Gendered Impacts of Children and Living Arrangement
on Social Network Support of Chinese Older Adults

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ABSTRACT

Most extant literature on fertility history and social network support of older adults focuses on the elderly in advanced societies. Nevertheless, a limited number of studies explore how the culturally preferred family structure or living arrangement is related to older adults' network support in developing societies. This study sketches the Chinese context, paying particular attention to the filial piety and son preferences, and develops hypotheses regarding the fertility history, living arrangement and older adults' support from family and non-relative friend network. Specifically, we focus on the interplay of family structure, living arrangement and gender in older adults' network resources. Using nationally representative data of adults aged 60 and over in mainland China, we find that childless older adults are most disadvantaged in terms of family network support. Despite the patrilineal tradition, daughters are also important sources of family network support. In terms of support from non-relative friend network, older men, but not older women, who have no sons are least likely to receive support from friend network. Further, coresidence with partner and sons is related to more friend network support for older men but not for older women. Nevertheless, older rural women also receive more friend network support if living with sons, implying urban-rural differences in the influence of living arrangement on older adults' social network support.

SOCIAL NETWORK SUPPORT FOR PARENTS

Early research emphasizes the intergenerational transmission of social capital, focusing on the transmission from parents to their children (Coleman 1988). Yet, from the children-as-connectors perspective, children might also serve as social brokers and facilitate their parents' social network outside families. Using data collected from middle-class families in the United States and a child-centered approach, Offer and Schneider (2007) argue that ties between children help connect their parents to each other. Evidence from the Netherlands suggests that, compared to men aged between 40 and 59 years living with their children, childless men are less likely to turn to their families when in need or provide help to others in communities (Dykstra and Keizer 2009). One of the explanation is that having children serves as a vehicle for expansion of the parents' social networks and also an opportunity for generativity — a concern to support and guide the next generation (Erikson 1993). Because of the continuity of social networks over different stages in life course (Bost et al. 2002; Schwartz and Litwin 2018), the social support and exchange might also help prevent parents from becoming socially isolated as they age.

However, according to the compensatory theory of social support, the role of children or lineal kin in old age can be substituted by extended families, friends, or even community (Cantor 1989). A number of studies find that childless older adults have more friends and extended kin than their counterparts (e.g., Schnettler and Wöhler 2016; Mair 2019). This is partly because, as implied by the socioemotional selectivity theory, time perception is integral to human motivation, and constraints on time horizons motivate persons to prioritize emotional regulation goals (Carstensen *et al.* 1999; Carstensen 2006). Childless adults might actively construct and emphasize close but non-familial networks because they expect less family support as they age and have to adapt to the situation (Wenger 2009).

Further, as argued by Guiso et al. (2006), culture has long-term influence on individual preferences or values. Recent empirical studies further point to the cultural nuances and the spillover effects of children's characteristics on older adults' wellbeing. One study uses nationally representative data of Chinese residents aged 45 years or older to test the relationship between having a cadre child, who is considered as having political power, and older adults' health status. The results suggest that because older adults with a cadre

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child tend to be more comfortable and confident in daily interactions, they are more involved in social activities and thus have better self-reported health (Zhao et al. 2018). By conducting a comparative study among Southeast Asian societies, Teerawichitchainan et al. (2015) also find that coresidence with a child of culturally preferred gender significantly improves Vietnamese and Thai elders' emotional health.

CHINESE CONTEXT AND RESEARCH HYPOTHESES

Development idealism paradigm posits that, as influenced by globalization and modernization, the Western paradigm of modern family has powerful homogenizing forces and has changed gender relations, family structures and intergenerational relationships around the world (Thornton 2001). Nevertheless, a growing numbers of studies point out that, although East Asian societies have gone through rapid social and economic changes in recent decades, the marriage persists to be a patriarchal, familistic social organization, and limited change in family expectations and obligations has occurred (Ji 2017; Raymo et al. 2015). The family norms in Southeast and South Asia also remain, such that a majority of the elderly are still coresident with their children (Yeung et al. 2018). As argued by Kamo and Zhou (1994), the cultural effect on elderly family expectations and living arrangements still persists among elderly persons of Chinese and Japanese origin in the United States, despite of the influence of modernization and assimilation.

