

Grandparents' Financial Contributions to Grandchildren in Rural China

Introduction

Providing care for grandchildren represents one of the most important ways that grandparents contribute to the well-being of their families. In nations with emerging economies, such as China, grandparents play an especially important role by taking care of grandchildren whose parents have migrated (Chen et al., 2011). Grandparents also provide economic resources to their grandchildren, although this contribution is much less considered than their childcare labor. Rural China represents an illustrative context in which to examine the economic contributions of grandparents, given high rates of rural-to-urban labor migration, the large number of children and elders left-behind in rural villages, and the prolific involvement of grandparents providing custodial care for grandchildren in those villages. Further, grandparental investments are primarily occurring in the rural context of a patrilineal family system that privileges children and grandchildren in the male-line of descent (Graham, Larsen, & Xu, 1998).

In this investigation, we used a sample of older adults in rural China to examine expenditures made by grandparents for the benefit of their grandchildren. Using a direct, detailed, and family-specific measure of spending on grandchildren, we examined whether variation in economic transfers to grandchildren is related to (1) financial flows from adult children, (2) living arrangements between grandparents and grandchildren, (3) gender of the lineage to which grandchildren belong, and (4) gender of grandchildren.

Financial Transfers to Grandchildren

Research suggests that grandparents benefit the well-being of grandchildren, particularly in rapidly developing economies with a highly mobile labor force. Grandparents may serve as conduits for remittances received from migrant children that potentially improve the health and educational achievement of grandchildren in their care. For instance, young children of migrant

parents in China have been shown to have greater weight-for-height ratios as a result of remittances received by grandparents (Mu & de Brauw, 2015). Remittances from migrants have also been linked to greater educational achievement of grandchildren in Morocco (Bouoiyour & Miftah, 2015) and Columbia (Medina & Cardona, 2010).

Advantages that accrue to grandchildren from income transfers to grandparents are not limited to remittances from adult children. For instance, newly allocated pension benefits provided to older South African women were associated with better weight-for-height status of girls under five years of age (Duflo, 2003). Evidence from Indonesia showed that grandparents with sufficient resources tended to be net providers to their descendants, serving as the “economic backbone of the multigenerational family” (p. 9), and improving the well-being of grandchildren (Schröder-Butterfill, 2004).

Intensive involvement with grandparents appears to confer human capital benefits to grandchildren. The importance of contact with grandparents for the educational achievement of grandchildren has been demonstrated in the U.S. and U.K. (Chan & Boliver, 2013; Entwisle & Alexander, 1995; Mare, 2011). In the Asian context, coresident grandparents have a positive impact on the academic performance of grandchildren in Taiwan (Pong & Chen, 2010), and have been found to enhance the transmission of educational advantage in rural mainland China (Zeng & Xie, 2014). Another study in China found that grandchildren not raised by their parents had better education outcomes when their primary caretakers were grandparents (Falbo, 1991). What these studies suggest is that there are social and socio-economic pathways by which grandparents influence the life chances of their grandchildren. Yet, it is unclear the degree to which grandparents’ solicitude involves elevated monetary contributions, and whether monetary contributions follow the same gendered pattern as does care. This study examines flows of

economic resources to grandchildren in the context of custodial living arrangements, intergenerational remittances, and a patrilineal cultural system in rural China.

Family Factors in Financial Transfers to Grandchildren

The broad concept of filial altruism—providing to family members in need—informs much of the literature on intergenerational transfers in developing and recently developed nations (Becker, 1981). However, intergenerational transfers also operate under rules of reciprocity, such as when grandparents care for grandchildren and receive remittances in return (Ko & Hank, 2013; Silverstein & Cong, 2006). The blended concept of reciprocal-altruism underlies the *corporate group/mutual-aid* model of Chinese kinship (Sun, 2002) in which assistance is provided across generations based on exigent need as well as exchange motivations (Secondi, 1997; Lillard & Willis, 1997).

