of women's empowerment, negatively associated with fertility intentions (Jin, Song, and Chen 2016; Upadhyay et al. 2014). This variable had two categories: not employed (reference group) and employed (including wage earners, the self-employed, and farmers). In our sample almost 90% of women were employed.

The *hukou* status⁶ of women and their husbands was also included in our models. *Hukou* status is the status of each person registered in the Household Registration System in mainland China, mainly agriculture or non-agriculture. Recently, a third category of resident *hukou* was introduced into the system.⁷ Thus, this variable had three categories: agricultural *hukou* (reference group), non-agricultural *hukou*, and resident *hukou*. We included this variable in our analyses because *hukou* status is closely related to the social benefits that individuals can receive, and previous fertility policies were designed based on *hukou* type (Gu et al. 2007),.

Several household characteristics were also controlled for, including the gender of the first child, annual household income, age of the youngest parent (logged), and the health status of the least healthy parent. We included the first child's gender, with girl as

⁶ Some respondents' *hukou* status changed after marriage. As a robustness check, we also tried models with the *hukou* status of women and their husbands before marriage. The results remained consistent (available upon request).

⁷ In July 2014 the central government of China announced Opinions on Further Promoting the Reform of the *Hukou* System, to gradually transit from agricultural/non-agricultural *hukou* to resident *hukou*. Thus, at the time of the survey, there were three types of *hukou* status in mainland China.

the reference group, because the gender of the first child is closely related to second-child intention (Jin, Song, and Chen 2016). Household income is an indicator of financial capacity to support a second birth (Bao, Chen, and Zheng 2017). Because the distribution of household income was highly skewed, we took the logarithm of annual household income. Because both age and the health status of parents and in-laws reflects their ability to provide childcare support, we used the age (measured in years) of the youngest parent, and the health status of the least healthy parent reported by the respondents (i.e., whether they had parents who were not healthy and might need care), to capture their capacity to take care of children.

We also controlled for living with parents or in-laws in both parts of the analyses. We included living with parents in the first part of analyses because it may be associated with both parental childcare support and the sibship status of the young couple. However, due to data limitations we did not have information about spatial proximity, as used in previous studies (Chen, Liu, and Mair 2011; Zhao and Ji 2019). Instead, we used three-category dummy variables: coreside occasionally, coreside long-term, and not coresident (reference group).⁸

For the second part of the analyses – examining the impact of parental childcare support on mothers’ second-child plans – we also included living with parents or in-laws to control for intergenerational effects on women’s childbearing plans other than providing childcare support (Bernardi 2003), such as women’s exposure to parents’ or in-laws’ traditional ideas and expectations of large family size during the period of co-residence (Chi and Hsin 1996). Furthermore, recent studies using longitudinal data suggest that, compared to not living with parents, Chinese women’s motherhood penalty was nonexistent for women living with their own parents and largest for those living with parents-in-law (Yu and Xie 2018). Thus, in the models we distinguished living with wife’s parents from living with husband’s parents.

Finally, we controlled for heterogeneity across provinces by including a set of dummy variables of provinces, with Zhejiang as the reference category.

3.3 Analytical strategy

In this study we adopted multinomial and binary logistic regression models with robust standard errors clustering at provincial level.

⁸ Because we only have cross-sectional data, we do not know the exact living arrangement at the time of the birth of the first child. Nevertheless, as shown in Table 2, the living arrangement estimates are consistent with expectations. That is, the relative risk of getting childcare help from the wife’s parents was higher when coresiding with the wife’s parents long-term, but lower if coresiding with the husband’s parents long-term. The counterpart also held true for the husband.

We used multinomial logistic regression to test the first two sets of hypotheses regarding the relationship between the main childcare providers for the first child under age 3 and the sibship status of young couples. In this model the young couples as the primary childcare providers were treated as the reference category ($z = 1$):

$$\begin{aligned} \text{Log} \left(\frac{P(z = 2)}{P(z = 1)} \right) &= \beta_{00} + \beta_{10} \text{wife's sibship status}_i + \beta_{20} \text{husband's sibship status}_i \\ &+ \sum \beta_{k0} X_{ki}, \text{ for } i = 1 \dots n \\ \text{Log} \left(\frac{P(z = 3)}{P(z = 1)} \right) &= \beta_{01} + \beta_{11} \text{wife's sibship status}_i + \beta_{21} \text{husband's sibship status}_i \\ &+ \sum \beta_{k1} X_{ki}, \text{ for } i = 1 \dots n \end{aligned}$$

$P(z = 2)$ is the probability of the wife's parents being the primary childcare providers for the first child. $P(z = 3)$ is the probability of the husband's parents being the primary childcare providers for the first child.