As suggested by previous studies, older adults' fertility history largely affects their network support from both family and friends, especially in societies with strong filial norms. For older adults, the informal support provided by children can hardly be compensated by extended kin, close friends or institutional support (Grundy and Read 2012). Thus, we expect that, compared to childless older adults, old Chinese parents receive more family support. Further, as one of the core values in East Asian society, filial piety expects the children or grandchildren to take care of their parents or grandparents (Whyte 2004). Having no children imposes stigma costs that the individuals fail fulfilling filial obligations and they might have no offspring take care of them as they age. As a result, childless older adults are less likely to be respected by extended kin or friends in communities, especially in rural areas. Moreover, the intergenerational support has also be mandated recently by legal obligations imposed by the Law of the People's Republic of China on Protection of the Rights and Interests of the Elderly (2012) that adult children have to frequently visit and care for their old parents. Consequently, the adult children's support to parents and the filial piety has been further emphasized and praised in recent Chinese public discourse.

Thus, we propose the first sets of hypotheses.

> *Hypothesis 1a: Old adults having children tend to have more support from family network.*
> *Hypothesis 1b: Old adults having children tend to have more support from friend network.*

The traditional Chinese family system, which is patriarchal, patrilineal and patrilocal, still dominates Chinese lives, especially in rural areas. In the tradition of patriarchal norms, sons, rather than daughters, are needed in funerary rituals and are the ones responsible for perpetuating the patrilineage, providing protection and old-age security (Croll 2000; Tao 2012). Thus, having male offspring is important in getting recognized in the neighbor and even obtaining higher socioeconomic status for the whole family. Using three-wave data from China Family Panel Studies, Zhang (2019) found that older respondents living in communities with ancestral temples, which are considered as proxies for traditional culture, tend to have higher probabilities of having sons and coresiding with adult or married sons. Evidence from Taiwan also suggest that sons are the main care providers for their old parents, while daughters only fulfill the sons' roles in the absence of sons (Lin et al. 2003).

Although Marxist egalitarian gender ideology used to be dominant in Chinese society at the height of the socialist era, several studies argue that the traditional gender role ideology and patriarchal norms remain unchallenged in Chinese families (S. Song 2012; Ji et al. 2017). During the marketization process in recent decades, the resurgence of Confucian patriarchy which aligns closely with the market-oriented discourse emphasizing the gendered work abilities and labor market outcomes leads to lower positions of women in the labor market (Sun and Chen 2015; Y. Zhang and Hannum 2015; M. Zhao 2018). Consequently, as

indicated by a number of studies, despite socioeconomic development, including rapid universal female education, the entrenched preference for sons over daughters persists with slow attenuation (Guilmoto 2009; Murphy, Tao, and Lu 2011; Lu and Tao 2015). This preference for sons, especially in the rural areas where the modernization process lags behind that in urban areas, leads to an increase of sex ratio of birth since 1980 with the rapid decline of fertility rate. Thus, given the power of culture, we further propose two hypotheses regarding the relationship between the gender of (coresiding) children and old adults' network support.

> *Hypothesis 2a: Old adults having son(s) tend to have more support from family network.*
> *Hypothesis 2b: Old adults having son(s) tend to have more support from friend network.*
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> *Hypothesis 3a: Old adults coresiding with son(s) tend to have more support from family network.*
> *Hypothesis 3b: Old adults coresiding with son(s) tend to have more support from friend network.*

Because the gender differences have been found in the influence of childrearing on parents' social network (Munch, McPherson, and Smith-Lovin 1997; L. Song 2012), we will test the hypotheses separately for old men and women.

DATA AND METHODS

Data

We used data from the China Longitudinal Aging Social Survey (CLASS), conducted by Renmin University of China. It is a longitudinal survey starting from year 2014, covering 28 provinces, autonomous regions, and municipalities in mainland China (see http://class.ruc.edu.cn for more detailed information regarding sampling design and data collection procedures). The survey collected detailed information on old adults' family/social network and support, family structure, living arrangement as well as their function limitations (ADL, IADL). In this study, we used data from the second-wave survey conducted in 2016, which included a nationally representative sample of 11,471 individuals aged 60 and over living in more than 450 villages or communities. Observations with missing data on dependent variables were dropped. Independent and control variables were imputed by multiple imputation by chained equations (MICE with 20 imputations for each model). The final analytic sample size was 11,465 with 5,830 for men and 5,635 for women.