Although altruism and exchange remain powerful meta-theoretical frameworks for understanding household decision-making in resource allocation, they remain more descriptive than explanatory in ascribing motivation to transfer behaviors, and rarely incorporate cultural factors in their application (Kohli & Künemund, 2003). Our conceptual framework focuses on three intermediate family factors, particular to the context of rural China, that potentially shape grandparents' allocation of financial resources for the benefit of grandchildren: financial supply, household demand, and patrilineal cultural norms.

Financial supply. Financial supply in our consideration is represented by economic transfers received by grandparents from the parents of their grandchildren. Economic support for family members in rural China often follows an upward flow with adult children providing more money to parents than parents provide to their children (Silverstein, Cong, & Li, 2006). These

payments, often in the form of remittances from migrant children, sustain the household of grandparents and their co-residential partners which may include grandchildren.

Evidence points to significant economic strain experienced by grandparents caring for grandchildren when remittances received from adult children are insufficient to meet the needs of their grandchildren (Noveria, 2015). This suggests that grandparents may close the gap by providing their own resources to assist the grandchildren in their care. The literature is silent on the question of whether grandparents are simply conduits through which transfers from migrant children benefit grandchildren or whether grandparents contribute beyond remittances received. We know little about whether remittances fully account for the money spent by grandparents on the grandchildren in their custodial care.

Household demand. Grandparents in rural China are prolific providers of care for children left-behind in rural villages by parents who have migrated to take higher wage jobs in urban areas (Chen, Liu, & Mair, 2011). Grandchildren in rural China who are left-behind in their natal villages by migrant parents are particularly vulnerable and suffer from physical, psychological, and social deficits. Research shows that left-behind children disproportionately suffer from developmental delays (Su, Li, Lin, Xu, & Zhu, 2013), weak school engagement (Wen & Lin, 2012), and lower grades (Zhou, Murphy, & Tao, 2014), as well as mental health problems such as clinical depression (He, Fan, Liu, Li, Wang, Williams, & Wong, 2012) and low self-esteem (Shi, Bai, Shen, Kenny, & Rozelle, 2016). Assuming that grandchildren under the care of their grandparents are disadvantaged by their family circumstances, economic support of custodial grandchildren can be interpreted as driven by demand or need. This support provides compensatory benefits to the educational, medical, and nutritional status of left-behind children (see Zhou et al., 2015).

Patrilineal cultural norms. There is a strong normative basis for grandparents taking care of grandchildren in rural China. Confucian precepts of filial obligation, which for centuries have guided relationships in the Chinese family, extend up and down multiple generations, including the responsibility of grandparents for the welfare of their grandchildren (Fan, 2006). Therefore, we anticipated that cultural factors play a role in economic transfers to grandchildren. In traditional Chinese culture, Confucian ethics endorse patrilineal favoritism such that downward intergenerational transfers follow male-lineages in the family (Greenhalgh, 1985; Miller, 2004). Parents are expected to invest as much as possible in their sons' schooling and marriage, and provide them a disproportionate share of familial assets. First-born sons are particularly favored given the primacy of this kinship position, which carries with it unique privileges and responsibilities in Chinese culture (Li & Wu, 2011).

In contrast, daughters are often perceived as “temporary” family members, as they are expected to integrate into their husbands' families following marriage (Miller, 2004). Consequently, parents tend to invest more time and monetary resources in their sons than in their daughters, a pattern particularly acute in more traditional rural China (Chen et al. 2011; Hu, 2017). Consequently, grandparents are more likely to provide care for the offspring of their sons than those of their daughters (Wu & Li, 2014; Xie & Zhu, 2009).

Although we know relatively little about whether these gender disparities extend to grandchildren, evidence suggests that it might. Sons are expected to maintain the patrilineal family line by having sons themselves to continue the family name (Ikels, 2004; Murphy, Tao, & Lu, 2011). The privileged status of grandsons is seen in research showing that parents with newborn sons are more likely to receive childcare support from grandparents than those with newborn daughters (Wang, 2015). This patrilineal tilt reflects a gender system that favors male

heirs in the filial line of descent. However, less is known about whether financial transfers from grandparents to grandchildren follow the same gendered pattern of patrilineal favoritism as custodial care, and, if so, whether financial transfers to sons' families is even more generous when those families contain grandsons.