To test the third and fourth hypotheses we used binary logistic regression models with second-child plan as the dependent variable, and conducted our analyses in progressive stages. First, we tested the effects of parents' or in-laws' childcare for the first child on mothers' plan for a second child (Hypothesis III), controlling for other variables. Next, we included the variables of wives' and their husbands' sibship status in the second model. Finally, to test the last set of hypotheses, we included the interaction terms between having siblings and parental childcare support. In the last two stages of the analyses we also tried dummy variables of sibship status that did not differentiate the siblings' gender.

4. Results

4.1 Sibship status and intergenerational childcare support

We conducted multinomial logistic regressions to examine how couples' sibship status is associated with childcare support from their parents, with the primary childcare providers for the first child under age 3 as the dependent variable. The young couple providing the childcare was the reference group.

As shown in Table 2, the sibship status of the young couple largely determined the primary childcare providers for the first child. Controlling for other variables, the relative

risks of the wife's parents being the main childcare providers rather than the reference group were 63% ($1 - \exp(-0.99)$) lower for a wife with male siblings than for a wife without siblings ($p < 0.000$), while the relative risks were only 21% lower for a wife with only female siblings ($p = 0.064$). Compared to the couple where the husband came from a one-child family, the relative risks of having the husband's parents as the main childcare providers rather than the couple raising the child were 34% lower for the husband with male siblings ($p < 0.000$). Also, if the wife had male siblings, the relative risks of having her husband's parents take care of the first child were 26% ($\exp(0.23) - 1$) higher than the reference group. Similarly, if the husband had male siblings, the relative risks of the wife's parents taking care of the first child were 52% higher than the reference group.

To facilitate interpretation, Figure 1 displays the predicted probabilities of primary childcare providers for the first child under age 3, by combined sibship status of wife and husband. We selected four key scenarios in this comparison: neither wife nor husband had siblings; husband had male siblings while wife had no siblings; wife had male siblings while husband had no siblings; both wife and husband had male siblings. The predicted probabilities were derived from the estimates of the multinomial regression model and calculated with covariates other than sibship status held at means. As shown in Figure 1, the different scenarios showed clear differences in primary childcare providers for the first child under age 3. Specifically, the predicted probability of the couple taking care of the first child was highest (64.79%) if both wife and husband had male siblings, and lowest when neither of them had siblings. If the husband had male siblings but the wife had no siblings, the probability of getting childcare assistance from the husband's parents was lowest (19.21%) among all the scenarios, while the chance of getting help from the wife's parents was highest (almost 21.28%). By contrast, for couples where the wives had male siblings but their husbands had no siblings, the probability of having childcare support from the husbands' parents was highest (33.96%), while the chance of getting childcare services from wives' parents was lowest (about 6%) among all the scenarios.

The results suggested that the decision about primary childcare providers was made collectively in extended families, because the wife's sibship status was also associated with the probability of having her husband's parents as the primary childcare providers, supporting most of the first two sets of hypotheses. The results also revealed that the gender of couples' siblings largely influenced the allocation of their parents' childcare assistance among families. Because of prevalent son preference among older generations (i.e., grandparents), having male siblings severely inhibited couples from getting childcare support from parents. This influence was largest among women. That is, compared to a wife with only female siblings, the relative risks of the wife's parents being the main childcare providers rather than the reference group (i.e., the young

couple) were 53% lower for a wife with male siblings than for a wife with only female siblings ($p < 0.000$).⁹

Table 2: Parameter estimates from multinomial logistic models of the primary childcare providers for the first child under age 3 (ref: young couple)

