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Regional Influences on Chinese Women's Fertility Desires: Development and Patriarchal Culture

This study describes Chinese women's fertility desires with regard to sex preference and the ideal number of children using a national sample. We also examine various predictors of the two fertility desires. Beyond the individual-level mechanisms, we highlight the importance of two factors at the provincial level—level of development and local patriarchal culture.

Data, Variables, and Methods

Our data come from the *2001 Chinese Fertility Survey*, a large national study of women of childbearing age (15-49). The sample was drawn from all 31 provinces/municipalities/autonomous regions in the country and representative of China's female population. The study interviewed a total of 40,550 women. After deleting cases with missing values on our analytic variables, the sample size is reduced to 38,004.

Our outcomes include sex preference and the ideal number of children. For the former, we construct a sex preference score based on three quantities retrieved from the following item: *In total, you would like to have ____ child(ren), including ____ boys and ____ girls?* We calculate the sex preference score as *(ideal number of boys – ideal number of girls)/(ideal number of children)*. Thus, the score ranges from -1 to 1, with -1 meaning strong preference for daughter(s), 1 strong preference for son(s), and 0 neutral attitude. In addition, in the descriptive Tables 1-3, we also provide a categorical version of this variable. We code all negative sex preference scores as "daughter preference," all positive numbers as "son preference," and all 0's as "neutral" to show the percentage distributions. The second dependent variable, ideal number of children, is the first quantity in the above survey question.

Our independent variables include both individual and provincial-level predictors. At the individual level, consistent with prior literature on fertility intention, we investigate the roles of age, marital status, household size, type of residence (rural/urban), ethnicity (Han/non-Han), education, actual number of sons, actual number of daughters, and exposure to birth control policy propaganda (whether the respondent's family has received propaganda materials). However, we also go beyond to examine the influences

of two provincial-level factors—level of development and indigenous patriarchal culture. The level of development is measured by the province-specific 1999 Human Development Index (HDI) scores published by the United Nations Development Program. Also, we use provincial sex ratio at birth in 2000 as a proxy for local patriarchal culture, which is a distinct contribution of this study: although demographers have long debated the true reason behind China's sex imbalance at birth—under-reporting of female births (to save the allowed quota for later births) or sex-selective abortion—both unmistakably indicate the traditional Chinese patriarchal preferences for male descendants.

The sample descriptives are summarized in Table 1. In Tables 2 and 3, we tabulated the outcomes with individual and provincial-level predictors, respectively. In Table 4, we report the results of four linear multilevel models predicting the sex preference score and the ideal number of children. For each outcome we estimate a random-intercept model and a random-coefficient model, which allows the individual-level coefficients to have a random component at the province level.

Preliminary Findings

Our descriptive Tables 2 and 3, as well as the results in Table 4, show the contingencies of Chinese women's fertility desires on multiple social, demographic, policy, and regional dimensions, which provide a large amount of reliable information on the national and provincial levels. In general, the findings are consistent with previous literature on Chinese women's fertility intentions.

In particular, we find strong evidence for the aggregate-level influences. Specifically, higher local HDI scores lead to weaker preferences for sons and lower ideal numbers of children in the multilevel models. Also, we find that higher provincial sex ratio at birth, as a proxy for stronger local patriarchal culture, predicts stronger preferences for more children and for sons.

Comparing the various mechanisms, we find that policy intervention (such defined) is not effective in changing women's fertility intentions, which are to a larger extent modified by local societal development and indigenous culture.

Table 1. Sample descriptives

	Mean/%	SD
Sex preference score	0.008	0.371
Sex preference (%)		
Girl preference	7.5	
Neutral	82.5	
Boy preference	10.0	
Ideal number of children	1.7	0.6
Age	33.0	9.3
% Currently married	82.7	
Household size	4.3	1.5
% urban residence	25.0	
% Han Ethnic	90.5	
Years of education	7.8	3.2
Number of sons	0.8	0.7
Number of daughters	0.7	0.8
% exposed to birth control policy propaganda	46.0	
1999 Human Development Index (HDI)	0.707	0.048
2000 Sex ratio at birth	117.5	7.1

Sources: 2001 Chinese Fertility Survey (analytic N = 38,004).
China Human Development Report 2002, Table A.1.
2000 Chinese Census Data Table, Table 1-7.