Hypotheses

Our aim in this investigation is to empirically distinguish three family factors that enhance the provision of economic support to grandchildren. We expect that grandparents provide greater financial contributions when they receive more money from adult children, have custodial responsibility for grandchildren, and when payments follow the male line of descent. Specifically, we hypothesized that grandparents are more likely to provide financial resources, as well as provide greater amounts, to grandchildren (1) whose parents provide greater upward economic transfers, (2) with whom they live in skipped-generation households, (3) who descended from first-born sons, and (4) who are grandsons, particularly those grandsons descended from first-born sons.

Method

Sample

We used data from the Longitudinal Study of Older Adults in Anhui Province, China. Located in the eastern region of China, Anhui province is largely rural with significant outflows of population due to labor migration (Anhui Statistical Bureau, 2015). The sample was selected using a stratified multistage random sampling of individuals 60 years of age and older living in rural townships of the Chaohu region of the province. In households consisting of multiple dwellers in the eligible age range, one older adult was selected at random to be the primary

respondent. The baseline sample was derived in 2001 and consisted of 1,715 respondents, representing a 95.3% response rate (Silverstein & Cong, 2006).

Follow-up surveys were conducted in 2003, 2006, 2009, 2012 and 2015 with replenishment sub-samples added in 2009 and 2015 to balance the age distribution of the sample. We focus on 2015 data because our main variable of interest—expenditures on grandchildren—was first measured in this wave of measurement. The full 2015 sample consisted of 1,243 respondents, including 765 survivors from the original sample and 478 from replenishment samples.

The analytic data structure consisted of multiple families (parents and their children) nested within grandparents. Because our interest is in financial transfers made to dependent grandchildren, we only considered 900 grandparents who had at least one grandchild 16 years of age or younger, representing 1,784 parent-level observations. We did not consider one parent who died, despite having children in the eligible age-range. Missing values occurred at grandparent and parent levels of analysis. We excluded 28 grandparents who had missing values on independent variables based on their own characteristics, representing a loss of 45 parent-level observations. We further deleted 106 parent-level observations due to missing values based on characteristics of parents and/or their children, including 8 parent-level observations with missing data for the dependent variable. Taken together, a total of 151, or 8.46%, of parent-level observations were omitted from the analysis. Thus, the final sample consisted of 1,633 parent-level dyads nested within 831 grandparents.

A second analysis considered the gender composition of grandchildren as a factor structuring financial transfers. Because questions about the gender of grandchildren were asked only about those in the families of first-born and second-born children of each grandparent, a

reduced sample consisting of 870 parent-level dyads nested within 585 grandparents was used to examine the question of whether male-lineage preference in transfer behavior extends to the gender of grandchildren.

Measurement

Dependent variable. The dependent variable in our analysis was expenditures made by grandparents for the direct benefit of their grandchildren. Grandparents were asked how much money in total they gave to all grandchildren within each adult child's family over the past year. Respondents provided exact amounts in each of the following spending categories: (1) tuition, (2) food and clothing, (3) medical treatment, (4) pocket money, and (5) other expenses. Amounts were reported in RMB currency where 100RMB was equivalent to about \$16 at the time of the survey. Respondents who were not able to provide exact amounts were asked to choose from the following supplemental RMB categories: 1=less than 50, 2=50-90, 3=100-199, 4=200-499, 5=500-999, 6=1000-2999, 7=3000-4999, 8=5000-9999, 9= 10000 or above. Grandparents reported categorical amounts in at least one spending category for 1.5% of parent-level observations. We excluded 8 observations for whom grandparents reported neither exact nor categorical amounts in a spending area. The dependent variable was constructed by adding exact amounts across the five categories for each set of grandchildren, supplemented by the median value of reported categories if exact amounts were not reported.