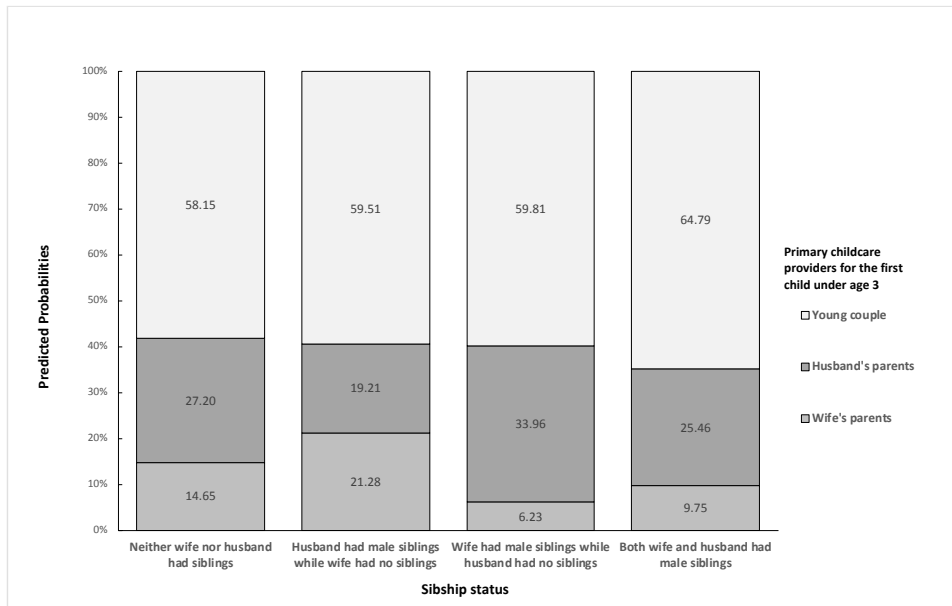
	Wife's parents	Husband's parents
Sibship status of wife (ref. = wife did not have siblings)		
Wife had male siblings	-0.99(0.000)	0.23(0.017)
Wife had only female siblings	-0.24(0.064)	0.21(0.211)
Sibship status of husband (ref. = husband did not have siblings)		
Husband had male siblings	0.42(0.019)	-0.42(0.000)
Husband had only female siblings	0.27(0.419)	-0.27(0.207)
The first child was a boy (ref. = a girl)	-0.23(0.099)	-0.03(0.663)
Wife's age	0.02(0.567)	0.01(0.556)
Wife's age at first birth	-0.02(0.598)	-0.07(0.000)
Wife was employed (ref. =not employed)	1.04(0.000)	1.13(0.003)
Household income (logged)	0.33(0.265)	0.11(0.406)
Wife's <i>hukou</i> (ref. = agricultural <i>hukou</i>)		
Non-agricultural <i>hukou</i>	0.06(0.849)	0.29(0.068)
Resident <i>hukou</i>	0.58(0.040)	-0.01(0.972)
Husband's <i>hukou</i> (ref. = agricultural <i>hukou</i>)		
Non-agricultural <i>hukou</i>	-0.01(0.988)	-0.26(0.236)
Resident <i>hukou</i>	-0.70(0.001)	0.22(0.486)
Wife's educational attainment (ref. = middle school)		
Primary school or lower	-0.42(0.340)	-0.36(0.012)
High school/Secondary school	0.01(0.983)	-0.20(0.056)
College or above	0.39(0.046)	0.10(0.751)
Age of the youngest parent of wife (logged)	0.84(0.350)	0.65(0.312)
Age of the youngest parent of husband (logged)	1.04(0.430)	-0.89(0.132)
Health status of wife's least healthy parent (ref. = not healthy)	0.35(0.128)	-0.10(0.176)
Health status of husband's least healthy parent (ref. = not healthy)	-0.07(0.796)	0.24(0.266)
Living arrangement with wife's parents (ref. =not coresident)		
Coreside occasionally	0.02(0.941)	-0.52(0.047)
Coreside long-term	1.71(0.000)	-0.75(0.006)
Living arrangement with husband's parents (ref. =not coresident)		
Coreside occasionally	-0.46(0.319)	0.49(0.016)
Coreside long-term	-0.82(0.006)	1.01(0.000)
Provinces (ref. = Zhejiang)		
Sichuan	-0.22(0.045)	-1.04(0.000)
Shandong	-0.24(0.256)	-0.04(0.559)
Guangdong	0.07(0.670)	0.37(0.005)
Liaoning	0.55(0.035)	-0.17(0.104)
Hubei	-1.06(0.000)	-0.94(0.000)
Log likelihood		-2083.71
N		2,598

Note: P-values (two-tailed tests) derived from the estimates of coefficients and robust standard errors are in parentheses. Ref. = reference group.

⁹ The estimate of the coefficient of wife had male siblings is -0.75 when the reference group is wife had only female siblings.

The results in Table 2 also suggested that a mother’s economic activity was positively associated with the relative risks of getting intergenerational childcare assistance. This was expected, because previous studies indicated that parents or in-laws are an important source of social capital that reduces women’s family–work conflicts. The living arrangement was also found to be associated with the availability of intergenerational childcare support. That is, the relative risks of getting childcare help from the wife’s parents were higher if coresiding with the wife’s parents long-term, but lower if coresiding with the husband’s parents long-term. The counterpart also held true for the husband. Occasional coresidence with the wife’s parents or in-laws was also associated with getting childcare support from parents-in-law.

Figure 1: Predicted probability of primary childcare providers for the first child under age 3, by selected sibship status of wife and husband



To sum up, the results support our main argument that women or their husbands having siblings reduces the chance of receiving childcare support from parents or in-laws, and intergenerational childcare assistance is allocated collectively in the extended families of both husband and wife. Male siblings are the main competitors for parental childcare assistance.

