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Intergenerational Ties in Context: Grandparents Caring for Grandchildren in China

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Abstract

Guided by theories and empirical research on intergenerational relationships, we examine the phenomenon of grandparents caring for grandchildren in contemporary China. Using a longitudinal dataset (China Health and Nutrition Survey), we document a high level of structural and functional solidarity in grandparent-grandchildren relationships. Intergenerational solidarity is indicated by a high rate of coresidence between grandchildren and grandparents, a sizable number of skipped-generation households (no parent present), extensive childcare involvement by non-coresidential grandparents, and a large amount of care provided by coresidential grandparents. Multivariate analysis further suggests that grandparents' childcare load is adaptive to familial needs, as reflected by the characteristics of the household, household members, and work activities of the mothers.

INTRODUCTION

Originating from a Parsonian perspective on family processes, the family convergence theory and the modernization theory of aging predict that industrialization and urbanization inevitably lead to the defunctionalization of extended kinship. Specifically, family convergence theory posits a convergence of family life towards the marital relationship and the nuclear family, regardless of national or cultural contexts (Goode 1970). Similar to this perspective, modernization theories of aging posit that this shift toward the nuclear family structure would result in the decline of older relatives' favored, functional status in the family (Burgess 1960; Cowgill and Holmes 1972). At the beginning of the 21st century, however, the opposite seems to have occurred: intergenerational relationships are becoming increasingly important in societies at different levels of economic development. In the U.S., for example, intergenerational ties have become more central to individuals' lives as a response to marital instability and demographic shifts (Bengtson 2001; Uhlenberg 2009; also see review by Swartz 2009). At the other side of the globe, the historically strong relationship between parents and children in China has persisted, despite a dramatically changing national socioeconomic context (Chen 2005; Logan and Bian 1998, 1999; Short and Zhai 1996). Contemporary data on intergenerational ties suggest a more complex story of the combined influence of household demography, culture/norms, and strategic pathways. In this paper, we examine the role of grandparents in China—a nation with strong cultural traditions regarding extended kin and one that has experienced rapid economic and

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industrial development over the last several decades. In particular, we focus our research lens on the role of grandparents in providing care for grandchildren in China. This topic provides a lucid demonstration of the strength of intergenerational solidarity among grandparents, parents and grandchildren.

Grandparents caring for grandchildren are an increasingly common experience for many families in both urban and rural China. This trend is a clear divergence from China's traditional cultural pattern of intergenerational exchange. The concept of filial piety, which historically emphasized the responsibility of children for parents, is now balanced with reciprocal or altruistic help from aging parents. Accurately described by Silverstein, Cong and Li (2007) as a "widespread" but "loosely documented" phenomenon, research on caregiving by grandparents in China has been extremely limited and research evidence tends to be indirect. For example, while coresidence between aging parents and adult children in China has been well-documented in the family literature (e.g., Chen 2004; Davis and Harrell 1993; Logan, Bian, and Bian 1998; Zeng and George 2001; Zhang 2004), we do not know much about the extent to which young, pre-school aged grandchildren coreside with grandparents, particularly when parents are absent from the household. It has become increasingly common for young adults to migrate away in search of better economic opportunities while leaving their children to be cared by the grandparents (see Silverstein, Cong, Li 2006). Yet, there has been no estimate of the prevalence of skipped-generation households (grandparents living with grandchildren, with no parent generation present) in contemporary China. Further, we know even less about the extent of care provided by coresidential grandparents. Are they comparable to what parents typically do, or do grandparents merely play an auxiliary role? In addition, whereas grandparents caring for grandchildren is common in China, there is little consensus on what level of care they typically engage in (Chen, Short and Entwisle 2000; Hermalin, Roan and Perez 1998; Parish and Whyte 1978; Unger 1993). Finally, we understand little about the configuration of individual, household, and community characteristics in accounting for the range of grandparents' childcare involvement. For example, does the patriarchal tradition in China lead to a heavier contribution by paternal grandparents? Does grandparents' childcare load adjust to mothers' labor force participation? Does the availability of daycare centers in the community reduce the need for grandparents to be involved?

