

# "The Impact of the Childcare Policy on Family Women's Career Development: A Empirical Analysis based on the DID Model"

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## Abstract

**This article aims to evaluate the policy effect of the childcare policy on family women's career development using microdata collected from Nanchang and Jiujiang during 2017-2021. The study finds that the career development index of family women in the pilot areas is significantly higher than that in the non-pilot areas, indicating that the childcare policy significantly promotes the career development of family women. Furthermore, this article conducts robustness tests by delaying the control variables by one period and shortening the sample range, verifying the stability of the regression results. Additional analysis shows that the childcare policy mainly affects family women's career development by accumulating women's human capital in terms of health. The findings of this article provide important policy implications for China to further improve childcare services in the field of childcare.**

## Keywords

**Childcare Policy; Women's Career Development; Difference-in-Differences; Mediating Effect; Heterogeneity Analysis.**

## 1. Research Background

The employment situation for women is relatively severe. According to the International Labour Organization, the female labor participation rate has experienced a significant decline. A report by the Chinese Academy of Social Sciences shows that as of early 2022, over a quarter of married women in China have chosen to become stay-at-home wives. In June 2021, a study published by the Center for Global Development, an American think tank, showed that globally in 2020, women spent 173 more hours per year than men on unpaid caregiving activities for children, which has limited women's participation in the job market, especially in terms of career development.

In 2017, the Chinese government issued the "Guiding Opinions of the General Office of the Ministry of Education on Doing a Good Job in After-school Services for Primary and Secondary School Students," and in 2021 it issued the "Notice on Supporting and Exploring the Development of Summer Homework-light Education Services." Subsequently, the government implemented a series of complementary measures to reduce burden and improve quality, ensuring that after-school services for compulsory education not only help students complete their homework but also align with regular work hours and help parents establish a balance between work and educating their children.

## 2. Current Status and Evaluation of Research on Domestic and International Studies

### 2.1. Research on Childcare After-school Services

Now scholars have analyzed the causes and problems of childcare after-school services. However, domestic scholars are still in the initial stage of theoretical research on after-school services, with relatively few relevant research achievements.

In terms of the causes of childcare after-school services, scholars both domestically and internationally believe that its emergence is mainly closely related to real needs from families and society. In terms of family needs, the problem mainly lies in the inconvenience of using grandparent care resources in nuclear families [13]. In terms of social needs, there are mainly considerations such as "parents cannot accompany due to work or other reasons, policy care for impoverished areas and populations" [14]. Under the premise of strong demand, there are still many problems within and outside the childcare after-school service system in China. In terms of internal problems, the quality of after-school services provided is not high, and the institutions on the market are of mixed qualities. In terms of external problems, parents have a unclear understanding of after-school services, lack sufficient external support, and have insufficient funds for providing after-school services [15].

### 2.2. Research on Family Women's Career Development

Now women's career development is hindered mainly manifested in gender discrimination in multiple specific indicators such as employment opportunities, income level, promotion space, etc., which is influenced by the "social role theory" to a certain extent [4], and most of the research focuses on analyzing the factors and solutions related to childcare services [16].

### 2.3. Research on Childcare Services and Women's Career Development

Currently, scholars' research on the role of childcare services mainly focuses on teenagers, and there is little research on women's career development mainly focusing on birth obstacles. There is relatively little research on the correlation between childcare services and women's career development, and there is insufficient empirical analysis on the specific impact degree with more simple descriptive statistical analysis and less quantitative statistics.

## 3. Research Hypotheses

### 3.1. Childcare Policy and Family Women's Career Development

According to relevant theories, the childcare policy will have an important impact on various aspects of family women's careers, including employment opportunities, lateral, and vertical aspects. In terms of employment opportunities, the introduction of the childcare services policy can increase the guarantee of childcare and increase the employment rate of women [6]; in terms of lateral aspects, network data surveys have found that with the implementation of the childcare services policy, women's job search scope has expanded slightly in space; in terms of vertical aspects, it can alleviate the negative impact of family childcare issues on women's career prospects [5]. Moreover, it can increase married women's preference for taking responsibility for work, which is conducive to promoting women's career development [2]. It can be seen that the childcare policy has positive effects on multiple aspects of family women's career development. Based on this, hypothesis 1 is proposed in this paper.

H1: The childcare policy has a positive impact on family women's career development.

### 3.2. Human Capital Health

The childcare policy helps female parents reduce their burden by standardizing the provision of after-school services for primary and secondary school students, which has a positive effect

on women's physical and mental health. According to the employment health selection theory, good health status is more advantageous to one's career development [8]. It is reported that the female sickness rate is 2-5 percentage points higher than that of men [7], and poor health has a greater negative impact on women's careers than men [8]. Therefore, the childcare policy has a positive impact on women's career development by accumulating female human capital health. Based on this, hypothesis 2 is proposed in this paper.

