

Childhood family background and female fertility intentions in China: analysis under different policy conditions

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Research

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Abstract

Objectives This study aimed to clarify the relationship between childhood family background and female fertility intentions in adulthood, fertility intentions for a second child under the universal two-child policy, and ideal fertility intentions under no birth restrictions.

Methods Using 3388 participants sampled from the 2016 China Labor-force Dynamics Survey, I analyzed the relationship between women's family background in childhood and their fertility intentions in adulthood. Zero-inflated Poisson regression and multinomial logistic regression models were used to determine the predictors of women's intended number of children under different policy conditions.

Results Women with more siblings intended to have more children. Parents' education had a negative effect on daughters' fertility intentions. There was also a cohort effect in female fertility intentions.

Conclusions These empirical results suggest women's fertility intentions are associated with their family background in childhood. A better socioeconomic status in childhood means women have moderate reproductive desires in adulthood.

Plain English Summary

Women's reproductive intentions may stem from their family of origin, and parental experience may contribute to forming the fertility intentions of daughters in adulthood. However, no empirical studies have examined the effect of childhood family background on women's fertility intentions in China. Moreover, the cause and pathway of fertility transmission across generations is difficult to be disentangled. A total of 3388 women aged 15–49 years from the China Labor-force Dynamics Survey (CLDS) collected in 2016 were included in this analysis. The thesis used a zero-inflated Poisson (ZIP) model to estimate the fertility intentions for another child under the universal two-child policy for women who already had one child, and then used multinomial logistic regressions to estimate fertility intentions without any situational or institutional constraints. The result showed that women with more siblings intended to have more children, parents' education had a negative effect on daughters' fertility intentions and there was also a cohort effect in female fertility intentions. In conclusions, these empirical results suggest women's fertility intentions are associated with their family background in childhood and a better socioeconomic status in childhood means women have moderate reproductive desires in adulthood. Government should provide institutional support to increase women's childbearing desires, and improve the low fertility trend. This thesis offered a contribution to the causal understanding of fertility transmission across generations, especially under specific constraints and circumstances.

Introduction

In China, fertility intentions for a second child have been a hot topic since the universal two-child policy was implemented at the end of 2015. In the late 1970s, China launched the unprecedented one-child policy (a quota of one child only) to control the population. As a result of aggressive birth control programs, the total fertility rate (TFR) in China dropped to below replacement level (TFR of 2.1) from the early 1990s (Zhao and Zhang 2010). China also encountered various demographic problems during this period, such as population aging, a shrinking labor force, and decreased childbirth. China's one-child policy also resulted in increasing controversy. In this context, China lifted the one-child restriction, and replaced it with the universal two-child policy in 2015 to promote fertility. This policy allowed almost all Chinese people to have a second child.

Fertility intentions are closely involved in fertility behavior. Fertility intentions have gained increasing attention in demographic research because they are the most proximate determinants of actual fertility (e.g., Bongaarts 1992; Vidal, Huinink and Feldhaus 2017; Riederer, Buber and Brzozowska 2019). Fertility intentions also tell us about possible trends (Hin et al. 2011), although there are discrepancies between fertility intentions and actual behaviors. Hayford (2009)

identified women's individual characteristics associated with patterns in the evolution of fertility intentions, and found factors related to family formation were the most consistent correlates of patterns of change in expected family size.

According to socialization theories (e.g., Glass, Bengtson and Dunham 1986), fertility-related intentions and behaviors may be transmitted across generations. Parental status and behavior during childhood and adolescence significantly influences the intentions and behaviors of an individual in adulthood (Elder 1994; Fernandez and Fogli 2006). The positive correlation between parents' preferences for their children's fertility behavior and the next generation's preferences (Axinn et al. 1994; Starrels and Holm 2000) and behavior (Barber 2000) indicates some transmission of family culture across generations. Studies on intergenerational correlations in fertility across the developed world have consistently found that children tend to replicate their parents' family size (Murphy 2013). For example, intergenerational transmission of fertility means that women with more siblings are likely to have more children (e.g., Murphy and Knudsen 2002). Those who grew up with two siblings were found to be disproportionately more likely to have a completed family size of three children (Starrels and Holm 2000). Therefore, understanding the pathways that connect childhood family structure across two generations is important.