Independent variables. We considered variables describing characteristics of grandparents and parents/grandchildren. At the grandparent-level, we included age (in years), gender (1=female; 0=male), marital status (1=married and living with spouse; 0=other marital statuses), education (1=some education; 0=no education), and current or previous occupation (1=agricultural work; 0=other work). To measure health, we used a summed score of the amount

of difficulty performing 15 instrumental and personal activities of daily living, ranging from 0 to 30, with a higher score indicating worse functional health status. We included self-reported health as a continuous variable, ranging from very good (1) to poor (4). We also controlled for the total number of paternal grandchildren age 16 or younger to account for overall patrilineal demand for grandparents' resources.

Household income of the primary respondent and spouse (if any) was calculated as the logged sum of labor income, pension income, contributions from relatives other than children, and money from other sources. For two grandparents who reported zero household income, we assigned the value of one before log-transforming the variable.

We assessed grandchildren's living arrangements at the parent-level of analysis with respect to all three generations. Three categories of living arrangements were considered: not living with the grandparent; living with the grandparent but not with parents (skipped-generation), and living with both the grandparent and at least one parent (three-generation household). Living in a skipped-generation household is considered a demand factor due to the sole responsibility that grandparents have for grandchildren, as well as grandchildren's known vulnerability, in this type of living arrangement. We note that among grandparents living in skipped-generation households 94% provided full-time care for grandchildren and 92% were living with grandchildren of labor migrant parents.

Financial transfers from parents (the adult children of grandparents) were reported as the total amount of money received from each child in the past year (log-transformed). Birth order and gender of parents were identified using three dichotomous variables oriented by their relationship to grandparents: first-born sons, first-born daughters, second-born or higher order sons, and second-born or higher order daughters. In order to provide generalized results beyond

specific group comparisons, these variables were effect-coded so that comparisons were made to the unweighted mean across sub-groups.

Other characteristics of parents included age (in years), education (1= more than primary school; 0 = primary school or less), marital status (1 = married and live with spouse; 0 = other marital statuses), and occupation (1 = agricultural work; 0 = other forms of work or no work). We also controlled for the number of grandchildren who were 16 years of age or younger, and age of the youngest grandchild to adjust for compositional differences in each family.

For the analysis that focused on the gender composition of grandchildren in each family, we created a dichotomous variable differentiating families with only grandsons (=1) from families that contained only granddaughters or mixed gender grandchildren (=0). This approach provided the best specification among the various gender combinations tested. Finally, an interaction term between birth order/gender of parents and gender composition of grandchildren was tested.

Analytic strategy. As there is a considerable proportion of grandparents who did not provide money to grandchildren (64.7%), we used two-part random effects regression in Stata v.14.2 as our analytic approach (StataCorp, 2015), predicting first whether or not a transfer to grandchildren was made, and then the monetary value of transfers given that one occurred. A two-part model is typically recommended when the distribution of the dependent variable is characterized by a large number of zeros, and where the transition from zero to a positive value and the level of that positive value are potentially guided by different processes (Belotti et al., 2015).

Random effects modelling was used because we observed strong within cluster similarity as indicated by moderate to high intraclass correlations (ICC). In the unconditional dichotomous

model $ICC = .91$, and in the unconditional continuous model $ICC = .67$. We note that large ICCs—particularly with respect to the dichotomous outcome—imply that variation in outcome variables is largely between grandparents; consequently, differences in grandparent characteristics may partially account for parent-level effects in our analyses. Although fixed effects models would better identify how grandparents discriminate between different types of children/grandchildren, the inclusion criteria for such a model (grandparents with multiple parent-level observations that vary on the outcome variable) would have severely reduced sample size (see Clark & Linzer, 2015). For example, applying a logistic fixed effects analysis reduced the effective sample size from 870 to 88 parent-level observations. This sample reduction occurred in part because more than one-third (35%) of grandparents contributed only one parent-level unit to the analysis.