This paper is the first study that systematically examines the prevalence, intensity, and determinants of grandparents caring for grandchildren in contemporary China, using the China Health and Nutrition Survey (CHNS 1991CHNS 1993CHNS 1997CHNS 2000CHNS 2004). We maintain that the phenomenon of grandparents caring for grandchildren not only reflects the centrality of family in traditional Chinese culture, but also exemplifies a relationship that has been largely transformed in a rapidly changing society. Modernization/convergence theory, which is largely culturally-ideationally-grounded, treats traditional values as a normative prescription and assumes the dissolution of traditional values under the pressure of economic development and influence of "Western" culture. In contrast, we view culture as "a tool kit rather than a doctrine" (Logan and Bian 1999:1254). In doing so, we consider "family changes as an outcome of strategic behavior in which people follow the culturally constrained array of opportunities available to them" (Thornton and Fricke 1987).

THEORETICAL FRAMEWORK AND BACKGROUND: THE ROLE OF STRUCTURE, CULTURE, AND STRATEGY

In the growing body of research on grandparents' experience, one of the most persistent themes is heterogeneity among grandparents and ambiguity of the norms related to grandparenthood (see review by Szinovacz, 1998). For example, in terms of household structures, living arrangements vary from "not living together," to "coresidence," (where

parents, grandchildren, and grandparents sharing the same residence), to "skipped-generation" households (where parents are not present) (Pebley and Rudkin, 1999). When it comes to caregiving of grandchildren by grandparents, the role of grandparents ranges from "uninvolved," to "occasional helper" or "long-term surrogate parent" (Hirshorn 1998). Furthermore, variations in norms and national contexts impact the implementation of grandparents' provision of care from one society to the other (Hank and Buber 2009; Ikels 1998).

Research on grandparents as childcare providers in China has been sparse. A number of studies examine the outcome of the caregiving experience, such as the mental well-being of grandparents or grandchildren (Falbo 1991; Goh 2009; Silverstein, Cong and Li 2007). Other studies provide indirect evidence of grandparents' childcare involvement in their research on maternal work and childcare (Chen, Short and Entwisle 2000; Short et al. 2002). In our endeavor to understand the complex milieu of grandparents' caregiving, we provide a review of the China background and relevant literature, drawing loosely from the intergenerational solidarity framework, family adaptive strategy, and the life course perspective ("linked lives" and "historical time and place") to explore structural, cultural, and strategic contexts (Moen and Wethington 1992; Silverstein, Giarrusso and Bengtson 1998).

THE STRUCTURAL CONTEXT: CORESIDENCE AND BEYOND

The structural context of grandparents caring for grandchildren is reflected in the concept of structural solidarity, which refers to the opportunity structure that facilitates interactions between grandparents and grandchildren, with geographic proximity between the generations being of primary importance (Silverstein, Giarrusso, and Bengtson 1998). While there are no studies specifically focusing on living arrangements between grandparents and grandchildren in China, researchers on intergenerational relationships extensively study family structures and living arrangements between parents and their adult children in China and other Asian countries (Kawabe and Shimizu 1994; Knodel and Debavalya 1997; Lavely and Ren 1992; Tsui 1989; Weinstein et al. 1990).

Existing studies of intergenerational relationships in Asia and China reveal that, historically, extended family has been the dominant family form in East Asian countries, with adult sons (at least one of the sons), wives, and descendants living in the same house with their parents. Industrialization and urbanization are believed to be powerful forces contributing to a decline in coresidence levels. Statistics from the 2000 Census in China illustrate both change and continuity in family forms: while the nuclear household is the dominant family type and the average household size is as low as 3.51, the majority of the elderly population (age 65+) coresides with their children (Zeng and Wang 2003). Other survey-based research confirms the coexistence of a high level of coresidence and increasing popularity of nuclear household forms since the 1990s (Chen 2005; Logan, Bian, and Bian 1998; Zhang 2004).