Cross-national evidence indicates schooling influences women's thinking about desired fertility (Bachan and Frye 2013; Hayford and Agadjanian 2011; McCarthy and Oni 1987; Olusanya 1971; Riley et al. 1993). A recent analysis of women's fertility desires in Nairobi slums found a woman's education level, residence, and ethnicity were important influences on baseline fertility desires (Machiyama et al. 2019). However, education affects desired fertility and other fertility-related preferences through a number of pathways (Behrman 2015). In practice, it is difficult to disentangle the role of social interaction from other factors, such as individual and family background variables. The relationship between education and fertility has largely been shown to be positive, but partly spurious because of family background factors that cannot be controlled in most research designs (Tropf and Mandemakers 2017).

In China, researchers have investigated women's fertility intentions after the universal two-child policy was released. Chen, Zhang, and Wang (2019) explored individual differences in relative fertility costs and benefits and their effects on fertility desire for a second child in China. Women with more economic and familial/social resources were more likely to want a second child (Bao, Chen and Zheng 2017). Among Chinese women who had one child, those with higher socioeconomic status (SES) (e.g., higher educational level) had lower fertility intentions (Zhang et al. 2016). Wang et al. (2019) investigated Hunan province and found that there was no guarantee that the universal two-child policy was sufficient to promote fertility among urban working women with one child, and effective measures were urgently needed to create a favorable environment for childbearing in China. However, few empirical studies have examined the effect of childhood family background on women's fertility intentions in China.

Women's reproductive intentions may stem from their family of origin, and parental experience may contribute to forming the fertility intentions of daughters in adulthood. Women's fertility intentions are therefore likely to be influenced by their experiences in their family of origin and occupational life domains. This study investigated the ways childbearing desires or intentions were influenced by family circumstances during the transition to adulthood. I analyzed the relationship between women's fertility intentions and their parents' status, controlling for daughters' SES. This study offered a significant contribution to the causal understanding of fertility transmission across generations, especially under specific constraints and circumstances. Given the intergenerational transmission of family size preferences between parents and daughters, I tested whether there were intergenerational effects of education on intended childbearing. The empirical results suggested there was a positive link between birth intentions and level of education. My study suggested that the intergenerational transmission of education is an important mechanism in explaining the influence of parental education on daughters' fertility intentions.

Material And Methods

Data

I used data from the China Labor-force Dynamics Survey (CLDS) collected in 2016. The CLDS was conducted nationally by Sun Yat-sen University. The CLDS is an interdisciplinary, large-scale, longitudinal study that is conducted every 2 years in 29 provinces, municipalities directly under the Central Government, and autonomous regions (except Hainan and Xizang/Tibet). The survey covers various areas related to the labor force, including family, education, work, and health. Collected data included detailed information on family of origin background and birth history, which allowed analysis of fertility intentions. Multistage cluster stratified probability proportional to size sampling was used to capture the rapid-developing society in China, and provide longitudinal and panel data. Data for this analysis were from the most recent CLDS conducted in 2016. I extracted women of childbearing-age as the research group to explore women's fertility intentions. After data pre-processing, 3388 women aged 15–49 years were included in this analysis.

Variables

The dependent variable was women's fertility intention. The independent variables included family background characteristics in childhood (age 0–14 years) and SES in adulthood. The key explanatory variable was the number of siblings, which was coded as a categorical variable: 0 if a woman was a single child in her family of origin, 1 if she had one brother or sister, and 2 if she had two siblings, with the remainder deduced by analogy.

