Proceedings of the 2nd International Conference on Social Psychology and Humanity Studies
DOI: 10.54254/2753-7048/41/20240696

Research on the Influence of Gender Role Beliefs on Fertility Intentions and Gender Differences

–Based on CGSS 2021 Cross-Sectional Data

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Abstract: Based on the 2021 China General Social Survey (CGSS) data, this study investigated the impact of gender role beliefs on fertility intentions and explored the heterogeneity in fertility intentions across genders. This study employed descriptive statistics to conduct a basic analysis of the variables. Subsequently, it utilized ordered logistic regression and discriminant analysis models to analyze the impact of gender role perceptions on the fertility intentions of the population suitable for pregnancy. Finally, differences based on gender and marital status were examined. The research findings indicate a significant negative correlation between gender role beliefs and fertility intentions, suggesting that more progressive gender role beliefs are associated with lower fertility intentions. Additionally, through heterogeneity analysis, it was observed that progressive gender role beliefs among females are significantly negatively correlated with fertility intentions, while the relationship between male gender role beliefs and fertility intentions is not significant. Moreover, among the unmarried population, there is a significant positive correlation between gender role beliefs and fertility intentions, whereas, among the married population, gender role beliefs and fertility intentions are not significantly related. Therefore, accelerating the promotion of gender equality plays a crucial role in boosting fertility intentions among women in China.

Keywords: Gender role beliefs, fertility intentions, gender differences

1. Introduction

The National Bureau of Statistics reports that China's fertility rate was a mere 1.15 in 2021. According to the paper 'Where Is the Fertility Level Heading: Backward Estimation and Trend Prediction,' preliminary estimates suggest that China's total fertility rate had further declined to 1.09 in 2022, making it one of the lowest fertility rates among countries with a population exceeding one billion. In recent years, numerous scholars have explored the factors contributing to China's low fertility rate. Economic and social factors [1,2], healthcare and medical aspects [3-5], family issues [5], and religious beliefs [6] have all been found to influence residents' fertility intentions to varying degrees. Research indicates that gender role beliefs are one of the key factors affecting the contemporary phenomenon of low fertility rates [7-8].

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In today's China, gender equality is gaining increasing attention, and the country has implemented relevant laws and policies to promote it. Gender role beliefs serve as a crucial indicator of gender equality. Given the evolving modernization of gender role beliefs in the contemporary context, their relationship with the fertility perceptions of childbearing-age individuals becomes an important topic of inquiry."

2. Theoretical Analysis and Research Hypotheses

Gender role beliefs refer to cultural and societal notions and beliefs about how men and women should behave, what social roles they should play, and what traits and responsibilities they should possess. Gender role beliefs typically influence individuals' and societies' perceptions and behaviors regarding gender roles. Before the establishment of the People's Republic of China, traditional gender role beliefs enforced a gender division of labor with the concept of “men primarily responsible for work outside the home, and women primarily responsible for work inside the home” [9]. However, with the development of modern gender roles, individuals holding modern gender role beliefs may alter the internal dynamics of families, thus impacting fertility intentions. Therefore, the following hypothesis is proposed.

Hypothesis 1: Different marital beliefs significantly affect fertility outcomes for the general population. Building on the analysis above, further investigation into gender differences is undertaken. Previous research has shown that in regions where the women's liberation movement is more pronounced, contemporary gender role beliefs tend to be more modern, and female labor force participation and income levels are higher [10]. Men with more modern gender role beliefs tend to be more involved in family life to some extent, albeit at a slower pace [11]. Under these conditions, women with progressive gender role beliefs may face conflicts between family and work. Thus, the following hypothesis is proposed.

Hypothesis 2: Gender role beliefs have a significant impact on the fertility intentions of women. Building on Hypothesis 2, the fertility challenges faced by women constitute a significant factor contributing to the reduction in women's fertility intentions. Many modern women grapple with the balance between family and career, and motherhood can result in inequality in career development, such as reduced wages, leading to what is commonly referred to as the 'motherhood penalty' [12]. Under these circumstances, the fertility intentions of unmarried individuals may be more susceptible to the influence of gender role beliefs. Therefore, the following hypothesis is proposed.

Hypothesis 3: Gender role beliefs have a significant impact on the fertility intentions of unmarried individuals.

3. Methods

3.1. Data Source

This study uses data from the Chinese General Social Survey (CGSS), conducted by the China People's University and the China Survey and Data Center, collected through a probability proportional to size (PPS) sampling method. The CGSS survey comprehensively gathers data at various levels, including social, community, family, and individual data, to summarize social trends. This study employs data from 2021, with an initial sample size of 8,148 respondents. After data cleaning and the removal of missing values, the final dataset comprises 1,523 observations.

