

Children's Gender and Living Arrangements of Old Parents': the Case of One-child Family in China

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Abstract—The aging of population is a serious problem in China. One-child policy leads the problem of supporting old people in single-child family to heated debate. Whether the elderly live with their children is related to elderly's life and affection need. Through analyzing data from the 2011 wave of CHARLS, this research examines the determinants of living arrangements among Chinese elderly--old by distinguishing the children by gender. The results show that child's gender of the elderly in one-child-family is key factor of resident arrangement. In general, without mate living together, high education, and having own income decrease the odds of co-residing. Having ADL disability, a higher household income, homeownership and preferring to live with others increase the likelihood of co-residing. Under this circumstance, government needs to formulate a preferential endowment policy for parents in one-child-families; society should construct old-age service system and improve old-age support security. Eventually, Pension system can realize the combination among different endowment patterns.

Keywords—one-child family; family endowment; logistic regression; living arrangement

I. INTRODUCTION

The population aging highlight the problem of old-age care, which is current needs of any time and any areas. Chinese people live with their children for material support and moral support and take "children take care of their parents" for granted. One-child-policy leads to changes in family formation decrease of households' population and reduction of the endowment resources. Along with translations of social concept, there is an increase in population mobility from rural area to urban areas and from underdeveloped areas to developed areas[1]. Under the circumstance of insufficient system coverage and imperfect development, family supporting is still the mainstream. Some scholars believe that one-child families meet the risk because of lack basis for traditional Chinese household care. The living arrangements of the elderly have long been regarded as key indicators for determining the quality of life and daily care of the elderly so that it's meaningful to study the factors on the living arrangement of the elderly in one-child family of China.

II. LITERATURE REVIEW

Both developed and developing countries in western countries or in China, the living arrangements of the elderly

have gradually changed, and more and more elderly people choose to live alone. This prudence is caused by the elderly economic independence, declining fertility, changing social attitudes and mass migration[2].

In China, living with children is the main residential preference of the elderly, and family support is still the first choice of the elderly retirement pattern. The choice of care-way for the aged of one-child parents in city is influenced by many factors, including the economic and social development, married children's living pattern, care supporting provided by children, personal income and health situation[3], and so does the one-child-family in rural areas[4]. Some scholars also found that there was a significant difference between the parents of only children and the parents of non-only children in the economic planning of old-age care that one-child-parents are more financially independent[5]. Moreover, both parents of only children and parents of non-only children are likely to live with their children, they are depend on their children for their living in their old age.

In terms of child preference, Ruggles S put forward economic development hypothesis that express parent-child living pattern meet their children's needs, not their parents'. On the other side, taking care of their grandchildren is more likely for old parents to live with their children. In addition, the way the elderly's living arrangement is affected by demographic factors such as the number and gender of the children, as well as specific social norms of economic conditions such as marriage, economic income and housing condition[6]. Other scholars hold different views on the gender factors of children, Zhang li considers that the elderly are mainly dependent on their sons when regarding household living style or financial support, but dependent on their daughters when regarding daily care. The elderly show gender differences when choosing the family of co-habitation[7].

In the study on the influence of children on the living arrangements of the elderly, the study are mainly focus on the influence mechanism of parent-child living mode actually. However, insufficient attention is paid to the relationship between the residential arrangement and the old-age security of the elderly. The study on the gender of children did not define special groups, such as one-child-family, and did not take into account the change of gender in current social concepts, nor was it related to the pension security.

III. DATA AND MODEL

A. Data Description

TABLE I. VARIABLE DESCRIPTION

Variables	Variable name	Variable meaning
Dependent variable	Willingness of living arrangement	Live with children=1; Do not live with children, but live in the same village/community with children =2; Do not live with children, and do not live in the same village/community with children =3; Live in a nursing home =4; others=5
Independent variable	Children gender	son=1; daughter=0
	Parental marriage	Married and live with a spouse(Reference group)=1; Separation (no longer living as a spouse)=2; Divorced or widowed =3; Never married =4
	Parental education	Primary school and below (Reference group)=6; Junior high school education =9; High school or secondary school education=12; College degree=15; Bachelor degree=16; Master's degree or above =19
Control variable	Individual income	Total individual income in the past year
	Family income	Total household income in the past year
	ADL/IADL	Ability of daily life(the best=5,the worst=20)
	Mental health	Mental health(the best =10,the worst =40)