In China, educational attainment is associated with occupation and welfare, which is more reliable and stable compared with income or reputation. Educational attainment was categorized in seven levels: illiterate (less than primary school education completed), primary school completed, junior high school completed, senior high school completed, junior college or post-secondary certificate completed, undergraduate completed, and graduate completed. Educational attainment was measured by average years of education (as constructed by Barro and Lee 2001), set as 3, 6, 9, 12, 15, 16, and 19 years. As an illiterate person may acquire knowledge through social learning (interpersonal communication) and observation, I evaluated this level as 3, rather than 0.

Some individual-level sociodemographic and economic factors have been found to be relevant for fertility intentions, and were considered as control variables in this study: age, marital status, Hukou type (household registration), organizational type of the woman's job, workload, and political status. These data referred to participant's characteristics at the time of interview. Marital status was coded in four categories (single, married, divorced, or widowed). Hukou type included rural and non-rural (urban). In China, Hukou represents socioeconomic background as well as the registered geographic location of a person's residence. Organizational types of women's jobs were classified as: government, public institutions, or state-owned enterprises (working within China's political system); companies; and others. Workload was classified as full-time job or part-time job. Given China's political system, the women's political status was considered, and divided into two categories: member of Chinese Communist Party or others (other party member or independents/the masses).

Analytic strategy and method

I estimated the relationship between childhood family background and women's fertility intentions in adulthood under different policy conditions. First, I used a zero-inflated Poisson (ZIP) model to estimate the fertility intentions for another child under the universal two-child policy for women who already had one child. Next, I used multinomial logistic regressions to estimate fertility intentions without any situational or institutional constraints.

I used a ZIP model to estimate women's fertility intentions for another child, especially a second child. A ZIP model is suitable for outcome variables that have a count nature. According to the preliminary analysis of the data, there were many

zeros because many participants did not intend to have another child (no more children). The ZIP model can address the shortcomings of Poisson regression when dealing with too many zero values, and improve the effectiveness and reduce the bias of estimated results. This model was estimated separately using two states: the “zero state” (no more children) and the “count state” (second child or more).

According to Zeng and Hesketh (2016), China’s population will peak at 1.45 billion in 2029, which is a relatively small increase compared with a peak of 1.4 billion in 2023 if the one-child policy had continued. If the universal two-child policy does not work, it may be that fertility restrictions would be lifted completely. Therefore, I used multinomial logistic regression to estimate fertility intentions without any situational or institutional constraints.

Results

Descriptive statistics

In this study, fertility intention was measured as a desire to have a second child or ideal number of children. Table 1 shows the descriptive statistics for the analytical sample. The full distributions of variables used in the analysis are reported. For fertility intentions for a second child under the universal two-child policy, 3362 women were sampled, of which 84% (n=2855) did not intend to have another child; 13.2% (n=443) intended to have another child, and 1.9% (n=64) would like to have two or more children (shown in Figure 1). Among women aged 25–44 years that already had one child, 82.1% (n=1841) did not intend to have another child and 17.9% (n=401) intended to have another child.

Participants’ fertility intentions with no conditional constraints were measured by the question, *“If you had no need to consider the fertility policy, socioeconomic status, or physical situation, how many children in a family do you think would be perfect?”* Four response options were provided: “zero (no intention/childless),” “one,” “two,” and “more than two.” The distributions of answers were 1.1%, 7.5%, 78.4%, and 13% for the four options, respectively. The average educational attainment (years) of the women, their father, and their mother were 8.88, 6.79, and 5.47 years, respectively.