A second consideration revolves around whether the two-part model or a selection model is more appropriate. The basic question is whether sample selection in the first equation introduces bias in the second equation, necessitating a statistical adjustment. The answer to this question depends on theoretical and statistical considerations. Theoretically, we ask whether grandparents not providing money to their grandchildren have a latent potential to spend unusually more or less on grandchildren were their circumstances different (e.g., had fewer resource constraints). Because there is no obvious mechanism to suggest that this hypothetical might be true, we used an unadjusted two-part model as suggested by Madden (2007). Statistically, a selection modelling approach would be appropriate if the decision to provide money is correlated with the amount provided, as indicated by correlated error terms in the two equations. As a robustness check, we estimated a Heckman selection-adjusted model (available

upon request) and found no substantive differences in coefficients and no evidence of correlated error, further supporting use of a two-part model (see Madden, 2007).

The first part of the two-part model employed logistic random effects regression to predict the log odds of whether grandparents spent any money on grandchildren in each family. The second part of the model employed random effects regression to predict continuous log-transformed amounts spent on grandchildren among those receiving a transfer. Equations are built hierarchically introducing grandparents' characteristics first, then adding characteristics of adult children and grandchildren.

Results

We present characteristics of grandparents in Table 1. The average age was 68 years, slightly more than half (53%) were men, most (78%) were currently married, 60% had no formal education, and the large majority (87%) had engaged in occupations related to agriculture. The average family size was over three children (3.3). We note that almost half the grandparents in the sample (48%) provided full-time care for at least one grandchild and 41% spent money to benefit at least one set of grandchildren.

---INSERT TABLE 1 ABOUT HERE---

Characteristics of parents and their families are shown in Table 2. Parents averaged about 38 years of age and slightly more than half (55%) were sons, of which 13% were oldest sons. The large majority (85%) were currently married, 63% were educated at the middle school level or higher, and 18% worked in agricultural occupations. The average family size was 1.5 children. In terms of multigenerational household arrangements, 82% of grandchild-sets were not living with the selected grandparent, 12% were living in skipped generation households, and 6% were

living in three-generation households. Grandparents provided money to almost two-thirds (65%) of grandchild-sets, among whom the average logged amount provided was 5.86 (≈ 350 RMB).

---INSERT TABLE 2 ABOUT HERE---

Results from the logistic random effects model—the first stage of the two-part model—are presented in Table 3. The first equation, introducing grandparents' characteristics, shows that younger grandparents, and grandparents with higher income, less functional disability, and fewer paternal grandchildren were more likely than their counterparts to provide money to their grandchildren. This last finding suggests that grandchildren receive fewer resources per set when paternal grandchildren are more plentiful, possibly the result of competition for grandparents' resources. Turning to characteristics of parents, added in the second equation of the logit model, we found that grandchildren whose parents were first-born sons were more likely to receive money from grandparents compared to grandchildren from other lineages. In addition, grandchildren who lived in skipped generation households and whose parents provided more money to grandparents were more likely to receive financial transfers from grandparents when compared to other grandchildren. With parents' characteristics controlled, several characteristics of grandparents emerged as significant; grandparents with formal education and who worked in non-agricultural occupations were more likely than their counterparts to provide financial transfers to grandchildren.

---INSERT TABLE 3 ABOUT HERE---

The final two equations in Table 3 present estimates predicting the value of transfers made to grandchildren. Among grandparents' characteristics, only age and number of paternal grandchildren were significant, with younger grandparents and those with more paternal grandchildren making larger transfers to grandchildren. When parents' characteristics were

added in the last equation, these relationships ceased to be significant. This equation shows that grandchildren whose parents were sons, both first-born and later-born, received more money than other grandchildren, with the coefficient larger for grandchildren from first-born sons. In addition, grandchildren in skipped generation households received more money from grandparents than grandchildren in other living arrangements. Finally, grandchildren received more money from grandparents who received greater financial transfers from parents compared to those grandparents receiving less financial transfers.

We also examined the provision of money to grandchildren based on birth order/gender of parents as well as gender composition of grandchildren. The relevant main effects and interaction terms for the two-part random effects model are shown in Table 4 (control variables not shown). The first equation predicts whether money was provided and consists only of main effects. Results indicate that grandchildren whose parents were first-born sons of the designated grandparent were more likely to receive money compared to grandchildren whose parents were of other gender/birth order combinations. Gender composition of grandchildren was of little consequence in predicting whether grandchildren received money from the grandparent.