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3.2. Variables and Measurement

3.2.1. Dependent Variable

The dependent variable in this study is fertility intention. In the CGSS questionnaire for the year, respondents are asked, "If there were no policy restrictions, how many children would you like to have?" Fertility intention is measured in this study, where no intention to have children is assigned a value of 0, and having the intention to have children is assigned a value of 1.

3.2.2. Independent Variables

The independent variable in this study is gender role beliefs. The CGSS questionnaire includes a Likert scale to measure gender role beliefs, consisting of five items: (1) Men should prioritize their careers, while women should prioritize their families; (2) Men are naturally more capable than women; (3) Doing well in one's career is not as good as marrying well; (4) During economic downturns, women employees should be laid off first; (5) Household chores should be equally shared by spouses. Respondents rate their agreement with these items on a scale where 1 = strongly disagree, 2 = somewhat disagree, 3 = neither agree nor disagree, 4 = somewhat agree, and 5 = strongly agree. A reliability test for the scale reveals that, after removing the item about the equal sharing of household chores, the correlation value is -0.203, which is below the 0.3 threshold. Therefore, this item is removed from the analysis. The remaining four items show a Cronbach's α coefficient of 0.708, indicating acceptable internal consistency. Given the multidimensionality of this scale, it is not suitable to compute a simple mean. Following previous research, a principal component factor analysis was conducted to extract common factors. A standardized variable ranging from 1 to 100 is generated, named "gender role beliefs." The factor analysis results show a Kaiser-Meyer-Olkin (KMO) value of 0.733 and a significant Bartlett's test statistic of 1111.764 at the 1% confidence level, indicating the suitability of factor analysis. A higher value for this variable indicates a more modern gender role belief.

3.2.3. Control Variables

Based on existing literature and available variables in the CGSS data, control variables are categorized into three parts: individual characteristics (age, gender, marital status, education level, and health condition), family characteristics (family economic status and the number of properties), and regional factors (Eastern, Central, Western, and Northeastern regions).

3.3. Statistical Analysis

Due to the dependent variable and some control variables being ordinal variables, this study employs ordered logistic regression and linear discriminant analysis. Firstly, the study investigates the impact of gender role beliefs on the reproductive-aged population using ordered logistic regression and linear discriminant analysis. Subsequently, the study conducts a robustness test by dimensionally breaking down gender role beliefs. Finally, the study discusses the influence of gender role beliefs on fertility intentions among different genders.

4. Results

4.1. Descriptive Statistics

Table 1 provides descriptive statistics for the relevant variables. Regarding fertility intention, 93% of individuals of childbearing age still express the intention to have children. Concerning gender role

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beliefs, the average score is 32.021, indicating that contemporary individuals of childbearing age hold relatively traditional gender role beliefs. In terms of individual characteristics, the median values are moderate, which suggests a reasonable data distribution. Family characteristics variables exhibit relatively concentrated data with small variances.

Table 1: Descriptive Statistics

Items	Sample Size	Maximum Value	Minimum Value	Mean	Standard Deviation	Median
Fertility intentions	2690	1	0	0.93	0.256	1
Gender role beliefs		100	1	32.839	21.089	31.928
region		4	1	1.979	0.877	2
Gender		2	1	1.568	0.495	2
Age		4	1	2.578	1.092	3
Educational level		13	1	7.573	3.521	7
Family economic status		5	1	2.723	0.69	3
Property ownership		20	0	1.272	0.832	1
Health condition		5	1	3.982	0.856	4
Marital status		1	0	0.602	0.49	1

4.2. Logistic Regression

Table 2 presents the regression results of the influence of gender role beliefs on fertility intentions among the reproductive-aged population. The results indicate a statistically significant positive effect of gender role beliefs at the 5% significance level. This implies that as gender role beliefs become more traditional, the willingness to have children increases. Specifically, for each one-unit increase in gender role beliefs, the probability of having a fertility intention of one level or higher increases by 1.555%. Thus, Hypothesis 1 is supported.

Table 2: Logistic Regression Results

Item	Regression Coefficient	Standard Error
Gender role beliefs	0.018***	0.005
region	-0.23**	0.09
Gender	-0.303*	0.173
Age	0.186*	0.099
Educational level	-0.059**	0.028
Family economic status	0.06	0.125
Property ownership	-0.101	0.075
Health condition	0.336	0.092***
Marital status	1.823	0.25***

4.3. Discriminant Analysis

For binary dependent variables, the logistic model establishes the conditional distribution of the dependent variable given the independent variables. Discriminant analysis, on the other hand, first establishes the distribution of the independent variables given each Y and then uses Bayes' theorem to estimate Prob (Y=k | X=x). In this study, significant variables from the logistic model were used for analysis. A 70% sample was used as the training set and a 30% sample as the test set, resulting in

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high accuracy, recall, and precision rates, indicating good predictive performance. The discriminant function obtained is shown in Table 3. It further confirms that gender role beliefs indeed have a positive impact on fertility intentions, meaning that the more traditional the gender role beliefs, the higher the fertility intentions. At the same time, marital status and gender have significant influences on fertility attitudes. Therefore, subsequent heterogeneity analysis will be conducted based on marital status and gender.