Table 1. Descriptive analysis of the sample

Variables	average	St.dev	Min	Max	Samples
Female ideal number of children <i>Fer_ideal</i>	2.033	0.498	0	10	3388
Female fertility intention for second child <i>Fer_contr</i>	0.171	0.427	0	5	3362
Parent's education <i>Pedu</i>	12.577	6.700	3	16	3388
Parent's organizational type when participant at 14 age <i>Porgan_type</i>	2.645	0.727	1	3	3388
Parent's marital status when participant at 14 age <i>Pmarit_stat</i>	0.030	0.169	0	1	3388
Siblings size <i>SibSize</i>	6.853	7.254	0	14	3388
Hukou when participant born <i>Hukou_born</i>	0.883	0.322	0	1	3388
Participant's education <i>Dedu</i>	12.973	6.468	3	22	3388
Participant's marital status <i>Dmarit_stat</i>	0.082	0.274	0	1	3388
Participant's organizational type <i>Dorgan_type</i>	2.475	0.684	1	3	3388
Full time job <i>Fulltime</i>	0.643	0.479	0	1	3388
Participant's political status <i>Polit_stat</i>	0.046	0.210	0	1	3388
Participant's Hukou <i>Hukou_growup</i>	0.736	0.441	0	1	3388
Participant's age <i>Age</i>	38.697	7.799	15	49	3388
Participant's birth cohort <i>Cohort</i>	1977.303	7.799	1967	2001	3388

Notes: N=3388. Source: China Labor-force Dynamics Survey 2016.

Figure 1. Women's fertility intentions for another child under the universal two-child policy in the 2016 China Labor-force Dynamics Survey

Fertility intentions for a second child under the universal two-child policy among women who already had one child

Table 2 shows the ZIP model estimates including the zero and count parts of models. I ran four models: Model 1 included family of origin characteristics; Model 2 was Model 1 controlled for daughter's education and organizational type; Model 3 was Model 2 further controlled for daughters' workload and marital status; and Model 4 considered Model 3 and daughters' political status. The number of siblings (family structure in childhood) was positively and significantly associated with women's fertility intentions for a second/another child. Women with more siblings were likely to plan a larger family size compared with their counterparts with none or one sibling. This meant there was intergenerational transmission of childbearing cultures in the context of contemporary China.

Daughters' and parents' education were significantly negatively associated with the no more children intention, and significantly positively associated with the intention to have a second/another child. Parents' educational level contributed to their daughters' fertility intentions, perhaps by communication, observation, or imitation. However, the influence of daughters' education was much stronger than that of parents: odds ratio 0.060 (for zero or no child) and -0.595 (for a second/another child) compared with parents (0.045 and -0.348, respectively). Although the effect of a daughter's educational attainment on her own fertility intentions was complex, women who invested more in education had less desire to have another child than their less-educated counterparts. The bidirectional time squeeze between family life and occupational career may mean that more skills are needed to deal with this relationship for women with higher education.

In China, working for the government, public institutions, or state-owned enterprises represents high social status, a stable income, and good working conditions. To some extent, organizational job types can be used to measure family conditions. Under those conditions, parental influence was significantly and negatively associated with daughters' no-child intention, whereas for daughters, it was significantly and positively associated with another-child intention. This suggested women who were born in a good family and had good SES conditions were much more likely to have another child than other women. From the perspective of birth environments (Hukou, registered residence), it was also confirmed that women from a rural origin (probably born in a relatively poor conditions) were more likely to prefer no more children compared with their urban counterparts. Daughters' and parents' marital status, daughters' political status, and workload (full-time or not) did not influence fertility intentions regarding no more children or a second/another child.

Table 2. Fertility intentions for a second/another child under universal two-child policy among women who already had a child