H2: The childcare policy can promote women's career development by accumulating female human capital health.

## 4. Empirical Research Design

### 4.1. Model Establishment

Considering that Nanchang and Jiujiang implemented the childcare services policy in different years, this article uses the two-way fixed effects model proposed by Beck (2010) to verify the impact of the childcare policy on family women's career development. The model is as follows:

$$WCD_{it} = \alpha_0 + \alpha_1 did_{it} + \alpha_2 X_{it} + \delta_i + \beta_t + \varepsilon_{it} \quad (1)$$

In Eq. (1),  $i$  represents the surveyed female household member.  $WCD_{it}$  represents the career development of the  $i$ -th female household member in the  $t$ -th year, which is the explained variable.  $did_{it}$  is a dummy variable representing the childcare policy pilot program. In the pilot year and subsequent years, the value is 1 in the pilot areas and 0 elsewhere, which is the core explanatory variable.  $\alpha$  is the estimated parameter that we are interested in, which measures the size of the pilot treatment effect.  $X_{it}$  represents a series of control variables.  $\delta_i$  and  $\beta_t$  represent individual fixed effects and year fixed effects, respectively, while  $\varepsilon_{it}$  represents random disturbance terms.

### 4.2. Data Source and Variable Selection

#### 4.2.1. Data Source

To meet the data requirements of the empirical model DID, this article needs to select two areas: a control group and a control group. Panel data for different years are collected. This article selects specific schools in Nanchang and Jiujiang that meet the requirements and collects data from them. For example, Nanchang No. 10 High School implemented homework supervision from 2019 as the control group, while Jiujiang Chatiang Primary School and Tongwen High School implemented homework supervision from 2021 as the control group. Therefore, the micro-data used in this article comes from the questionnaire survey panel data of Nanchang and Jiujiang from 2017 to 2021, with a total of 205 sample data, of which 101 samples come from Nanchang.

#### 4.2.2. Explanatory Variable

Women's career development. Referring to the research [9], this article selects three dimensions of employment opportunities, horizontal career development, and vertical career development, and uses entropy method to evaluate women's career development with 7 indicators.

#### 4.2.3. The Core Explanatory Variable

Childcare policy. In this article, we use dummy variables to represent this variable. Areas affected by the homework supervision policy pilot program in 2019 are assigned a value of 1 (as the treatment group), while other non-pilot areas are assigned a value of 0 (as the control group).

#### 4.2.4. The Mediating Variable

Human capital health. In this article, we choose health as a mediating variable to further analyze the relationship between homework supervision policies and women's career development.

#### 4.2.5. Control Variables

Based on existing research literature on women's career development [11], to alleviate estimation bias caused by omitted variables, this article incorporates a series of control variables into the empirical analysis later. The selected control variables mainly include: age, education level, household registration, physical health, number of children, and monthly income of the spouse. The descriptive statistical results of each variable are detailed in Table 1.

**Table 1.** Descriptive Statistics

Type	Variable Meaning	Mean	Variance	Minimum	Maximum	Sample Size
Explained variable	Women's career development	0.5078	0.0040	0.9214	0.9213	205
Control variables	Age	4,2049	0.2720	1	5	205
	Level of education	2.2146	0.0393	1	5	205
	Household registration	1.3756	0.1513	0	1	205
	Physical health	4.2517	0.0278	1	5	205
	Number of children	1.8049	0.0221	1	3	205
	Monthly income of husband	2.8624	0.0310	1	5	205

#### 4.3. Policies and Development Status of “Childcare Services”

Currently, China's childcare policy can be classified as symbolic and persuasive tools through the policy tool analysis framework of MacDonald and Elmore, indicating that the policy is non-mandatory. The purpose of this article is to conduct an empirical analysis of the effectiveness of the childcare policy on family women's career development through the DID method, which is also an empirical analysis of the effectiveness of symbolic and persuasive tools.

#### 4.4. Benchmark Empirical Results

##### 4.4.1. Benchmark Regression

The table below shows the benchmark regression results of the childcare policy on family women's career development. Columns (1)-(3) show the regression results gradually adding control variables, column (1) shows the regression result without adding control variables, columns (2) and (3) show the regression results gradually adding individual characteristic variables (self-rated health status) and family situation variables (husband's monthly income), and column (3) shows the regression result with all control variables added. It was found that after adding all control variables, the regression coefficient of the childcare policy on family women's career development was 0.049, significant at the 1% significance level; among the control variables, self-rated health status had a significantly positive regression coefficient on family women's career development, indicating that high self-rated health status can significantly promote family women's career development.