Data used in this study was from 2011 national baseline survey of China Health and Retirement Longitudinal Study (CHARLS). The baseline survey covered 150 county-level units, 450 village-level units and 17,000 people of approximately 10,000 households. The subjects were middle-aged and elderly families, who aged 45 and above in China. Micro-survey research try to analyze the interdisciplinary issues brought about by China's aging population. CHARLS questionnaires follow and refer to international indicators, such

as US HRS database, UK ELSA database, European SHARE database, Korean KLSA database and Japanese JSAR database. This article focuses on the living arrangements of the elderly with only children, so that this paper deletes the samples of non-only-child families. After that the sample size is about 3643. For the convenience of description, the parents of the only child are referred to as "elderly" in the following, and the average age of the elderly is 58.4.

TABLE II. SPECIFIC INDICATORS OF EACH AGGREGATE VARIABLE

Ability of daily life(ADL)	Eat, dress, go to the bathroom, go to bed, take a shower
Mental health	1. Troubled by some small things
	2. Difficult to concentrate when doing things
	3. Feel depressed
	4. Feel that it is very hard to do anything.
	5. Feel no hope for the future
	6. Feel scared
	7. Sleep is not good
	8. Unhappy mood
	9. Feel lonely
	10. Feel unable to continue living

1) Dependent variable

The dependent variable of this paper is the living arrangement of the parents of the only child family, and the assumption of the "cohabitation with the children" was added in the questionnaire topic. Family harmony plays an important role in the way of living that the elderly choose, so that the survey exclude this factor when asking questions, and idealize the living arrangement. The living arrangement variable of the only child elderly is an ordered multi-category variable, which decrease in accordance with the degree of recognition of living with their child. In the regression analysis, the variables are encoded as follows: Live with children=1; Do not live with children, but live in the same village/community with children =2; Do not live with children, and do not live in the same village/community with children =3; Live in a nursing home =4; others=5.

2) Independent variable

According to previous studies, the paper uses confirmed relevant factors that may affect the living arrangements of the elderly in the only child family as independent variables. The independent variable is divided into five part: ① Children gender; ②Parental marriage; ③Parental education and income: including individual income and family income; ④ Health: ADL/IADL and mental health.

TABLE III. FAMILY SAMPLE SITUATION

Sample characteristics	Variable	Number	Present(%)
Children's gender	Son	1971	54.1
	Daughter	1672	45.9
Parental marriage	Married and live with a spouse	3222	88.44
	Separation (no longer living as a spouse)	22	0.6
	Divorced or widowed	395	10.84
	Never married =4	4	0.11
Parental education	Primary school and below	2612	71.7
	Junior high school education	705	19.35
	High school or secondary school education	287	7.88
	College degree	25	0.69
	Bachelor degree	8	0.22
	Master's degree or above	6	0.16
Individual income	0	2636	72.36
	0-1000	478	13.13
	1000-5000	460	12.63
	5000-20000	4554	1.25
	>20000	23	0.63
Family income	<20000	2770	76
	20000-60000	673	18.5
	60000-100000	109	3
	>100000	91	2.5
ADL	5	2503	68.7
	5-10	858	23.55
	10-15	195	5.34
	15-20	88	2.41
Mental health	10-20	2145	58.88
	20-30	1426	39.14
	30-40	72	1.98

IV. SINGLE CHILD FAMILY SAMPLE DESCRIPTION

The basic statistical characteristics of dependent, independent, and control variables are shown in Table 3. The number of one-child family survey was 3643. In terms of child gender, males accounted for 54.1% and women accounted for 45.9%. About parental marriage, married and live together as a spouse 88.44%, separation and no longer living as a spouse 0.6%, divorced or widowed 10.84%, never married 0.11%. As for parental education, 71.7% of them graduated from primary school or below, 19.35% from junior middle school, 7.88 % from high school or secondary school, and only 1.07% of them graduated from college or university with a master's degree or a doctor's degree. In terms of household income, 76% of single-child families earn less than 20,000 Yuan a year, 20,000 to 60,000 account for 18.5%, 3% from 60,000 to 100,000 Yuan, and 2.5% of households with incomes of more than 100,000. In terms of ability of daily life (ADL), 68.7% of the elderly meet no difficulties about daily-care, 23.55% of the elderly people have difficulty in life but can be done by themselves, with 5.34% of the elderly life is difficult and need help, no life ability of care for 2.41% of the elderly. As for mental health, 58.88% of the elderly few occasional relevant psychological problems, of which 39.14% of the old man sometimes would confront psychological problems, 1.98% of the elderly people most of the time would have sleep or various emotional problems.