	(1)		(2)		(3)		(4)	
	0	1+	0	1+	0	1+	0	1+
Family Background Characteristics								
<i>SibSize</i>	-0.084*	0.549**	-0.039	0.550**	-0.034	0.589***	-0.035	0.590**
	(0.050)	(0.239)	(0.047)	(0.220)	(0.047)	(0.227)	(0.048)	(0.239)
<i>Pedu</i>	0.065**	-0.649***	0.046*	-0.322**	0.045*	-0.343**	0.045*	-0.348*
	(0.026)	(0.190)	(0.025)	(0.164)	(0.025)	(0.171)	(0.027)	(0.210)
<i>Porgan_type</i>								
government, public institutions or state-owned enterprise	-0.961***	0.409	-0.865***	1.104	-0.857***	1.22	-0.855***	1.245
	(0.203)	(1.167)	0.204	0.994	0.204	1.036	0.214	1.206
Others(ref.)								
<i>Hukou_born</i>								
rural	0.293	-2.068**	0.446**	-1.512	0.472**	-1.584	0.472**	-1.592
	(0.202)	1.029	0.190	1.015	0.188	1.052	0.189	1.085
Unrural/Urban(ref.)								
<i>Pmarit_stat</i>								
First married(ref.)								
others	0.342	-2.793	0.341	-2.400	0.362	-2.076	0.367	-2.038
	0.209	2.717	0.221	2.037	0.225	2.021	0.229	2.056
Daughter's Characteristics								
<i>Dedu</i>			0.049**	-0.619**	0.058**	-0.599***	0.060**	-0.595***
			(0.024)	(0.177)	(0.025)	(0.176)	(0.026)	(0.201)
<i>Dorgan_type</i>								
government, public institutions or state-owned enterprise			-0.324*	2.594**	-0.272	2.542**	-0.254	2.587*
			(0.185)	(1.059)	(0.187)	(1.081)	(0.210)	(1.354)
Others(ref.)								
<i>Fulltime</i>								
Yes(ref.)								
No					0.190	-0.251	0.188	-0.256
					0.133	0.732	0.133	0.741
<i>Dmarit_stat</i>								
First married(ref.)								
others					-0.031	-0.653	-0.033	-0.68

Polit_stat

Independents(ref.)

member of Chinese Communist Party	-0.083	-0.061
	0.273	3.259

Note: a. Dependent variables were women’s fertility intentions under the universal two-child policy (*Fer_contr*) and all estimated by zero-inflated Poisson models. b. standard errors in parentheses. c. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively.

Fertility intentions for a second child tested by *Hukou*, age, and interactions between *education* and *sibsize*

In Table 3, daughters’ Hukou in adulthood, age, and the interaction effect between sibling size and daughter’s educational attainment were added to Model 4 to form Models 5, 6, and 7, respectively. Age had a significant negative effect on the no more children intention and a significant positive effect on another child intention. It may be that women had to take their last chance to give birth to another child before biological limits occurred. Compared with their rural counterparts, urban women who already had one child were more likely to have a second/another child, which was significant at a 10% critical value. Interactions between women’s education and the number of siblings were added to test if family size affected children’s educational attainment. The results were non-significant. Previous research in different cultures and regions found a negative relationship between sibsize and educational attainment (Blake 1981; Hanushek 1992; Knodel and Wongsith 1991). However, some different conclusions were reported after parents’ preferences and family characteristics were considered (e.g., Angrist et al. 2010), although there was no causal link between family structure and child’s educational attainment. There was no obvious evidence for the existence of gender inequality in family resource allocation. In China, women’s socioeconomic position and reputation have greatly improved in recent decades.

Table 3. Regressions added by Hukou, age, and interactions between education and sibsize

	(5)		(6)		(7)	
	0	1+	0	1+	0	1+
<i>Hukou_growup</i>	-0.500**	2.005*				
Non-rural (rural as ref.)	(0.230)	(1.044)				
<i>Age</i>			-0.079***	0.465***		
			(0.015)	(0.068)		
<i>SibSize* Dedu</i>					0.011	0.153
					0.014	0.101
Other variables	Controlled		Controlled		Controlled	

Note: a. Dependent variables were women’s fertility intentions under the universal two-child policy (*Fer_contr*); other variables were the same as Table 2 column 4. All were estimated by zero-inflated Poisson models, but have been

condensed because of limited space. b. Standard errors in parentheses. c. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively.