Table 2. Sex preference (score and 3-category % distribution) and ideal number of children by individual-level predictors

	Sex preference score		Sex preference (%)			Ideal # of children		Sample frequency
	Mean	SD	Daughter preference	Neutral	Son preference	Mean	SD	
Age								
15-19	-0.018	0.393	9.2	83.2	7.5	1.5	0.6	3,895
20-24	0.003	0.389	7.9	82.9	9.2	1.5	0.6	3,831
25-29	0.021	0.394	7.5	81.5	11.0	1.6	0.6	5,641
30-34	0.015	0.371	6.9	83.0	10.1	1.7	0.6	7,390
35-39	0.012	0.355	6.9	82.8	10.3	1.8	0.6	7,223
40-44	0.003	0.365	7.8	81.3	10.9	1.8	0.7	4,741
45-49	0.002	0.342	7.2	83.1	9.8	1.9	0.7	5,283
Currently married								
No	-0.019	0.393	9.2	83.0	7.8	1.5	0.6	6,566
Yes	0.013	0.366	7.1	82.4	10.4	1.8	0.6	31,438
Household Size								
1	-0.055	0.425	12.3	80.9	6.8	1.4	0.5	220
2	-0.052	0.437	13.0	78.8	8.2	1.5	0.6	1,538
3	-0.020	0.437	10.9	79.7	9.4	1.5	0.6	10,472
4	0.010	0.330	5.7	86.1	8.2	1.8	0.6	11,634
5	0.033	0.339	5.9	81.9	12.1	1.8	0.7	7,521
6 or more	0.034	0.335	5.5	82.5	12.1	1.9	0.7	6,619
Residence								
Rural	0.032	0.339	5.4	83.8	10.8	1.8	0.6	28,518
Urban	-0.067	0.447	13.9	78.7	7.4	1.5	0.5	9,486
Ethnicity								
Non-Han	0.034	0.337	7.1	78.3	14.6	2.0	0.8	3,629
Han	0.005	0.374	7.5	83.0	9.5	1.7	0.6	34,375
Eduacation								
None	0.051	0.306	4.4	82.5	13.1	2.0	0.7	6,345
Primary school	0.035	0.334	5.2	83.4	11.4	1.9	0.6	10,988
Junior middle school	-0.005	0.391	8.4	82.8	8.8	1.6	0.6	13,734
Senior middle school	-0.056	0.434	12.6	80.2	7.2	1.4	0.5	5,140
Some college or above	-0.039	0.407	10.6	82.5	6.9	1.5	0.5	1,797
Number of sons								
0	-0.066	0.394	11.8	82.5	5.6	1.6	0.6	15,187
1	0.050	0.354	4.9	84.1	11.0	1.7	0.6	17,594
2 or more	0.079	0.318	3.5	77.4	19.1	2.1	0.8	5,223
Number of daughters								
0	0.043	0.412	6.9	80.8	12.3	1.6	0.6	19,053
1	-0.042	0.328	8.3	85.1	6.6	1.8	0.6	14,208
2 or more	0.015	0.298	7.2	82.0	10.8	2.1	0.8	4,743
Birth control policy propaganda								
No	-0.006	0.371	8.1	83.1	8.8	1.7	0.6	20,518
Yes	0.024	0.370	6.7	81.9	11.3	1.7	0.6	17,486

Source: 2001 Chinese Fertility Survey (analytic N = 38,004).

Table 3. Province-level predictors, and sex preference (score and 3-category % distribution) and ideal number of children by province