Table 3: Discriminant Analysis Results

items	Coefficient
Gender role beliefs	0.016
region	-0.189
Gender	-0.544
Age	0.21
Educational level	-0.075
Health condition	0.457
Marital status	1.828

4.4. Robustness Test

Examining the analysis in the context of ordered logistic regression results, each of the four dimensions of gender role beliefs was included in the model independently, with varying techniques for adjusting the explanatory variables. According to the robustness test, except for the variable related to laying off female employees during an economic downturn, which was found to be not statistically significant, all other explanatory variables had a positive impact on fertility intentions. Among these variables, the one related to men prioritizing their careers and women prioritizing their families had the most significant influence. This assumption was validated.

Table 4: Robustness Test

items	（1）	（2）	（3）	（4）
	Coefficient			
Men prioritize their careers, while women prioritize their families.	0.326***			
	（0.083）			
Men are naturally stronger in their careers than women.		0.272***		
		（0.086）		
It's better to marry well than to do well.			0.142**	
			（0.071）	
During an economic downturn, female employees should be laid off first.				0.194
				0.119
Individual characteristics	Yes	Yes	Yes	Yes
Family characteristics	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes

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4.5. Heterogeneity Analysis

4.5.1. Gender Heterogeneity Analysis

To investigate whether there are gender differences in the impact of gender role beliefs on fertility intentions, as suggested in the derivation process in the second part of this paper, it is hypothesized that as gender equality awareness increases, the influence of female gender consciousness on fertility intentions will be greater than that of males. In this section, separate regressions are conducted for male and female sub-samples, and the results are presented in columns (1) and (2) of Table 5.

4.5.2. Marital Status Heterogeneity Analysis

The phenomenon of the "motherhood penalty" exists not only during the period of infant and child care but also throughout a mother's later career development. In this study, regression analyses are performed separately for the sub-samples of unmarried and married individuals, and the results are presented in columns (3) and (4) of Table 5. It is found that the impact of gender role beliefs on fertility intentions is more significant among unmarried individuals, indicating that the more traditional the gender role beliefs of unmarried individuals, the higher their fertility intentions [13].

Table 5: Difference Test Result

items	（1）	（2）	(3)	(4)
	Fertility intentions			
	Gender		Marital status	
	male	female	Unmarried	Married
Gender role beliefs	0.008	0.028***	0.015***	0.024
	(0.007)	(0.007)	(0.005)	(0.024)
Individual characteristics	Yes	Yes	Yes	Yes
Family characteristics	Yes	Yes	Yes	Yes
Region	Yes	Yes	Yes	Yes

5. Conclusion

This study investigated the impact of gender role beliefs on fertility intentions among individuals of childbearing age, using comprehensive data from China. The following conclusions were drawn from the study:

First, through ordered logistic regression and discriminant analysis, it was found that the more modern the gender role beliefs, the lower the fertility intentions among the childbearing population. Additionally, the ordered logistic regression results showed that for each 1-unit increase in gender role beliefs, fertility intentions among the childbearing population increased by 0.018 units in a more traditional direction.

Second, gender role beliefs have varying effects on fertility intentions among different gender groups. By dividing gender into two sub-samples of men and women and conducting regression analysis, it is evident that gender role beliefs significantly influence fertility intentions for women. In other words, the more traditional a woman's gender role beliefs are, the higher her fertility intentions tend to be. On the other hand, the impact of gender role beliefs on fertility intentions for men is not

DOI: 10.54254/2753-7048/41/20240696

significant, indicating that women's fertility intentions are more influenced by gender role beliefs than men.

Last, through subsample regression, the impact of gender role beliefs on fertility intentions varies among different marital status groups. Specifically, gender role beliefs have a significant influence on fertility intentions for the unmarried population, while their impact on fertility intentions for the married population is not substantial. This suggests that the fertility intentions of the unmarried population are more affected by gender role beliefs compared to the married population.

This study analyzed cross-sectional data from 2021 and was unable to investigate the dynamic characteristics of fertility intentions among populations and the influence of policies. Future research should focus on expanding the concept of gender norms and, from a social perspective, explore the impact of the development of a fertility-friendly society in China on the changing fertility intentions among the population.

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