Fertility intentions without situational or institutional constraints

Results from the multinomial logistic regression analyses are presented in Table 4. I estimated fertility intentions under no conditional constraints (i.e., ideal childbearing expectation). Model 8 captured the association between family of origin background and women's fertility intentions. This basic model served as a starting point to determine if and how the association changed when variables of interest were added. In Model 9, I added women's educational attainment as an explanatory variable to see whether fertility intentions differed by level of education in different cohorts. This considered fertility intentions without situational constraints, so women's SES characteristics were not controlled, except for education.

Women's fertility intentions were classified in four categories: zero (no fertility intention/no birth expectation), one child, two children (as the reference group), and three or more children. The number of siblings was positively and statistically significantly associated with women's intended number of children. Women with two or more siblings were more likely to plan a larger family size than their counterparts with only one brother/sister.

This paper considered the differentials of educational effect in the inter-generational context. Parents' education had a negative effect on the possibility of a daughter having three or more children. If parents had attained a medium or high educational level, their daughter would have a lower probability of having three or more children. After daughters' education was added, the effect of parents' education decreased. The higher the daughters' education (e.g., higher than junior high school), the lower the intended number of children. This result was consistent with those reported by Testa et al. (2017). With increased educational attainment, women may learn more about contraceptive techniques, and may also perceive a higher opportunity cost than their counterparts with a low education.

The possibility of no fertility intention for women with a primary school education was much lower than for those with a junior high school education at a significance level above 10%. The possibility of expecting one child for women with a senior high school education was much higher than those with a junior high school education at a significance level above 5%. Women with a lower education level (illiterate, primary school) were more likely to expect three or more children than their higher-educated counterparts (higher than junior high school), especially in situations where there was a wide gap in educational attainment between parents and daughters; for example, parents were lower-educated (e.g., illiterate) but daughters were higher-educated (higher than senior high school), where the daughters' fertility intention was much lower.

Women may readjust their intended fertility plan over their life course (Liefbroer 2009), so a cohort effect was considered. For the sampled women, various historical events experienced in childhood might have affected their fertility intentions in adulthood. For example, the Cultural Revolution (1966–1976), Reform and Opening (since 1978), and one-child policy (preliminary introduction period 1977–1981, initial stage of implementation 1982–1986) were taken as historical events. Women born in 1977–1986 had stronger fertility intentions than their counterparts born in 1967–1971, and even 1972–1976, who were inclined to have one child. The fertility policy changed from encouraging fertility after the People's Republic of China was established to controlling the population in the 1980s, with the enforcement of the one-child policy. Although the one-child policy had been implemented which would be a hard startpoint for the former (born in 1977–1986), the former then benefited from Reform and Opening and enjoyed a better socio-economic condition during the process of their growup, compared to the later (born in 1967–1971) who encountered Cultural Revolution, suffered a nationwide starvation and had painful memories about childhood. A possible reason for this was that women's fertility intentions were affected by their childhood experience and increased with the improvement of their living situation, which was consistent with Easterlin's relative income hypothesis. The fertility control policy suppressed women's fertility expectations in

adulthood, which may relate to the improvement in living standards, although resistance to birth control occurred in the same time. In addition, daughters whose parents were divorced, cohabitating, remarried, or widowed would prefer to be childless or had a higher desire to reproduce compared with their counterparts whose parents were in their first marriage, possibly stemming from psychological insecurity or compensation.

Table 4. Influence of childhood family background on women's ideal fertility intentions estimated by multinomial logistic regression