4.2 Influence of intergenerational childcare support on a mother's plan for a second child

We next adopted logistic regression with mothers' plan for a second child as the dependent variable to explore the association between intergenerational childcare support and mothers' second-child plans. The results are shown in Table 3. The first model specification (Model A1) included only the primary childcare providers for the first child under age 3 and other control variables. Parents' or in-laws' childcare assistance greatly increased mothers' chances of planning a second child. Compared to women whose parents were not the primary childcare providers for the first child under age 3, the odds of planning a second child were 62% ($\exp(0.48) - 1$) higher for those with wife's parents as the primary childcare providers. The odds were 40% higher among mothers whose parents-in-law were the primary childcare providers, compared to those whose parents-in-law were not, supporting the third hypothesis. The results are consistent with previous findings that childcare assistance from parents or in-laws contributes to higher fertility intentions in contemporary China, where high-quality public childcare is scarce (Ji et al. 2015; Jin, Zhao, and Song 2018; Wang and Yang 2017).

To test the fourth set of hypotheses, we measured the sibship status of wives and husbands differently in Models A2 and B2, and also their interaction terms with primary childcare providers for the first child in Models A3 and B3. The sibship status did not show strong effects on mothers' second-child plans in any model specification. However, the p-value of the interaction term between husband's sibship status and husband's parents as the first child's main childcare providers in Model B3 is as low as 0.018. Specifically, controlling for other variables, when a husband did not have siblings, the odds of having a second-child plan increased by 67% if the husband's parents were the first child's main childcare providers. Nevertheless, if the husband had siblings, childcare support from husband's parents for the first child only increased the odds of planning a second child by 23% ($\exp(0.51 - 0.30) - 1$). Thus, only Hypothesis IVb is supported.

For either specification of sibship status, the likelihood ratio tests suggested no improvement of the model fit after including the interaction terms. One explanation might be that, as shown in the first part of the analysis, the sibship status of both wives and husbands largely determined the childcare providers for the first child. Therefore, it was hard to observe the moderating effect of sibship status in the second part of analyses. Another possibility was the lack of statistical power to reveal a robust finding of the interaction effect, especially when gender of siblings was considered (Model A3). The smaller sample size of those with wives' parents as the main childcare providers rather than that of those with husbands' parents as the primary childcare providers led to the large standard errors and thus large p-values of the interaction terms for wives. Thus, the small p-value of the interaction term between sibship status and intergenerational childcare assistance was only observed for husbands (Model B3).

Table 3: Parameter estimates from logit models of a mother's second-child plan (ref: having no plan for a second child)

	Model A1	Model A2	Model A3	Model B2	Model B3
Wife's parents are primary childcare providers for the first child under age 3 (ref. = no)	0.48(0.032)	0.48(0.041)	0.59(0.031)	0.47(0.036)	0.58(0.032)
Husband's parents are primary childcare providers for the first child under age 3 (ref. = no)	0.34(0.008)	0.35(0.010)	0.51(0.000)	0.35(0.011)	0.51(0.000)
Siblings status of wife (ref. = wife did not have siblings)					
Wife had male siblings		0.01(0.972)	0.06(0.667)		
Wife had only female siblings		-0.08(0.695)	-0.08(0.673)		
Siblings status of husband (ref. = husband did not have siblings)					
Husband had male siblings		0.10(0.593)	0.17(0.360)		
Husband had only female siblings		0.05(0.867)	0.17(0.551)		
Wife had siblings*wife's parents					
Wife had male siblings*wife's parents			-0.36(0.154)		
Wife had only female siblings*wife's parents			0.01(0.973)		
Husband had siblings*husbands' parents					
Husband had male siblings*husband's parents			-0.23(0.276)		
Husband had only female siblings*husband's parents			-0.41(0.149)		
Wife had siblings (ref. = wife did not have siblings)				-0.02(0.880)	0.01(0.929)
Husband had siblings (ref. = husband did not have siblings)				0.08(0.722)	0.17(0.443)
Wife had siblings* Wife's parents are primary childcare providers for the first child					-22(0.342)
Husband had siblings* Husband's parents are primary childcare providers for the first child					-0.30(0.018)
The first child was a boy (ref. = a girl)	-0.27(0.024)	-0.27(0.020)	-0.27(0.060)	-0.27(0.021)	-0.27(0.022)
Wife's age	-0.14(0.000)	-0.14(0.000)	-0.14(0.000)	-0.14(0.000)	-0.14(0.000)
Wife's age at first birth	0.04(0.037)	0.04(0.031)	0.04(0.033)	0.04(0.033)	0.04(0.041)
Wife was employed (ref. =not employed)	-0.03(0.895)	-0.03(0.909)	-0.02(0.943)	-0.03(0.903)	-0.02(0.927)
Household income (logged)	0.36(0.116)	0.36(0.123)	0.36(0.119)	0.36(0.120)	0.36(0.116)