Analytical approach

To test the proposed hypotheses, we constructed the dependent variable based on the abbreviated version of Lubben Social Networks Scale (LSNS), which demonstrated high levels of internal consistency for both studies in European and Chinese societies (Lubben et al. 2006, Tang et al. 2019). The scale consists of two subscales measuring perceived social network support from family and friends ties. For each subscale, there are three questions evaluating family or social ties: "How many relatives/friends do you see or hear from at least once a month?", "How many relatives/friends do you feel close to such that you could call on them for help?" and "How many relatives/friends do you feel at ease with to talk about private matters?". Following previous studies, the total scale score for family/friends ties is an equally weighted sum of its three items, ranging from 0 to 15.[2] The Cronbach alpha scores were 0.812 and 0.856 for the family subscale and the friends subscale, respectively.

The main independent variables included the number of alive children, the number of sons and daughters and living arrangement. A set of dummy variables were constructed for fertility history: no child, one child (reference group), two children and three or more children. For living arrangements, observations were classified into seven mutually exclusive groups: living alone, living with partner only (reference

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[2] The score is coded as 0 for no friends/relatives, 1 for one, 2 for two, 3 for three or four, 4 for five through eight, and 5 for nine or more friends/relatives.

group), living with son(s), living with daughter(s), living with partner and son(s), living with partner and daughter(s) and others.[3]

Demographic variables, including age and its quadratic term, marital status, household registration (*hukou*) status and educational attainment (illiterate, primary school as the reference group, middle school, high school or above), were controlled in all models. The marital status was defined as married versus unmarried. *Hukou* status includes agricultural *hukou* and non-agricultural *hukou* (reference group).[4] Other individual attributes were also controlled in our analysis. Observations' current occupations or occupations prior to retirement include managers/professionals, agricultural workers and others. The pension status (have pension versus no pension as the reference group), which partially represents observations' socioeconomic status, and the logarithm of annual income was also included in the model. Variables representing locations (central cities as the reference group, suburban and counties, and rural areas) and regions (East coast as the reference group, West, Northeast, and Central China) were also included to capture regional variation. Activity of daily living (ADL) and instrumental activity of daily living (IADL) were also controlled in the analysis, accounting for the elderly's health conditions. Higher ADL and IADL scores represent more capacity for independent living.[5]

Because both of the dependent variables were continuous, we used linear regression models to test the hypotheses with robust standard errors obtained by clustering at provincial level. In the first step, we only included the variables of the number of children and control variables. Then we distinguished the sons from daughters in the second model. In the third model, variables representing living arrangement were added, after which their interaction terms with *hukou* status were included. All the models were conducted separately for men and women.

SUMMARY OF PRELIMINARY RESULTS

Table 1 and 2 present results from linear regressions of family network support and friend network support. Results indicated that, for both old men and women, more children were correlated with more support from family network, which is consistent with previous studies and **supports Hypothesis 1a** (Table 1, M1 & W1). The second model differentiated the gender of children. As shown, in terms of family network support, both the number of sons and the number of daughters lead to more family support, **supporting Hypothesis 2a**. Nevertheless, having daughters also lead to more support from family network, contrasting the patrilineal traditions. After adding the variables of living arrangement (Table 1, M3 & W3), the number of sons and daughters still matter. Comparing to living with partner only, old adults get more family network support if they also live with their sons or daughters. The results **support Hypothesis 3a** while also suggest that coresidng with daughter(s) is also associated with more family support. The effect size is bigger for old men than for old women.[6] However, no significant difference was found between those living with partner only and those did not live with partner but with son(s) or daughter(s). Those living alone was the most disadvantaged group.

As shown in Table 2 M1 and W1, more children were also correlated with more support from friend network, **supporting Hypothesis 1b**. For old men, the number of sons, but not daughters, was associated with friend network support. Also, comparing to living with partner only, an old man could get significantly more support from friend network if he also lives with son(s). Nevertheless, for old women, neither the number of sons or daughters, nor the living arrangement was associated with friend network support.