The above-mentioned research on living arrangements between parents and adult children provides valuable information about the level of coresidence between grandparents and grandchildren, as adult children usually live in the same household. However, we also note several caveats, which reveal gaps in the literature on intergenerational relationships. First, caregiving by grandparents sometimes takes place when the parental generation is absent, i.e., skipped-generation households. Massive rural to urban migration results in younger generations leaving home to seek employment in the cities, leaving children behind to be cared for by grandparents. Second, non-coresidential grandparents living in close proximity to their families often provide childcare, reflecting the "network" or "enwebbed" extended family (Greenhalgh 1984; Logan, Bian, and Bian 1998). So far, there is no empirical

documentation on the extent of coresidence between grandparents and young grandchildren, particularly when parents are absent. Nor has there been any report on the availability of grandparents living in different households. Documenting descriptive patterns with regard to the structure of the household and grandparents' care for grandchildren (non-coresidential, coresidential, skipped-generation) is a key first step in understanding intergenerational ties in the context of China.

THE CULTURAL CONTEXT: TRANSFORMED FILIAL PIETY

The importance of cultural norms for intergenerational ties is reflected in the heterogeneity and ambiguity of grandparental roles cross-culturally. In the US, for example, the majority of grandparents follow a norm of "non-interference" in intergenerational relationships and do not assume a central role in caring and rearing grandchildren (Cherlin and Furstenburg 1986). Yet, there are cultural/normative variations. African American and Hispanic grandmothers, for example, tend to play a larger role in nurturing grandchildren compared to White grandparents—a pattern that is not only the result of socioeconomic disadvantage but also likely reflects distinct variation in family and community cultural norms (Fuller-Thomson and Minkler 2007; Gibson 2005; Hogan, Hao, and Parish 1990; Minkler and Fuller-Thomson 2005; Peres 1986; Pruchno 1999; Williams and Torrez 1998).

In traditional Chinese society, intergenerational exchange is guided by the Confucian norm of filial piety, one of the central pillars of cultural and moral ideals. Under the norm of filial piety, parents command absolute subordination from their adult children and children are obligated to prioritize their parents above all other responsibilities. Further, the traditional patriarchal nature of filial piety prioritizes paternal above maternal relations. Given such a strong convention of intergenerational exchange, it is not surprising that there are no specifications of formal obligation of grandparents to grandchildren in traditional Chinese culture. In contrast, in contemporary rural and urban China, it is now increasingly common for grandparents to play a major caregiving role. It not only reflects the strong tie between parents and adult children historically, but also indicates a significant cultural emphasis on collective family interests over individual interests. As we elaborate in the next section of the paper, childcare provided by grandparents could be interpreted as a family adaptive strategy to maximize the well-being of the whole family, by alleviating mothers' burden and enabling them to pursue economic opportunities. Interestingly, it also suggests that the meaning of filial duties is changing. No longer a simple patriarchal mandate, the construct of filial piety progressively reflects the norm of reciprocity, where taking care of grandchildren can be seen as a bargaining strategy that guarantees them old age support (Croll 2006).

Nonetheless, despite the widespread nature of grandparental childcare, there is a lack of knowledge on the exact capacity of grandparental involvement. It is often assumed that coresidential grandparents provide childcare, yet data are often not available on the extent of their involvement. By examining the prevalence and intensity of childcare involvement by coresidential grandparents and comparing them to that of the mother, we examine descriptive evidence to determine if there is a high level of structural and functional solidarity embodied by this particular type of intergenerational exchange. Further, we test for the existence of the cultural legacy of patriarchy by examining 1) the availability of maternal versus paternal grandparents who are non-coresidential in the descriptive analysis; and 2) the difference in childcare involvement between paternal versus maternal coresidential grandparents in the multivariate analysis. As explained further in the next section, we examine the availability of daycare centers in the community to gauge the childcare needs of the family. Many studies show that women ranked grandparents' help as the "best" and often more desirable than paid help, such as childcare centers (Goh 2009; Short et al. 2002; Whyte 2003). Thus, if we find that grandparents' childcare involvement is

not affected by community childcare resources, it could be an indirect demonstration of the strength of intergenerational solidarity.

THE STRATEGIC CONTEXT: FAMILY ADAPTIVE STRATEGY AND FUNCTIONAL SOLIDARITY

In addition to being an aspect of cultural expectations, grandparents caring for grandchildren can be portrayed as a display of functional solidarity as well as a part of a family adaptive strategy. Caregiving for young grandchildren is an important form of instrumental support for the family and is embodied in the concept of functional solidarity, which refers to the degree of helping and exchanges of resources between family members (Roberts and Bengtson 1991). From the perspective of family adaptive strategy, grandparents taking care of grandchildren could reflect household members adaptively responding to changing external constraints and opportunities for the benefit of the household (Moen and Wethington 1992; Yan 2003). Research on American grandparents finds that occasional babysitting by grandparents often gives adult children temporary relief and may ease the burden on employed young mothers (Presser 1989). Importantly, grandparent involvement with grandchildren may increase when adult children face difficulties, such as unemployment, bankruptcy, divorce, incarceration, or drug abuse (see review by Gibson 2005; Hirshorn 1998; Hogan, Hao, and Parish 1990; Peres 1986).