A. Model

Since the living arrangement is an ordered variable from living with children nearly to living in a nursing home far away from children, it is ranked from 1-5 in order, which is suitable for ordered multi-logistic regression. Logistic regression is a

probabilistic nonlinear regression model. According to the above correlation analysis , this paper research the influencing factors of middle-aged people's living arrangement, and further analysis the consistency of the regression model of living arrangement of the elderly in one-child families. In Model 1, economic variables ("family income" and "individual income") were added to take into account the influence of economy on the living preference of parents of one-child families. From the perspective of family care, Model 2 is to add physical status variables ("ADL" and "mental health"). These two models examine the impact of each explanatory variable on the parental living arrangements of the only child family from the three aspects, including elderly's economic ability, physical health and mental health. This paper sets up the following model to study the relationship between the residential preference of the elderly in one-child families and the explanatory variables:

$$\text{Logit}[P(Y \leq j/x)] = \alpha_j - (\beta_1 x_1 + \beta_2 x_2 + \dots + \beta_p x_p)$$

In the regression equation, "Y" represents the residential preference of the elderly in single-child families, and "x" represents all explanatory variables, including the gender of children and the marriage, the education degree, income and health status of the elderly. In the model, "P" represents probability, "p" represents the number of explanatory variables, "α" represents the intercept, and "j" represents the critical value in the ordered logistic regression. Among them, all explanatory variables showed significant influence on the difference of the willingness to live in the interactive table.

V. RESULTS

TABLE IV. THE MARGINAL EFFECT ANALYSIS OF THE FACTORS AFFECTING THE ELDERLY'S WILLINGNESS TO LIVE IN ONE CHILD FAMILIES (WITH A SPOUSE)

Dependent variables		Live with children	Live in the same village/community with children	Do not live in the same village/community with children	Live in a nursing home
Children's gender	son	0.106***	-0.078***	-0.012***	-0.012***
	daughter(Reference group)				
Parental marriage	Married and live with a spouse(Reference group)				
	Separation (no longer living as a spouse)	0.037	-0.028	-0.004	-0.004
	Divorced or widowed	0.062*	-0.048*	-0.006**	-0.006**
	Never married	-0.210	0.140	0.027	0.030
Parental education	Primary school and below (Reference group)				
	Junior high school education	0.300***	-0.252***	-0.021***	-0.020***
	High school or secondary school education	-0.075***	0.057***	0.008***	0.008***
	College degree	-0.170***	0.123***	0.019***	0.020***
	Bachelor degree	-0.114	-0.085	0.012	0.012
	Master's degree or above	-0.456***	0.234***	0.078	0.097
Income	Individual income	6.70e-06**	-5.06e-06**	-6.74e-07**	-6.87e-07**
	Family income	-5.58e-07***	4.21e-07***	5.62e-08***	5.27e-08***
Health	ADL	-0.0032	0.0024	0.0003	0.0003
	Mental health	-0.0018	0.0014	0.0002	0.0001
N		3058	3058	3058	3058

Notes: *p<0.1, **p<0.05, ***p<0.01

Next, the Logistic regression model will show whether the relevant factors have a significant influence on the preference of living arrangements under the control of relevant variables.

The study use stata13.0 to process data. Through the marginal effect analysis of the ordered logistic regression of each variable, it is more intuitive to verify the influence of each factor on whether the choice of the only child parents chooses to live with their children.

According to the marginal effect results (see Table 4/Table 5), the income has the most significant effect on the living arrangements of the parents of one child. The results confirm

that the key variable, gender of the only child has a significant impact on the way parents choose to live. Assuming the elderly parent has spouse, parents whose only child is a son are 10.6 percent more likely to choose to live with their child than parents whose only child is a daughter. Under the assumption that there is no spouse with the elderly, the parents with only children as sons have 6.1% more chance of living with their children than those with only children as daughters.

The results showed that the residential preference of the elderly in one-child families was significantly affected by children's gender, the marriage, education level, income and health situation of the elderly.