In summary, it can be preliminarily concluded that the childcare policy has a promoting effect on family women's career development.

**Table 2.** Benchmark Regression Results

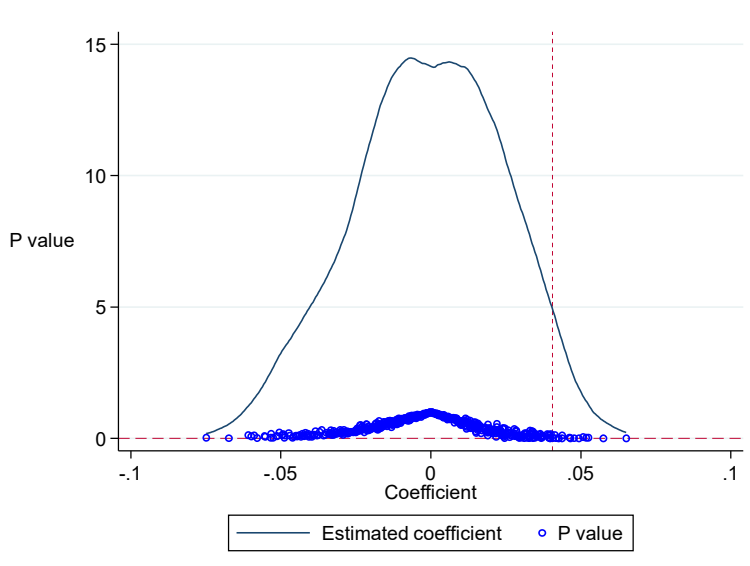
Variables	Female Career Development		
	(1)	(2)	(3)
Childcare policy	0.176*** (0.010)	0.062*** (0.016)	0.049*** (0.014)
Self-rated health level		0.109*** (0.012)	0.098*** (0.013)
Husband's monthly income			0.035*** (0.008)
Individual fixed effects	True	True	True
Year fixed effects	True	True	True
Constant	0.456*** (0.003)	0.026 (0.049)	-0.024 (0.043)
Observations	1025	1025	1025
R-squared	0.7074	0.7841	0.7915

**4.5. Robustness Test**

**4.5.1. Parallel Trends Assumption**

Before implementing the pilot childcare policy, the coefficient of DID was not significant, indicating that there was no significant difference in career development between Nanchang and Jiujiang women. However, after the implementation of the policy, the coefficient of DID became significantly positive, and the positive effect of the childcare policy on women's career development increased. The parallel trend test was passed.

**4.5.2. Placebo Test**



**Figure 1.** Placebo test

To further test whether the results in this paper are driven by unobservable factors at the regional-year level, we conducted a placebo test by randomly assigning pilot areas and generating a treatment group (Cai et al., 2016). Specifically, we randomly selected 15 samples from a total of 205 samples as the treatment group, assuming that these 15 samples implemented the childcare policy, while the other samples were used as the control group. We repeated this process 500 times by randomly assigning a treatment group and extracted the placebo effect coefficient or P-value. Then we plotted these results and compared them with the True policy effect. The specific process is shown in the following figure.

In Figure 1, the vertical line represents that the True regression coefficient of the childcare policy is a significant outlier in the placebo test, and the distribution of most P-values is concentrated around zero and greater than 0.1. These results indicate that the estimates in this paper are robust and valid.

#### 4.5.3. Control Variable is Delayed by One Period

To reduce potential endogeneity issues, considering the possible positive effect between the establishment of control variables and the effect of the childcare policy, we regress all control variables with a time lag. The empirical result is shown in column (2) of Table 5, where the coefficient of the childcare policy effect is 0.108 and remains significant.

#### 4.5.4. Shorten the Sample Period

Considering that the establishment of the sample period may affect our benchmark regression results, and taking into account the impact of COVID-19 on the world in 2021, we used panel data from 2017 to 2020 to adjust the sample period. The empirical results are shown in column (3) of Table 3, where we find that the childcare policy effect remains significantly positive in the new time span, further supporting the robustness of the benchmark regression results.