	(8)			(9)		
	0	1	3 or more	0	1	3 or more
<i>Pedu</i>						
illiterate	0.457 (0.431)	-0.102 (.196)	-0.091 (0.132)	0.478 (0.471)	-0.011 (0.207)	-0.387*** (0.145)
primary school completed(ref.)						
junior high school completed	-0.148 (0.459)	0.173 (0.171)	-0.290** (0.148)	-0.225 (0.462)	0.163 (0.174)	-0.193 (0.150)
senior high school completed or higher level	-0.240 (0.610)	-0.084 (0.224)	-0.374* (0.201)	-0.316 (0.631)	-0.137 (0.228)	-0.181 (0.207)
<i>SibSize</i>						
0	0.391 (0.731)	0.288 (0.283)	-0.285 (0.347)	0.329 (0.748)	0.269 (0.286)	-0.214 (0.354)
1	0.503 (0.485)	0.284 (0.195)	-0.501** (0.216)	0.515 (0.486)	0.268 (0.196)	-0.461** (0.217)
2(ref.)						
3	0.024 (0.526)	-0.004 (0.196)	0.394** (0.161)	-0.031 (0.526)	0.023 (0.197)	0.370** (0.163)
4	-1.552 (1.071)	-0.418* (0.242)	0.354** (0.178)	-1.561 (1.071)	-0.406* (0.243)	0.324* (0.180)
5+	0.551 (0.531)	-0.491** (0.249)	0.730*** (0.167)	0.542 (0.536)	-0.469* (0.250)	0.665*** (0.168)
<i>Dedu</i>						
illiterate				-0.174 (0.639)	-0.268 (0.345)	1.000*** (0.185)
primary school completed				-0.903* (0.532)	0.156 (0.187)	0.435*** (0.135)
junior high school completed(ref.)						
senior high school completed				-1.142 (0.764)	0.466** (0.202)	-0.542** (0.234)
junior college or higher level completed				0.214 (0.556)	0.302 (0.229)	-0.569** (0.262)
<i>Porgan_type</i>						
Selfemployer(main peasant)(ref.)						

government, public institutions or state-owned enterprise	-0.343 [0.709]	-0.080 [0.236]	-0.444* [0.229]	-0.461 [0.730]	-0.136 [0.240]	-0.257 [0.232]
others	-18.159 [4875.770]	0.239 [0.265]	0.205 [0.252]	-18.234 (4776.797)	0.204 [0.269]	0.370 [0.259]
Hukou_born						
Rural(ref.)						
Non-rural	0.499 [0.688]	0.441* [0.235]	-0.408 (0.275)	0.420 [0.720]	0.351 [0.241]	-0.135 [0.286]
Pmarit_stat						
First married(ref.)						
others	1.439** [0.636]	0.390 [0.390]	1.330*** [0.236]	1.463** [0.645]	0.400 [0.393]	1.289*** [0.238]
Cohort						
1967-1971(ref.)						
1972-1976	0.762 (0.581)	-0.109 (0.187)	-0.114 (0.145)	0.727 (0.584)	-0.110 (0.188)	-0.106 (0.146)
1977-1981	1.244** (0.590)	-0.361 (0.221)	0.210 (0.162)	1.143* (0.599)	-0.388* (0.225)	0.338** (0.165)
1982-1986	1.029 (0.652)	-0.420* (0.239)	0.339* (0.174)	0.851 (0.662)	-0.434* (0.244)	0.532*** (0.180)
1987-1991	1.174* (0.669)	-0.224 (0.238)	-0.474** (0.235)	0.992 (0.683)	-0.268 (0.246)	-0.201 (0.241)
1992-1996	1.718** (0.789)	0.119 (0.326)	-0.131 (0.326)	1.600** (0.809)	0.077 (0.332)	0.178 (0.332)
1997-2001	-16.915*** (0.000)	-0.811 (1.060)	0.242 (0.792)	-16.816*** (0.000)	-0.923 (1.066)	0.484 (0.803)
intercept	-5.316*** (0.639)	-2.226*** (0.203)	-1.914*** (0.168)	-4.903*** (0.668)	-2.342*** (0.228)	-2.173*** (0.190)
Nagelkerke R ²		0.079			0.102	

Note: a. Dependent variables were fertility intentions without any situational or institutional constraints (*Fer_ideal*). b. Standard errors in parentheses. c. *, **, and *** represent significance at the 10%, 5%, and 1 % level, respectively.