---INSERT TABLE 4 ABOUT HERE---

When interaction terms were added to the logistic equation, a significant interaction was found between parents who were first-born sons and parents whose families consisted only of sons. We calculated predicted probabilities from the equation to show variation in the likelihood of making a transfer based on characteristics that comprised the interaction, holding other covariates constant at their mean values. These probabilities presented in Figure 1 reveal that among the eight possible combinations of lineage/birth order of parents and gender composition

of grandchildren, the likelihood that grandparents provided money to grandchildren was greatest in lineages consisting of first-born sons whose families contained all grandsons.

---INSERT FIGURE 1 ABOUT HERE---

In the final two equations of Table 4, predicting the amount of money transferred to grandchildren, no main effects or interaction terms were statistically significant.

Discussion

This analysis examined monetary transfers for the benefit of grandchildren in rural China and relied on supply/demand and cultural frameworks to derive hypotheses based on family circumstances and gender preferences of grandparents. Supporting an explanation consistent with principles of altruism, we found that household structure was an important factor in whether transfers were made, as well as the size of those transfers. Grandchildren in skipped generation households, almost all of whom had labor migrant parents and received full time care from grandparents, were relatively advantaged by the financial transfers they received from grandparents. That this result held when upward financial transfers from parents were controlled, implies that grandparents transferred out-of-pocket resources to their dependent grandchildren. The commitment of grandparents, typically exemplified by their custodial responsibility for grandchildren, extends to monetary support as well, presumably benefiting their grandchildren's well-being and optimal development.

Grandparents also served as conduits of money transfers from their adult children. Grandparents served to redistribute the supply of intergenerational financial support to grandchildren, either as intended by parents or on a voluntarily basis. We also found evidence that income was an important factor in determining whether economic contributions were made to grandchildren, and functional health enhanced the amount transferred to grandchildren.

Household income provides the means for making transfers to grandchildren and good health acts as an accelerator of these transfers possibly by freeing up financial resources that would otherwise have been used for health care costs.

Monetary transfers to grandchildren also have a strong cultural component, as we found that financial transfers were targeted at paternal grandchildren, as well as to grandsons who were born to first-born sons. That favoritism shown to sons within rural Chinese families extends to grandsons implies that economic resources flowing down the extended male-lineage has consequences for gender inequality in at least two generations. How this double-gendered preference on the part of grandparents disadvantages the successful development of granddaughters must await future research. It is likely that the educational achievement, health, and well-being of granddaughters are adversely affected by the observed gender imbalance in transfers. At the same time, we recognize that patrilineal norms have undergone change in China, particularly in urban China, with daughters increasingly adopting rights and responsibilities in the family (Hu, 2017; Whyte & Xu, 2003; Yan, 2003). How quickly this change will diffuse to the rural population is unknown, but it is probably just a matter of time before greater gender equality reduces preferential treatment of children based on patrimony.

We note that the interaction between first-born sons and all-grandson families held only when predicting the binary variable of whether or not a transfer was made and not when predicting the value of transfers. This suggests that gender of adult children and grandchildren together forms the basis for discrete decisions about the initiation of resource flows. After passing this “cultural threshold,” the value of economic transfers is equivalent in size across gender groups, suggesting a conditional form of gender egalitarianism in the largesse of grandparents.

The attribution of altruistic motivations to our findings should be tempered by the possibility that financial transfers made by grandparents have implicit or explicit expectations on the part of their adult children to reciprocate by providing care, financial support, and/or housing to more generous grandparents. Our point-in-time analysis does not permit the investigation of dynamic exchanges. Further, cultural imperatives to give to the families of sons may be strategic, given knowledge that first-born sons have the responsibility to support their older parents. More than likely, mixed motives are involved in spending decisions that benefit other generations. Altruism and self-interest are intertwined with cultural preferences that together characterize the corporate group/mutual aid model of resource distribution within Chinese families (Sun, 2002).

There are several limitations to our analysis that deserve mention. First, because the sample derives from one particular region in a single province, we urge caution in extrapolating our results to other rural areas of China. Although there is little reason to consider the Chaohu region of Anhui Province to be unusual, our findings may not be fully generalizable.