TABLE V. THE MARGINAL EFFECT ANALYSIS OF THE FACTORS AFFECTING THE ELDERLY'S WILLINGNESS TO LIVE IN ONE CHILD FAMILIES (WITHOUT A SPOUSE)

Dependent variables		Live with children	Live in the same village/community with children	Do not live in the same village/community with children	Live in a nursing home
Children's gender	son	0.061**	-0.040**	-0.040**	-0.011**
	daughter(Reference group)				
Parental marriage	Married and live with a spouse(Reference group)				
	Separation (no longer living as a spouse)	0.109	-0.078	-0.007	-0.017
	Divorced or widowed	0.043	-0.030	-0.003	-0.007
	Never married	-0.297	0.163	0.024	0.072
Parental education	Primary school and below (Reference group)				
	Junior high school education	0.204***	-0.151***	-0.011***	-0.029***
	High school or secondary school education	-0.042**	0.029**	0.003**	0.007**
	College degree	-0.088***	0.058***	0.006**	0.016***
	Bachelor degree	-0.007	-0.005	0.001	0.001
	Master's degree or above	-0.350	0.188**	0.028	0.086
Income	Individual income	6.82e-06*	-4.61e-06**	-4.43e-07*	-1.19e-06*
	Family income	-2.44e-07	1.65e-07	1.59e-08	4.27e-08
Health	ADL	-0.0050***	0.0034***	0.0003**	0.0008***
	Mental health	-0.0011	0.0008	0.0007	0.0002
N		3445	3445	3445	3445

Notes: *p<0.1, **p<0.05, ***p<0.01

A. *The Influence of Children's Gender on the Living Arrangement of the Elderly*

With or without a spouse, the odds ratio for the child's gender is less than one. This result indicates that the son's parents are less likely than the daughter's parents to live farther and more likely to live with their children. China has always been under the family system of patriarchal marriage, and the son has always the preferred object for parents to living with. It is still the mainstream idea of the society that men marry women. Most Chinese families still believe that married sons belong to their parents' families, and most of them need take the responsibility of supporting the old. Some scholar also agreed that the gender of children had an impact on the living arrangements of the elderly, and that the absence of sons would increase the probability of the elderly not living with their offspring. It can also be analyzed from the results that, parents with spouse have greater chance to live with sons than the one whom without spouse. Parents living with their sons will reduce some family conflicts. Mothers can help with their children's lives and bring their children. Fathers can help ease family conflicts such as mother-in-law and daughter-in-law relations.

B. *The Influence of Parental Marriage on the Living Arrangement of the Elderly*

Marital status has a direct influence on the living arrangement choice. The mutual support among the elderly is substitutable for parent-child support. Compared with the married group living with their spouse, the divorced or widowed group is more willing to live with their children. Without the spiritual comfort and life care of their spouses, they have a higher demand for child care and emotional comfort. Older people who are divorced or widowed play the most important role on their living arrangements. Older families who are divorced or widowed are more than 25% less likely to live with their children than those who live with their spouses. The reasons are as follows: first, the proportion of parents who have only one child never marry is very small. Secondly, there are also cases of unmarried adoptive children. The third reason is that the number of children has been determined and other variables have been controlled. The influence of marital status on the living arrangements of the elderly is mainly due to the fact that the spouse can provide care for the partner and reduce the dependence on the child[6]. When one of the parents of the only child dies, the other will find it difficult to adapt to the lonely life in his old age. The only child also needs to make corresponding adjustments to live together with the elders to meet his emotional needs, which will be recombined from an empty nest family and a core family into a stem family.

C. *The Influence of Parental Education on the Living Arrangement of the Elderly*

The level of education is related to personal ability, psychological orientation and self-protection consciousness, and also serves as an important indicator to measure the modernization concept and cultural preference of the elderly.

The degree of education will affect the individual's confidence and choice of the old-age problem to a certain extent. Older people with higher education tend to have independent space and their own communication network, and their higher income will also meet their economic needs of old care. The results show that compared with parents with primary school and illiterate education, high school, college, and even senior graduates are less likely to choose to live with their children. The higher the education level, the richer the social experience and experience, the better the understanding of social endowment, the greater the requirement for independent space, and the more willing to rely on themselves or the government for pension, so as to reduce the dependence on children.