Discussion

This study investigated the impact of childhood family background on women's fertility intentions. The effect of childhood family background on women's childbearing desires in adulthood was considered under different policy conditions in the

context of China's low level of fertility. Both fertility intentions for a second child under the universal two-child policy and ideal fertility intentions under no birth restrictions were analyzed. This study focused on dynamic nature of desired family size preferences (i.e., intergenerational transmission) among women of childbearing-age in China under different policy contexts. Intergenerational transmission of fertility intentions from parents to daughters were explained by various mechanisms.

In general, women were not discriminated against in the allocation of educational resources in families in China. Moreover, more siblings in childhood made it more likely for women to intend to have more children. From the perspective of family inheritance, there was intergenerational transmission of desired family size preferences between parents and daughters. The Chinese fertility tradition of more-children-more-happiness (more happiness comes with more offspring) was dominant, which was expressed in fertility intentions by individuals, separately but significantly. Parents' education had a negative effect on daughters' fertility intentions, not only for a second child but also for the perceived ideal number of children, although the effect of parents' education decreased after daughters' education was added. Women who were born in a good family (with good conditions) and also had good SES conditions in adulthood would like to have another child, which confirmed that improved living conditions would increase fertility intentions under no conditional constraints. There was a cohort effect in women's fertility intentions, which were affected by historical events, especially major policies, and socioeconomic progress.

Women's fertility intentions were influenced by their family of origin background. Fertility intentions were suppressed by education and birth control policies, but the family culture of more-children-more-happiness, family affection, and better family conditions in childhood supported women's fertility desires. Parental support may be helpful for women having a second child, especially in terms of providing childcare support (Chen, Short and Entwisle 2000; Wang et.al 2019). Even though parents with relatively high reputations and position (e.g., working within China's political system) would not have too much enthusiasm to urge their daughter to have another child, they don't endure daughter's no-intention for the second child.

The average ideal number of children for women in this study was 2.03. If there were no constraints, women's fertility intentions may be a little stronger than under a conditional environment, but not by much. This means that the universal two-child policy would promote fertility but wouldn't cause a sustainable "baby boom". Even under a possible universal three-child policy or no fertility control, Chinese fertility levels would increase but remain near replacement level. The low level of fertility, rapid population ageing, and shrinking working-age labor force may restrict China's development. Provision of institutional support may increase women's childbearing desires, help to balance labor force participation and family life, and improve the low fertility trend. An understanding of childbearing desires is important to amend the fertility policy and support reproductive health services.

Conclusion

Women's fertility intentions were influenced by their family of origin background. Fertility intentions were suppressed by education and birth control policies. However, the family culture of more-children-more-happiness, family affection, and better family conditions in childhood supported women's fertility desires. The intergenerational effects are obvious, even under different policy conditions. Nowadays, the overall intentions for a second child in China are low. It is suggested that a possible universal three-child policy or no fertility control should be implemented and more supports should be provided to improve women's reproductive desires.

Studies on the relationship between women's family background in childhood and fertility intentions remain scarce in Asian countries. Some findings from this study differ from those in similar Western studies. An advantage of this study was the large sample size and individual information. However, a large number of women were not included in the analyses because of missing information or other reasons. Fertility intentions involve many factors, and more factors and

mediators should be considered according to the change of institution and environment. I plan to analyze census- and continuous-panel data and more effective technologies to build on this study and focus on how to change China's low fertility intentions.

Declarations

Abbreviations

CLDS: China Labor-force Dynamics Survey; ZIP: Zero-inflated Poisson; TFR: total fertility rate; SES: socioeconomic status.

Authors' contributions

MYL conceived and designed the study and finished the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials

The data analyzed for this study are available from the corresponding author on request.

Ethical approval and consent to participate

Preparation of this manuscript was performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments. The CLDS investigators obtained informed consent from participants during sampling.

Consent for publication

Consent for publication was obtained from each participant during the informed consent process.

Competing interests

There are no conflicts of interest to declare.

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