Second, the sample of grandparents was left-censored at age 60, thus omitting younger grandparents who may be more likely engaged in productive labor and income generation that would benefit their grandchildren.

Third, we were not able to examine spending on specific grandchildren, only family clusters of grandchildren. Nor did we have information about the condition of grandchildren or took account of specific budget categories. This reduced some precision in our ability to determine whether financial contributions were directed at specific types of grandchildren and their particular needs. In addition, gender composition of grandchildren needed to be considered in the aggregate, necessitating use of an extreme condition in which all grandchildren in a family were grandsons.

Finally, we acknowledge that a fixed effects approach would have been preferable to random effects in identifying person-specific spending choices, but was not feasible given its restrictions.

In spite of limitations noted above, this investigation, to our knowledge, is the first examination of direct economic contributions by grandparents to grandchildren in China. That we studied this issue in *rural* China—a part of the world with high rates of labor migration, strong traditional beliefs, and a high degree of family interdependence—puts into sharp relief how societal context intersects with intergenerational processes to reveal distinct family patterns. As such, it serves as proof-of-concept that there are meaningful differences in financial allocations to grandchildren based on whether they are in custodial living arrangements with grandparents, as well as their position in a still strongly gendered system in rural China that privileges the male line of descent. These results complement what we know in the literature about time transfers to grandchildren in the form of care, by adding knowledge about another valuable resource provided by grandparents.

In conclusion, we note that having custodial responsibility for grandchildren—long considered an invaluable contribution on the part of grandparents in China—carries with it a financial component as well. We found that even when remittances from parents were controlled, custodial grandparents spent more money on their grandchildren compared to other grandparents. Under the assumption that grandchildren in skipped generation households are particularly vulnerable, this result is consistent with *altruistic preference* model of family functioning in which family members serve each other's exigent needs in a coordinated and cooperative manner. Perhaps most striking is that male grandchildren in the patrilineal line of descent were relatively advantaged in the allocation of financial resources by grandparents. Taken together,

these results suggest that normative patrilineal preferences continue to guide financial decisions by grandparents above and beyond the supply and demand factors that typically have been the focus of intergenerational family research in this region of the world.

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Table 1. Characteristics of grandparents in analytic sample from Anhui survey, 2015 (N=831).

	<u>Mean or Proportion</u>	<u>SD</u>
Age in years	67.96	6.58
<u>Gender</u>		
Women	0.47	
Men	0.53	
<u>Marital Status</u>		
Married and lives with spouse	0.78	
Other marital statuses	0.22	
Number of children	3.29	1.29
Number of paternal grandchildren 16 or Below	1.44	1.09
Household income (log)	8.50	1.12
<u>Education</u>		
No formal education	0.60	
Some formal education	0.40	
<u>Occupation</u>		
Agriculture, animal husbandry, or fishery	0.87	
Other occupation or never worked	0.13	
Poorly rated health	2.58	1.00
Functional disability score	2.71	5.28
<u>Money provided to grandchildren</u>		
Money provided	0.41	
No money provided	0.59	

Note: Sample includes respondents who have at least one grandchildren aged 16 or below. Observations with missing values on any variables are excluded.

Table 2. Characteristics of parents in analytic sample (N=1,633).

	Mean/Proportion	SD
Age in years	38.05	5.43
<u>Birth order and gender</u>		
Oldest son	0.13	
Oldest daughter	0.11	
Other sons	0.42	
Other daughters	0.34	
<u>Marital status</u>		
Married lives with spouse	0.85	
Other marital statuses	0.15	
<u>Educational attainment</u>		
Primary school or less	0.37	
Junior-middle school or greater	0.63	
Age of youngest child	8.87	4.38
<u>Occupation</u>		
Agriculture, animal husbandry, or fishery	0.18	
Other occupation or never worked	0.82	
Number of children	1.52	0.55
Number of children 16 or below	1.31	0.50
Money provided to grandparents (log)	5.82	2.82
<u>Living arrangement of grandchildren</u>		
Not living with grandparent	0.82	
Skipped-generation household	0.12	
Three-generation household	0.06	
<u>Grandchildren received money from grandparent</u>		
Received	0.65	
Did not receive	0.35	
Amount of money grandchildren received from grandparent ^a (logged value)	5.86	1.19

Note: Sample includes parents who have at least one child aged 16 or younger.