Table 3: (Continued)

	Model A1	Model A2	Model A3	Model B2	Model B3
Wife's hukou (ref. = agricultural hukou)					
Non-agricultural hukou	-0.43(0.059)	-0.42(0.045)	-0.41(0.060)	-0.43(0.033)	-0.42(0.047)
Resident hukou	0.22(0.408)	0.20(0.373)	0.19(0.407)	0.21(0.388)	0.21(0.409)
Husband's hukou (ref. = agricultural hukou)					
Non-agricultural hukou	0.33(0.165)	0.33(0.170)	0.31(0.199)	0.33(0.149)	0.33(0.168)
Resident hukou	-0.33(0.168)	-0.31(0.193)	-0.30(0.213)	-0.31(0.203)	-0.31(0.219)
Wife's educational attainment (ref. = middle school)					
Primary school or lower	0.30(0.005)	0.28(0.005)	0.28(0.006)	0.29(0.009)	0.29(0.010)
High school/Secondary school	-0.09(0.383)	-0.08(0.466)	-0.07(0.500)	-0.08(0.457)	-0.08(0.477)
College or above	-0.24(0.142)	-0.23(0.126)	-0.23(0.125)	-0.24(0.103)	-0.23(0.097)
Age of the youngest parent of wife (logged)	-0.25(0.649)	-0.22(0.662)	-0.24(0.630)	-0.23(0.657)	-0.23(0.648)
Age of the youngest parent of husband (logged)	-0.07(0.914)	-0.16(0.752)	-0.16(0.757)	-0.14(0.778)	-0.16(0.760)
Health status of wife's least healthy parent	0.23(0.237)	0.23(0.261)	0.22(0.282)	0.23(0.243)	0.23(0.258)
Health status of husband's least healthy parent	0.02(0.833)	0.03(0.815)	0.03(0.779)	0.03(0.812)	0.03(0.769)
Living arrangement with wife's parents (ref. =not coresident)					
Coreside occasionally	0.24(0.001)	0.23(0.001)	0.23(0.001)	0.23(0.001)	0.23(0.000)
Coreside long-term	0.06(0.780)	0.05(0.791)	0.05(0.790)	0.05(0.788)	0.05(0.787)
Living arrangement with husband's parents (ref. =not coresident)					
Coreside occasionally	-0.17(0.289)	-0.18(0.259)	-0.18(0.254)	-0.18(0.255)	-0.18(0.240)
Coreside long-term	-0.06(0.764)	-0.07(0.732)	-0.06(0.739)	-0.07(0.733)	-0.07(0.728)
Provinces (ref. = Zhejiang)					
Sichuan	0.24(0.000)	0.25(0.000)	0.26(0.000)	0.24(0.001)	0.24(0.001)
Shandong	0.81(0.000)	0.81(0.000)	0.81(0.000)	0.81(0.000)	0.80(0.000)
Guangdong	0.65(0.000)	0.65(0.000)	0.65(0.000)	0.65(0.000)	0.65(0.000)
Liaoning	0.55(0.001)	0.57(0.002)	0.57(0.001)	0.56(0.004)	0.55(0.004)
Hubei	-0.43(0.000)	-0.43(0.000)	-0.44(0.000)	-0.43(0.000)	-0.44(0.000)
Log likelihood	-1401.27	-1400.71	-1398.83	-1401.01	-1399.79
N	2,598	2,598	2,598	2,598	2,598

Note: P-values (two-tailed tests) derived from the estimates of coefficients and robust standard errors are in parentheses. ref. = reference group.

Additionally, as shown in all three models, a mother was less likely to plan a second child if the first child was a boy. This is consistent with prior evidence in mainland China regarding the impact of prevalent son preference on Chinese fertility (Poston, Jr 2002). Also, we did not find living with in-laws or coresiding with wife's parents long-term as important factors in a mother's plans for a second child. This lack of significance might also be related to the strong association between living arrangement and the main childcare providers for the first child. Nevertheless, the model results consistently revealed that those who occasionally lived with the wife's parents were more likely to plan a second child than those who were not coresident with the wife's parents. Although in China it is more common for young couples to coreside with the husband's parents than with the wife's parents, the wife's parents may occasionally live with young couples when the latter need extra assistance (e.g., childcare support), thus leading to a strong association with the wife's plans to have a second child. Across the three models, wives with at most primary education were more likely to have second-child plans than those with middle-school education.