	1999 HDI (0-1)	2000 sex ratio at birth	Sex preference score		Sex preference (%)			Ideal # of children		Sample frequency
			Mean	SD	Daughter preferenc	Neutral	Son preferenc	Mean	SD	
Beijing	0.845	111	-0.068	0.396	11.7	83.3	5.0	1.5	0.5	479
Tianjin	0.801	113	-0.126	0.497	19.5	73.5	7.0	1.4	0.5	471
Hebei	0.723	114	0.003	0.332	5.9	87.5	6.5	1.7	0.5	2,585
Shanxi	0.710	113	0.061	0.379	4.9	83.9	11.2	1.7	0.6	1,178
Inner Mongolia	0.679	109	-0.043	0.494	14.7	74.8	10.5	1.4	0.5	934
Liaoning	0.764	113	-0.039	0.509	15.0	73.8	11.2	1.5	0.5	1,453
Jilin	0.720	111	-0.098	0.475	17.0	75.5	7.4	1.4	0.6	698
Heilongjiang	0.732	110	-0.068	0.530	18.1	70.8	11.1	1.3	0.5	1,346
Shanghai	0.853	111	-0.126	0.482	18.8	75.1	6.1	1.4	0.5	558
Jiangsu	0.750	117	-0.049	0.393	10.4	84.0	5.6	1.5	0.5	2,420
Zhejiang	0.758	114	-0.025	0.396	9.8	82.8	7.4	1.6	0.6	1,188
Anhui	0.675	129	0.035	0.343	4.9	86.6	8.5	1.6	0.5	1,623
Fujian	0.733	119	0.059	0.299	3.3	83.3	13.4	1.9	0.6	1,062
Jiangxi	0.673	119	0.061	0.243	2.4	84.3	13.3	2.0	0.7	1,130
Shandong	0.724	113	0.017	0.354	5.9	86.6	7.5	1.6	0.5	2,830
Henan	0.686	120	0.040	0.315	3.3	89.1	7.6	1.7	0.5	3,004
Hubei	0.697	129	0.000	0.352	6.7	86.2	7.1	1.6	0.5	1,489
Hunan	0.683	127	0.022	0.303	4.7	86.8	8.6	1.8	0.6	1,612
Guangdong	0.771	131	0.103	0.296	2.9	72.7	24.4	2.3	0.8	1,752
Guangxi	0.680	127	0.082	0.302	3.6	76.6	19.8	2.1	0.7	1,493
Hainan	0.711	137	0.043	0.235	3.2	83.3	13.5	2.1	0.7	281
Sichuan	0.671	116	-0.021	0.369	8.0	85.5	6.4	1.6	0.5	2,038
Guizhou	0.602	108	0.014	0.274	4.2	87.7	8.1	2.0	0.7	996
Yunnan	0.632	110	0.020	0.265	4.4	86.4	9.2	2.0	0.8	1,408
Tibet	0.521	103	0.071	0.281	5.3	72.0	22.7	2.3	0.5	75
Chongqing	0.684	115	-0.034	0.415	10.7	81.4	8.0	1.6	0.5	703
Shaanxi	0.680	124	0.032	0.415	7.3	80.7	11.9	1.6	0.5	1,173
Gansu	0.632	116	0.060	0.269	2.0	88.5	9.5	1.8	0.5	855
Qinghai	0.625	111	-0.048	0.447	15.0	70.4	14.6	1.9	1.1	247
Ningxia	0.660	109	0.051	0.390	6.3	77.0	16.7	1.8	0.6	318
Xinjiang	0.707	106	-0.013	0.374	14.9	66.6	18.5	2.1	0.9	605

Sources: 2001 Chinese Fertility Survey (analytic N = 38,004).
China Human Development Report 2002, Table A.1.
2000 Chinese Census Data Table, Table 1-7.

Table 4. Multilevel models predicting Chinese women's sex preferences score and ideal number of children

	Outcome = sex preference score				Outcome = ideal number of children			
	Model 1a		Model 1b		Model 2a		Model 2b	
	Coef.	s.e.	Coef.	s.e.	Coef.	s.e.	Coef.	s.e.
Individual-level:								
Age	0.002	0.002	0.002	0.002	-0.005 †	0.003	-0.001	0.003
Age^2 (*100)	-0.004	0.003	-0.005 †	0.003	0.008 *	0.004	0.006	0.004
Currently married (yes=1)	0.009	0.008	0.006	0.008	-0.054 ***	0.012	-0.050 **	0.018
Household size	0.003 *	0.001	0.003 †	0.001	0.005 **	0.002	0.001	0.003
Residence (urban=1)	-0.064 ***	0.005	-0.066 ***	0.010	-0.127 ***	0.008	-0.180 ***	0.044
Ethnicity (Han=1)	-0.019 *	0.007	-0.017 †	0.009	-0.131 ***	0.011	-0.074 †	0.039
Years of education	-0.003 ***	0.001	-0.003 **	0.001	-0.017 ***	0.001	-0.015 ***	0.003
Number of sons	0.059 ***	0.004	0.068 ***	0.008	0.193 ***	0.005	0.167 ***	0.013
Number of daughters	-0.033 ***	0.003	-0.033 ***	0.005	0.194 ***	0.005	0.174 ***	0.009
Birth control policy propaganda	0.008 †	0.004	0.009	0.007	-0.009	0.006	-0.013	0.010
Province-level:								
1999 Human Development Index	-0.291 **	0.106	-0.518 ***	0.137	-1.022 *	0.506	-3.613 ***	0.940
2000 Sex ratio at birth	0.003 ***	0.001	0.003 **	0.001	0.007 †	0.004	0.003	0.008
Intercept	-0.133	0.122	-0.010	0.151	1.722 **	0.567	3.905 ***	1.034
Model χ^2 (df)	1239.07(*12*)		277.69(*12*)		7903.40(*12*)		624.34(*12*)	
Log likelihood	-15360.659		-15243.05		-30578.112		-29698.107	
LR ratio test	235.218(*10*)***				1760.01(*10*)***			

Note: Models 1a and 2a are random-intercept models. Models 1b and 2b are random-coeficient models.
† $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Source: 2001 Chinese Fertility Survey (analytic N = 38,004).

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