Observations with missing values on any variables are excluded.

^aBased on 577 parents whose children received money from grandparent

Table 3. Logit and linear random effects models predicting money received from grandparent.

	Logit Models (n=1,633)		Linear Models (>0) (n=577)	
<u>Grandparents' Characteristics</u>				
Age	-0.25***	-0.31***	-0.03*	-0.01
Female ¹	-0.18	0.29	-0.26	-0.19
Married and living with spouse ²	0.21	0.18	0.08	0.02
Some education ³	0.96	1.58*	0.01	0.11
Occupation agricultural ⁴	-1.47	-2.22**	0.09	0.01
Household income (logged value)	0.71**	1.09**	0.05	0.08
Functional disability	-0.12*	-0.20*	-0.02	-0.02
Poorer self-rated health	0.16	0.50	0.02	0.01
Number of paternal grandchildren aged 16 or less	-0.44*	-1.06***	0.11*	-0.01
<u>Parents' Characteristics</u>				
Age		-0.07		0.00
First-born son of grandparent ⁵		0.87*		0.22*
First-born daughter of grandparent ⁵		-0.55		-0.18
Second or higher order son of grandparent ⁵		0.32		0.13*
Junior-middle school or greater ⁶		0.34		-0.04
Married and lives with spouse ²		-0.81		-0.18
Number of children under 16 years		0.47		0.08
Occupation in agriculture ⁴		-0.45		-0.14
Skipped-generation household ⁷		2.57***		0.35***
Three-generation household ⁷		-0.28		0.20
Money provided to grandparent		0.31***		0.04*
Age of youngest child		0.08		-0.01
Constant	9.89*	11.91*	7.19***	6.36***
Sigma_u	5.11	7.31	0.98	0.82
Sigma_e	---	---	0.75	0.68
ICC	0.89	0.94	0.63	0.59
Log Likelihood	-782.53	-706.00	-	-
R-square	---	---	0.04	0.27

*p<0.05; **p<0.01; ***p<0.001

Note: Omitted groups are: ¹Male; ²Not married and living with spouse; ³No education; ⁴Non-agricultural or never worked; ⁵Second or higher-order daughter (effect coded); ⁶Primary school or less; ⁷Not Living with grandparent (effect coded).

Table 4. Logit and linear random effects models predicting money received from grandparent.

	<u>Logit Models (>0 vs. 0)</u> n=870		<u>Linear Models (>0)</u> n=357	
<u>Main effects</u>				
Grandchildren all sons ¹	-0.00	-0.02	-0.04	-0.03
Parent first son of grandparent ²	1.50**	1.34*	0.12	0.14
Parent second son of grandparent ²	0.33	0.26	0.03	0.02
Parent first daughter of grandparent ²	-0.95	-0.85	-0.13	-0.14
<u>Interaction terms</u>				
Grandchildren all sons * Parent first son of grandparent		1.09*		-0.13
Grandchildren all sons * Parent second son of grandparent		-0.36		0.03
Grandchildren all sons * Parent first daughter of grandparent		-0.15		0.02
Constant	7.98	7.90	7.22***	7.21***
Sigma_u	9.09	8.26	0.81	0.81
Sigma_e	---	---	0.69	0.69
ICC	0.96	0.95	0.58	0.58
Log Likelihood	-454.31	-451.10	---	---
R-square	---	---	0.29	0.29

*p<0.05; **p<0.01; ***p<0.001

Notes: Sample is restricted to grandchildren whose parents were first-born and second-born children. All main effect variables in Table 3 are controlled.

Omitted groups: ¹Some granddaughters; ²Second or higher-order daughter (effect coded).

Figure 1: Predicted probabilities that grandchildren received money from grandparent by gender composition of grandchildren and birth order/gender of parents