Overall, the results supported the third hypothesis regarding the influence of intergenerational childcare support on mothers' plans for a second child. In the tests of the moderating effect of sibship status we found some evidence for Hypothesis IVb: the influence of childcare support from the husband's parents on the mother's second-child plans was smaller if the husband had siblings, whereas the wife's sibship status had no moderating effect.

5. Conclusions and discussion

Extensive literature has shown that, given finite parental resources, having more siblings leads to lowered family investments in each child and thus negatively affects children's development outcomes. However, research on siblings' resource dilution during adulthood is scarce, especially in non-Western contexts. Capitalizing on recently collected survey data, this study tests the resource-dilution model in adulthood by examining how grandparental childcare support is shared and allocated among siblings and how primary childcare providers are decided collectively within the extended families of both husband and wife. In the era of China's two-child policy, this research further evaluates intergenerational influence on a mother's plan for a second child in urban China, where public childcare services are limited.

The results suggest that the sibship statuses of young couples greatly affect the possibility of receiving parental childcare assistance. Specifically, having male siblings greatly reduces the chance of obtaining parental childcare support. The analyses also indicate a strong association between wife's/husband's sibship status and

husband's/wife's parental childcare support, suggesting that decisions regarding childcare providers might be made collectively within extended families, including the original families of husband and wife. Further, using multivariate analyses, we find that grandparental childcare assistance for the first child is an important contributor to the mother planning a second child. Results also show that the influence of the husband's parents being the main childcare providers for the first child is much smaller if the husband has siblings.

Grandparents' childcare support is normative in contemporary East Asian societies. Given the relatively high female labor force participation in contemporary China, free intergenerational childcare assistance helps families reduce the opportunity costs of raising children and thus encourages young couples to have more children. However, our analysis suggests that this intergenerational effect on Chinese fertility may not be universal. This is because the two-child policy mainly targets couples that do not come from one-child families (i.e., who have siblings), while siblings are competitors for limited parental resources. Consequently, the sibship status of the target group of people might moderate the positive impact of intergenerational childcare support on fertility.

To avoid Chinese fertility decreasing further in the future, more high-quality public childcare services should be developed, because intergenerational childcare support might be diluted for couples with siblings, who are the main target group of the two-child policy. As argued by Attané (2016), Chinese low fertility is not a policy issue per se, but an economic and family tradeoff. In China, women's labor activity is widely accepted and expected after schooling, but their traditional roles within the household have remained. This inconsistency in gender equity levels in individual-oriented and family-oriented institutions can lead to low fertility (Ji and Zheng 2018; McDonald 2000; Zhao 2019). Thus, the promotion of gender equity, especially within households, would go a long way towards achieving the desired, stable fertility trend in China in the long run.

The following caveats should be noted when interpreting the results. The estimates of our statistical models might suffer from a plausible selection problem: Before the one-child policy was completely removed in mainland China in 2015, birth control regulations and second child exceptions varied substantially between different localities (Gu et al. 2007). Before the early 1990s, most provinces allowed couples to have a second child if both partners came from one-child families (i.e., had no siblings). Since 2013, parents have been allowed a second child if one of them came from a one-child family. Thus, those who choose to have another child might have already had a second child before the 2015 policy change, while this study focuses on those who have only one child.

Because of limited data, we can only examine factors affecting fertility plans, rather than actual behavior. Also, using cross-sectional data we were unable to incorporate

information about the timing of parental support, coresidence with parents or in-laws, and giving birth, which might yield endogeneity problems in the analyses. Family fertility ideology, and its possible variation with the policy change, could also be an omitted confounder, influencing both intergenerational childcare support and the couple's willingness to have a second child.¹⁰ Future studies with a panel design that collect information about life-course events, living arrangements, family ideology regarding fertility, and parents' actual childbearing behavior at a later stage can provide more evidence on how extended families function in determining fertility.

Despite the mentioned limitations, this study contributes to the literature on the roles of both siblings and parents in shaping young adults' childbearing behaviors. Specifically, by studying the correlation between the sibship status of both husbands and wives and the primary childcare providers for very young children, this research tests the resource-dilution model of siblings in adulthood, which has received less attention in existing sibling literature. In addition, by focusing on extended families in contemporary China, this study also complements the literature on the interplay between sibling structure characteristics, relationship processes, and larger family and sociocultural contextual conditions in Western societies. We also extend previous research by examining the influence of grandparental childcare support on women's fertility plans in a society with prevalent patriarchal norms and limited public childcare services, demonstrating how this effect varies by the structure of extended families.