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[3] The last category only accounts for less than 9 percent and 8 percent for male and female subsamples, respectively.

[4] Observations with agricultural/non-agricultural *hukou* includes those who transferred from agricultural/non-agricultural *hukou* to resident *hukou* in recent *hukou* reform.

[5] ADL includes basic routine activities, such as eating, dressing, toileting, walking indoors, bathing, as well as continence. The scale ranges from 0 to 6, and the Cronbach alpha score was 0.888. IADL includes making a phone call, climbing one flight of stairs, walking outdoors, taking public transportation, shopping, managing money, lifting a 5-kg bag of rice, preparing meals and doing housework. The scale ranges from 0 to 9, and the Cronbach alpha was 0.895.

[6] The difference between the coefficients of living with partner and son(s) for old men and old women is significant at 0.1 level (two-tailed test), according to t test.

Further, the gender difference in the coefficients of living with both partner and son(s) is statistically significant at 0.01 level by a t test. Thus, the results **only support Hypotheses 2b and 3b for old men**.

We further added the interaction terms between living arrangement and *hukou* status to see if there is any urban-rural difference (Table 3). As shown, compared to living with partner only, living alone is only negatively associated with less social network support for rural old men but not for urban old men. But the advantages in social network support related with living with both partner and son(s) remain for men with either agricultural or non-agricultural *hukou*. For old women, comparing to living alone, living with partner and son(s) or with partner and daughter(s) is only associated with more family network support for those with agricultural *hukou*. Living with son(s) or with partner and sons is positively related to friend network support for women with agricultural *hukou*, but not for women with agricultural *hukou*.

Table 1 OLS: Perceived support from family network of old adults by gender

	Men			Women		
	M1	M2	M3	W1	W2	W3
Number of alive children (Ref: one child)						
No child	-1.733***			-1.137*		
	(0.246)			(0.414)		
Two children	0.557*			0.506***		
	(0.215)			(0.118)		
Three or more children	0.801**			0.849***		
	(0.228)			(0.197)		
Number of alive sons (Ref: one son)						
No son		-0.840***	-0.669***		-0.382*	-0.313*
		(0.158)	(0.142)		(0.158)	(0.151)
Two sons		0.163	0.189		0.291***	0.305***
		(0.145)	(0.140)		(0.076)	(0.077)
Three or more sons		0.401	0.434*		0.665**	0.657**
		(0.201)	(0.201)		(0.204)	(0.201)
Number of alive daughters (Ref: one daughter)						
No daughter		-0.442*	-0.414*		-0.155	-0.162
		(0.197)	(0.184)		(0.147)	(0.142)
Two daughters		0.204	0.181		0.385***	0.361***
		(0.134)	(0.122)		(0.096)	(0.095)
Three or more daughters		0.552*	0.487*		0.609***	0.569***
		(0.217)	(0.207)		(0.149)	(0.145)
Living arrangement (Ref: with partner only)						
Living alone			-0.739**			-0.565**
			(0.202)			(0.167)
With son(s)			0.454			0.321
			(0.301)			(0.208)
With daughter(s)			0.430			0.149
			(0.330)			(0.290)
With partner and son(s)			0.994***			0.467**
			(0.244)			(0.161)
With partner and daughter(s)			0.871*			0.597
			(0.331)			(0.316)
Others			0.230			0.338
			(0.227)			(0.181)
***Hukou* status (Ref: agriculture)**						
Non-agriculture	-0.405	-0.371	-0.372	-0.230	-0.217	-0.203
	(0.218)	(0.216)	(0.211)	(0.171)	(0.168)	(0.168)
Other variables controlled	YES	YES	YES	YES	YES	YES
N	5830	5830	5830	5635	5635	5635

Note: Robust standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed tests).