Such interconnections between family members also reflect the social dynamics of “linked lives” and “historical time and place,” notions made explicit by the life course perspective (Elder 1998). The “linked lives” principle conceptualizes family members as embedded in a network of shared relationships. Further, the “historical time and place” principle views individuals’ experiences as contextualized by geographic location and time period. We view intergenerational relationships in contemporary China through the lens of these two life course principles. Grandparents caring for grandchildren represents an evolved intergenerational relationship from its historical past. At the same time, grandparents’ involvement in childcare may not necessarily reflect individual choices, but could be collective arrangements to maximize the well-being of the family in the context of a booming market economy. First, the conflict between maternal work and childcare is intense in China. Women’s labor force participation rates are extremely high in China, due in part to the communist government’s active promotion programs in the past, and also due to strong incentives to get ahead financially in an era of fast economic growth. Further, work arrangements are often not flexible. Unlike women in other settings, who often use part-time work as a way of balancing work and childcare demands (Connelly 1992; Klerman and Leibowitz 1999; Presser 1989), flexible work arrangements are generally not available in China, as labor supply far exceeds demand. Even in rural areas, where agricultural work is considered more compatible with childcare, women have to combine multiple work activities and thus carry a heavy load of paid work (Entwisle and Chen 2002).

Given these difficulties, parents in China often rely on help from grandparents to balance the needs of work and childcare. Indeed, in China’s economic context, it has been argued that households rather than individuals ought to be considered the operative economic unit (Gao 1994; Jacka 1997; Korinek et al. 2006). Both market and non-market work activities are often coordinated among family members as an outcome of resource demands and power relations (Chen 2004). Grandparents’ care for grandchildren could be due to grandparents’ lower opportunity costs in the labor force compared to the mother, who is younger and better educated.

Finally, because of the surplus of agricultural labor, parents often migrate from rural to urban areas in search of work— leaving children behind with their grandparents in skipped-

generation households, creating a major demographic trend. Starting in the 1980s, massive rural to urban migration resulted in a sizeable "floating population" ("temporary" migrants) that reached nearly 79 million by the 2000 Census estimate (Liang and Ma 2004). This phenomenon makes grandparental caregiving a necessity in many families. With young children left behind, many grandparents have to assume primary caregiving responsibility in these skipped-generation households—a trend that still requires documentation in China.

Taken together, structural and functional solidarity in intergenerational linked lives and the adaptive nature of the family as a unit creates the unique context for grandparents caring for grandchildren in China. In our subsequent analysis, rather than examining these influences as separate and competing processes, we emphasize their overlapping and interconnected qualities as revealed through household structure and other characteristics of the household, grandparent, child, community, and mother's work.

RESEARCH QUESTIONS AND HYPOTHESES

Our descriptive analysis documents the structural and functional dimension of intergenerational solidarity. We ask the following questions. What is the extent of coresidence with grandparents? In addition, to what extent do coresidential grandparents participate in providing childcare? How does this participation compare to that of coresidential *mothers*? What alternative forms of childcare exist outside of the household? What is the availability of help from non-coresidential grandparents? Finally, do paternal and maternal grandparents differ in their extent of coresidence or likelihood to care when they are non-coresidential?

Following this descriptive overview, our hypotheses for the multivariate analysis are organized around the structural, cultural, and adaptive/functional context. First, we hypothesize that household structure shapes grandparents' caregiving. The absence of parents in the household is both a structural characteristic and an indication of heightened need. We predict that living in a skipped-generation household is associated with higher involvement of grandparents. In addition, due to the patriarchal tradition in China, we predict that paternal grandparents are more involved in caregiving. As the society undergoes rapid socioeconomic changes, however, the cultural tradition has changed. For example, daughters are reported to play an increasingly important role in providing old age support to parents (Cong and Silverstein 2008; Whyte and Xu 2003; Xie and Zhu 2009). Thus, it is possible that maternal grandparents are just as involved as paternal grandparents.