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¹⁰ We also conducted models by adding variables of grandparents' preferences regarding number of grandchildren into the model specification in Table 3. The results remain consistent.

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Appendix

Table A-1: Parameter estimates from multinomial logistic models of primary childcare providers for the first child under age 3 (ref: young couple)

	Wife's parents	Husband's parents
Sibship status of wife (ref. = wife did not have siblings)		
Wife had male siblings	-0.97(0.000)	0.23(0.020)
Wife had only female siblings	-0.16(0.273)	0.24(0.109)
Sibship status of husband (ref. = husband did not have siblings)		
Husband had male siblings	0.39(0.043)	-0.45(0.000)
Husband had only female siblings	0.24(0.445)	-0.25(0.208)
The first child was a boy (ref. = a girl)	-0.22(0.145)	-0.04(0.419)
Wife's age	0.02(0.443)	0.01(0.675)
Wife's age at first birth	-0.02(0.568)	-0.07(0.000)
Wife was employed (ref. = not employed)	0.96(0.000)	1.09(0.004)
Household income (logged)	0.30(0.282)	0.11(0.367)
Wife's <i>hukou</i> (ref. = agricultural <i>hukou</i>)		
Non-agricultural <i>hukou</i>	0.17(0.586)	0.27(0.119)
Resident <i>hukou</i>	0.63(0.029)	-0.01(0.963)
Husband's <i>hukou</i> (ref. = agricultural <i>hukou</i>)		
Non-agricultural <i>hukou</i>	-0.05(0.881)	-0.24(0.315)
Resident <i>hukou</i>	-0.72(0.001)	0.20(0.527)
Wife's educational attainment (ref. = middle school)		
Primary school or lower	-0.37(0.424)	-0.27(0.022)
High school/Secondary school	-0.05(0.829)	-0.18(0.072)
College or above	0.38(0.022)	0.10(0.717)
Age of the youngest parent of wife (logged)	0.83(0.340)	0.63(0.326)
Age of the youngest parent of husband (logged)	0.97(0.441)	-0.93(0.107)
Health status of wife's least healthy parent (ref.= not healthy)	0.37(0.144)	-0.09(0.132)
Health status of husband's least healthy parent (ref.= not healthy)	-0.10(0.718)	0.21(0.337)
Living arrangement with wife's parents (ref. = not coresident)		
Coreside occasionally	0.04(0.903)	-0.52(0.030)
Coreside long-term	1.70(0.000)	-0.67(0.014)
Living arrangement with husband's parents (ref. = not coresident)		
Coreside occasionally	-0.41(0.360)	0.48(0.018)
Coreside long-term	-0.82(0.006)	1.01(0.000)
Provinces (ref. = Zhejiang)		
Sichuan	-0.24(0.021)	-1.02(0.000)
Shandong	-0.35(0.107)	-0.01(0.895)
Guangdong	0.09(0.572)	0.39(0.005)
Liaoning	0.47(0.070)	-0.15(0.172)
Hubei	-1.15(0.000)	-0.91(0.000)
N		2,704

Note: Multiple imputation by chained equations was used to deal with missing data. P-values (two-tailed tests) derived from the estimates of coefficients and robust standard errors are in parentheses. The log likelihood is not reported because we imputed missing data in the analyses.
ref. = reference group.

Table A-2: Parameter estimates from logit models of a mother's second-child plan (ref: having no plan for a second child)

	Model A1	Model A2	Model A3	Model B2	Model B3
Wife's parents are primary childcare providers for the first child under age 3 (ref. = no)	0.49(0.016)	0.50(0.023)	0.62(0.023)	0.49(0.019)	0.62(0.023)
Husband's parents are primary childcare providers for the first child under age 3 (ref. = no)	0.33(0.011)	0.34(0.013)	0.52(0.000)	0.34(0.015)	0.51(0.000)
Sibship status of wife (ref. = wife did not have siblings)					
Wife had male siblings		-0.00(0.989)	0.06(0.709)		
Wife had only female siblings		-0.12(0.579)	-0.12(0.564)		
Sibship status of husband (ref. = husband did not have siblings)					
Husband had male siblings		0.11(0.539)	0.18(0.309)		
Husband had only female siblings		0.08(0.776)	0.21(0.403)		
Wife had siblings*wife's parents					
Wife had male siblings*wife's parents			-0.39(0.074)		
Wife had only female siblings*wife's parents			-0.01(0.986)		
Husband had siblings*husbands' parents					
Husband had male siblings*husband's parents			-0.23(0.289)		
Husband had only female siblings*husband's parents			-0.46(0.174)		
Wife had siblings (ref. = wife did not have siblings)				-0.04(0.811)	0.00(0.992)
Husband had siblings (ref. = husband did not have siblings)				0.10(0.639)	0.19(0.336)
Wife had siblings* Wife's parents are primary child care providers for the first child					-0.26(0.302)
Husband had siblings* Husband's parents are primary childcare providers for the first child					-0.32(0.050)