**Table 3. Robustness Test Coefficient Results**

variable	Female career development		
	(1)Benchmark regression results	(2) Control variable is delayed by one period	(3)Shorten the sample period
Childcare policy	0.049*** (0.014)	0.108*** (0.008)	0.036** (0.015)
Health level	0.098*** (0.013)	0.065*** (0.009)	0.106*** (0.015)
Partner's monthly income	0.035*** (0.008)	0.069*** (0.008)	0.038*** (0.009)
Individual fixed effect	True	True	True
Year fixed effect	True	True	True
Constant	-0.024 (0.043)	0.010 (0.034)	-0.044 (0.051)
Observations	1025	1025	1025
R-squared	0.7915	0.7732	0.8247

#### 4.6. Mechanism Analysis

As shown in Table 4, column (1) displays the average effect of the childcare policy on the career development of women in the family, and columns (2) and (3) show the direct and indirect effects of healthy human capital. Specifically, the coefficients of  $\beta_1$  and  $\varphi_2$  in columns (2) and (3) are both positively significant. This indicates that the impact effect of the childcare policy

on healthy human capital is 84.7%, while the impact effect of healthy human capital on women's career development is 9.8%. Moreover, the indirect effect ( $\beta_1 * \varphi_2$ ) has the same sign as the direct effect (0.049), indicating that healthy status has passed the mediating effect test, indicating that the childcare policy can promote women's career development by accumulating female healthy human capital.

**Table 4.** Mechanism Test Results Based on Health Status

	Health level		
	(1)	(2)	(3)
	Female career development	Health level	Female career development
Childcare policy	0.176*** (0.010)	0.847*** (0.066)	0.049*** (0.014)
Health level			0.098*** (0.013)
Individual fixed effect	True	True	True
Year fixed effect	True	True	True
Constant	0.456*** (0.003)	3.157*** (0.142)	-0.024 (0.043)
Observations	1025	1025	1025
R-squared	0.7074	0.8810	0.7915

#### 4.7. Heterogeneity Analysis

"Does the childcare policy have differences in its impact on the career development of women in different groups of families? This article will further analyze the differences based on education level and age."

##### 4.7.1. Heterogeneity of Educational Level

Firstly, the sample was divided into low, medium, and high education levels based on the educational background, and the regression results are shown in Table 5. It was found that the childcare policy has had a positive impact on improving women's career development. Secondly, it can be seen that the childcare policy has a more significant impact on low- and medium-educated women.

**Table 5.** Heterogeneity Test Results by Education Level

variable	Low educational background		Medium educational background		High educational background	
Childcare policy	<b>0.296***</b>	<b>0.175***</b>	<b>0.278***</b>	<b>0.315***</b>	<b>0.031***</b>	<b>0.014***</b>
	(0.021)	(0.037)	(0.022)	(0.052)	(0.034)	(0.030)
Control variable	False	True	False	True	False	True
Individual fixed effect	True	True	True	True	True	True
Year fixed effect	True	True	True	True	True	True
Observations	1025	1025	1025	1025	1025	1025
R <sup>2</sup>	0.823	0.843	0.920	0.922	0.920	0.932

#### 4.7.2. Heterogeneity of Age Level

The sample was divided into young and old age groups based on age, and the results are shown in Table 6. It was found that the positive effect of the childcare policy on the career development of young women is better than that of older women. This may be because young women are more willing to spend time on their own career development abilities and time under the influence of the childcare policy.

**Table 6.** Heterogeneity Test Results by Age Level

variable	Low age	High age
Childcare policy	<b>0.172***</b>	<b>0.135***</b>
	(0.038)	(0.010)
Control variable	True	True
Individual fixed effect	True	True
Year fixed effect	True	True
Observations	1025	1025
R <sup>2</sup>	0.877	0.762

## 5. Conclusion and Policy Advice

The career development of women in the family is of great significance to social stability and development, providing a good opportunity for improving women's employment, especially for women in the majority of families. Therefore, it is of profound significance to explore the impact of the implementation of trusteeship policies on the career development of women in families. Based on the empirical analysis results, the following suggestions are put forward:

Firstly, by increasing medical resources to promote infrastructure construction for women's health services, expanding the coverage of universal women's health care, and strengthening women's health protection, we can further promote the career development of women in the family. Secondly, by enhancing women's education and increasing their knowledge reserves, professional skill reserves, and career competitiveness, we can support the horizontal and vertical development of women's careers in the family and fully leverage social support dividends. Thirdly, we should conduct publicity and education to promote equal employment opportunities, reduce employment bottlenecks faced by elderly women, and improve their career development. In addition, we must establish a sound supervision system. The government must continuously improve policy supervision mechanisms, increase the transparency of policy implementation, strengthen supervision publicity and guidance, and mobilize social forces to do a good job in supervision. Finally, parents should correct their cognitive biases about tutoring services. Tutoring services are not a continuation of classroom teaching; they play an important role in expanding students' interests and hobbies and improving their overall qualities. Parents should have a correct understanding of tutoring services.

## Acknowledgments

Fund Project: 2023 Jiangxi College Students' Innovation and Entrepreneurship Training Project "The Impact of the Childcare Policy on Family Women's Career Development: An Empirical Analysis Based on the DID Model" (Project No.: 202310421010).

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