Table 2 OLS: Perceived support from friend network of old adults by gender

	Men			Women		
	M1	M2	M3	W1	W2	W3
Number of alive children (Ref: one child)						
No child	-1.002***			-0.557		
	(0.214)			(0.315)		
Two children	0.244			0.458***		
	(0.176)			(0.120)		
Three or more children	0.346			0.419*		
	(0.207)			(0.193)		
Number of alive sons (Ref: one son)						
No son		-0.605**	-0.443**		-0.259	-0.222
		(0.163)	(0.155)		(0.162)	(0.163)
Two sons		0.120	0.139		0.153	0.153
		(0.145)	(0.142)		(0.108)	(0.107)
Three or more sons		0.038	0.065		0.068	0.054
		(0.218)	(0.222)		(0.194)	(0.195)
Number of alive daughters (Ref: one daughter)						
No daughter		-0.043	-0.031		-0.018	-0.021
		(0.193)	(0.188)		(0.145)	(0.140)
Two daughters		0.105	0.090		0.130	0.120
		(0.139)	(0.129)		(0.137)	(0.136)
Three or more daughters		0.164	0.117		0.219	0.211
		(0.152)	(0.158)		(0.173)	(0.168)
Living arrangement (Ref: with partner only)						
Living alone			-0.424			-0.115
			(0.211)			(0.209)
With son(s)			0.434			0.312
			(0.252)			(0.270)
With daughter(s)			0.073			-0.000
			(0.526)			(0.243)
With partner and son(s)			0.909***			0.095
			(0.243)			(0.178)
With partner and daughter(s)			0.641			0.299
			(0.356)			(0.412)
Others			0.233			0.332
			(0.136)			(0.230)
Hukou **status (Ref: agriculture)**						
Non-agriculture	-0.427	-0.407	-0.397	-0.156	-0.159	-0.154
	(0.271)	(0.270)	(0.261)	(0.207)	(0.207)	(0.210)
Other variables controlled	YES	YES	YES	YES	YES	YES
N	5830	5830	5830	5635	5635	5635

Note: Robust standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed tests).

Table 3 OLS: Perceived support from social network of old adults, rural-urban differences in living arrangement influence

	Men		Women	
	Family network	Friend network	Family network	Friend network
Living arrangement (Ref: with partner only)				
Living alone	-1.103***	-0.923**	-0.680**	-0.190
	(0.224)	(0.248)	(0.218)	(0.230)
With son(s)	0.585	0.303	0.555	0.753*
	(0.340)	(0.283)	(0.283)	(0.319)
With daughter(s)	0.671	-0.378	0.545	0.519
	(0.598)	(0.833)	(0.511)	(0.511)
With partner and son(s)	1.009**	0.796**	0.739***	0.452*
	(0.275)	(0.244)	(0.191)	(0.180)
With partner and daughter(s)	0.834	0.250	1.366*	1.107
	(0.496)	(0.527)	(0.500)	(0.653)
Others	0.373	0.259	0.376	0.514*
	(0.286)	(0.227)	(0.198)	(0.234)
***Hukou* status (Ref: agriculture)**				
Non-agriculture	-0.377	-0.634	0.040	0.271
	(0.287)	(0.310)	(0.234)	(0.265)
Living arrangement (Ref: with partner only) #				
***Hukou* status (Ref: agriculture)**				
Living alone # Non-agricultural *hukou*	1.038**	1.376**	0.226	0.128
	(0.313)	(0.433)	(0.189)	(0.256)
With son(s) # Non-agricultural *hukou*	-0.446	0.268	-0.582	-1.106**
	(0.297)	(0.354)	(0.305)	(0.339)
With daughter(s) # Non-agricultural *hukou*	-0.436	0.777	-0.672	-0.911
	(0.619)	(0.926)	(0.551)	(0.639)
With partner and son(s) # Non-agricultural *hukou*	-0.036	0.253	-0.617*	-0.800**
	(0.399)	(0.361)	(0.264)	(0.270)
With partner and daughter(s) # Non-agricultural *hukou*	0.065	0.717	-1.213*	-1.309
	(0.536)	(0.496)	(0.569)	(0.765)
Others # Non-agricultural *hukou*	-0.380	-0.111	-0.058	-0.390
	(0.358)	(0.410)	(0.308)	(0.393)
Other variables controlled	YES	YES	YES	YES
N	5830	5830	5635	5635

Note: Robust standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed tests).