Table A-2: (Continued)

	Model A1	Model A2	Model A3	Model B2	Model B3
The first child was a boy (ref. = a girl)	-0.25(0.008)	-0.25(0.007)	-0.24(0.010)	-0.25(0.008)	-0.24(0.008)
Wife's age	-0.14(0.000)	-0.14(0.000)	-0.14(0.000)	-0.14(0.000)	-0.14(0.000)
Wife's age at first birth	0.04(0.034)	0.04(0.029)	0.04(0.029)	0.04(0.030)	0.04(0.035)
Wife was employed (ref. = not employed)	-0.04(0.877)	-0.03(0.894)	-0.02(0.928)	-0.03(0.886)	-0.02(0.910)
Household income (logged)	0.35(0.117)	0.35(0.121)	0.35(0.120)	0.35(0.120)	0.35(0.115)
Wife's hukou (ref. = agricultural hukou)	-0.48(0.017)	-0.47(0.014)	-0.45(0.022)	-0.48(0.007)	-0.47(0.014)
Non-agricultural hukou	0.19 (0.479)	0.17(0.468)	0.16(0.502)	0.18(0.478)	0.17(0.499)
Husband's hukou (ref. = agricultural hukou)	0.41(0.050)	0.40(0.056)	0.39(0.070)	0.41(0.040)	0.41(0.046)
Non-agricultural hukou	-0.33(0.160)	-0.31(0.187)	-0.30(0.206)	-0.31(0.197)	-0.31(0.213)
Wife's educational attainment (ref. = middle school)	0.28(0.001)	0.27(0.001)	0.27(0.002)	0.28(0.003)	0.28(0.004)
Primary school or lower	-0.10(0.353)	-0.09(0.437)	-0.09(0.468)	-0.10(0.424)	-0.10(0.444)
High school/Secondary school	-0.29(0.150)	-0.24(0.128)	-0.24(0.129)	-0.24(0.112)	-0.24(0.104)
College or above	-0.37(0.488)	-0.34(0.510)	-0.35(0.484)	-0.35(0.501)	-0.35(0.497)
Age of the youngest parent of wife (logged)	-0.06(0.937)	-0.15(0.798)	-0.15(0.802)	-0.14(0.813)	-0.16(0.794)
Age of the youngest parent of husband (logged)	0.21(0.306)	0.20(0.329)	0.20(0.349)	0.21(0.313)	0.20(0.332)
Health status of wife's least healthy parent (ref. = not healthy)	0.03(0.805)	0.03(0.786)	0.04(0.749)	0.03(0.782)	0.04(0.737)
Health status of husband's least healthy parent (ref. = not healthy)					
Living arrangement with wife's parents (ref. = not coresident)	0.24(0.028)	0.23(0.036)	0.23(0.028)	0.24(0.027)	0.24(0.024)
Coreside occasionally	0.05(0.795)	0.05(0.809)	0.05(0.810)	0.05(0.809)	0.05(0.812)
Coreside long-term					
Living arrangement with husband's parents (ref. =not coresident)	-0.18(0.303)	-0.18(0.121)	-0.19(0.254)	-0.18(0.275)	-0.19(0.247)
Coreside occasionally	-0.05(0.820)	-0.05(0.785)	-0.05(0.785)	-0.05(0.792)	-0.05(0.782)
Coreside long-term					
Provinces (ref. = Zhejiang)					
Sichuan	0.20(0.003)	0.22(0.002)	0.22(0.001)	0.20(0.007)	0.20(0.007)
Shandong	0.80(0.000)	0.81(0.000)	0.81(0.000)	0.81(0.000)	0.80(0.000)
Guangdong	0.65(0.000)	0.64(0.000)	0.64(0.000)	0.65(0.000)	0.65(0.000)
Liaoning	0.52(0.003)	0.55(0.004)	0.54(0.003)	0.53(0.009)	0.52(0.008)
Hubei	-0.51(0.000)	-0.51(0.000)	-0.53(0.000)	-0.51(0.000)	-0.52(0.000)
N	2,704	2,704	2,704	2,704	2,704

Note: Multiple imputation by chained equations is used to deal with missing data. P-values (two-tailed tests) derived from the estimates of coefficients and robust standard errors were in parentheses. The log likelihood was not reported because we imputed missing data in the analyses. ref. = reference group.