D. *The Influence of Income on the Living Arrangement of the Elderly*

Economic factors play an important role in the choice of living arrangement. Regression results show that the higher personal income and family income are, the less likely they are to live with their children. Assuming the elderly has a spouse, the effect is consistent with the above, but only the individual income of the elderly has a significant impact on their choice of residence. Whether the elderly have economic independence has a significant impact on their living arrangements, and the economic income situation will not only affect their current life, but also influence their future lifestyle, thus affecting their preferences for living. One child Families with higher incomes is able to choose larger house for themselves and their parents to live with. Therefore, in the one-child family, the higher the family income, the more willing the parents would choose to live with the children. However, the economic situation does not definitely affect the living arrangements of the elderly, and children can still provide financial support to the elderly without living with the elderly. Therefore, the elderly who are not in a good financial condition do not necessarily choose to live with their children, among which more significant factors such as parent-child relationship and child gender are also taken into account.

E. *The Influence of Health Situation on the Living Arrangement of the Elderly*

Studies confirmed that the health of older people have an impact on their living arrangements. It is assumed from the results that in the case of without a spouse, the living self-care ability (ADL) or mental health status have no significant influence on the residential preference of the elderly in the family with only child. But if the old has no spouse, the opposite is true. Parents with weaker self-care ability are more likely to live with their children, and their children play the role of spouse care. The more independent parents are, the more likely they are to live independently. Living with their children is the most common option for the elderly, who tend to choose a healthy lifestyle when their health is declining. When the health status of the elderly gradually changes to good, the need for care will be reduced, and the parents who lived with their children may move out of their children's homes and live independently due to the improvement of their self-care ability. This reflects the slow development of China's pension service institutions at the present stage, and the life care of the elderly

is still mainly provided by families and children. At present, China's nursing homes have a small audience and unreasonable structure, which cannot meet the needs of the majority of the elderly.

VI. CONCLUSION

Based on the logistic regression analysis of the living arrangement of only-child parents for the elderly, the results of this paper are as follows:

First, parents of only children tend to live with their children. According to the research data, 30%-45% of parents of only children choose to live with their children, and 10% of the elderly prefer to live nearby.

With the development of China's urbanization and the evolution of family centralization, China's middle-aged and elderly people are experiencing the transition from traditional to modern endowment model. Although the family endowment has many drawbacks in the one-child family, the elderly still expect to live with their children in the old age, and this conclusion has been confirmed by related research by scholars. China has a long history of filial piety culture and "returns nurturing to parents". At the same time, parents of one child family have close relationship with their children. It is believed that the old-age support from other relatives and friends cannot be compared with the daily care and spiritual comfort from their children[9]. At the present stage, as China's old-age medical insurance still needs to be improved, the old-age security offered by children is more important.

Second, the gender of only child has a significant impact on the living willingness of parents. The parents of sons are more willing to live with their children than the parents of daughters.

Traditional Chinese culture often takes the son as the parent's future pension security, commonly known as the bring up sons to support parents in their old age. A one-child family with only one child means that parents will have only a son or a daughter, which lead to different living situation when child grow up[6]. Although the parents of only children cannot take up different attitudes toward their children's gender in terms of residence preference, actually, the proportion of sons living with their parents is significantly higher than that of daughters. It is still significant that we follow Chinese traditional living style of married wives living with their husbands reflected in today's one-child families[8].

Thirdly, parents' marriage, educational level, income and health situation of the one child family would affect living preference to some extent. Those with lower education, lower incomes and without a spouse would be more likely to live with their children. Without spouse living together, the self-care ability and mental health of elderly were worse, that's why they were inclined to live with their children.

Fourth, the only child family living arrangement has life cycle.

Rational choice theory holds that living arrangement is determined by one's own needs and economic conditions That is to say, according to the actual needs of the family and the existing conditions of the combination of relatives choose the lifestyle that can best meet the overall benefit of the family. Social exchange theory and life cycle theory usually have a certain influence on family residence choice. Different requirements of the parents and children in the different life cycle stages determine their different ways of living. When only children grow up and need to go out to study, or get married, parents at this period will change from living with their children to living apart from their parents. When the son or daughter in one child family has their own children, these next generations are still at the age when they need to be taken care of, which would cause the old parents need to help bring grandchild if they live together. This cyclical arrangement reflects the parents of the man's only child tend to take more responsibilities.

How to balance the family security, social security, self-security, and make them complement each other need further studies to solve the old age care problem of the only child family.

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