Second, we hypothesize that the level of childcare provided by grandparents responds to familial needs. Specifically, the level of childcare grandparents provide is positively associated with the mother's work, i.e., a heavier work load for the mother leads to higher demand for alternative childcare givers, and therefore, higher involvement of grandparents. Familial needs are also reflected by characteristics of grandchildren, grandparents, households and community. For example, the presence younger children and/or multiple children in the house will likely yield heavier childcare demands. Grandparents' childcare load is expected to be higher in skipped-generation households than in households where the parents are present.

Third, we hypothesize that a number of community factors will influence the level of grandparents' caregiving. The availability of formal support resources, childcare facilities provided by governmental, religious, or civic organizations can influence the type of care provided by grandparents and their time commitments to caregiving tasks (Pebley and Rudkin 1999). In a sense, community resources can be seen as measuring familial need. If the perceived need is not as strong (e.g., widely available daycare resources), then grandparents are less likely to help. On the other hand, the lack of an effect of community

resources could be seen as indirect evidence for the normative and preferred nature of grandparents' care. For example, in the U.S., unmarried mothers living in areas with better access to welfare support are less likely to live with grandparents (Winkler 1992). Cost of housing also affects the chances of single mothers living with the grandparents. Availability of daycare facilities may also affect involvement from grandparents. We also expect to see urban and rural differences, as daycare facilities are more abundant in urban China.

CHINA HEALTH AND NUTRITION SURVEY

To explore our research questions and hypotheses, we use data from the China Health and Nutrition Survey (CHNS), an ongoing collaborative project of the Carolina Population Center at the University of North Carolina, and the Chinese Academy of Preventive Medicine in Beijing. A multistage, stratified, random cluster process was used to draw the sample from nine selected provinces and autonomous regions in China, including Liaoning, Heilongjian, Shandong, Jiangsu, Henan, Hubei, Hunan, Guangxi, and Guizhou[1]. Counties in these provinces were first stratified by income (low, middle, and high) and then four of them were randomly selected by a weighted sampling scheme. The provincial capital and one lower income city are also included in the survey. Villages and townships within the counties as well as urban and suburban neighborhoods within the cities were then randomly chosen. Within the 190 primary sampling units (more since 1997), 25 households were sampled at random as secondary sampling units. There are about 4,400 households in the overall survey, covering around 19,000 individuals. Although the CHNS is not a nationally representative sample of China, earlier studies have documented that the characteristics of the households and individuals in the CHNS sample corresponds closely to national statistics (for example, see Du, Lu, Zhai, and Popkin 2002; Entwisle and Chen 2002; Short, Ma, and Yu 2000). For more details on the data, see www.cpc.unc.edu/projects/china.

CORESIDENCE OF GRANDPARENTS AND GRANDCHILDREN

Care for young children is typically more intense than care for older children, so the CHNS only asks childcare questions in households with the presence of children aged 0–6. Therefore, to be consistent with the multivariate analysis, we limit the sample to households with pre-school aged children (aged 0–6) when assessing coresidence levels between grandparents and grandchildren. The 1991 sample includes 1,317 households and subsequent waves in 1993, 1997, 2000 and 2004 include 1,080, 796, 772, and 651 households, respectively, with children aged 0–6. Sample sizes decline considerably over time due to the panel design. Because younger people are more likely to leave the sample (for example, due to marriage and employment), the CHNS tends to under-represent young adults and children over time. Therefore, we do not display descriptive statistics by year, because it is not appropriate to interpret it as a trend (year by year results available upon request).

Figure 1 shows that 45 percent of grandparents coresided with children aged 0–6 in the pooled sample from 1991 to 2004[2]. Compared with other societies, the extent of coresidence between grandchildren and grandparents is striking in China. For example, the 2000 U.S. Census reports about eleven percent of the children under the age of 18 live in households with grandparents present (U.S. Census Bureau 2004). Hank and Buber (2009) reported about nine percent of grandparents older than 50 lived with their grandchildren in ten continental European countries, based on the 2004 Survey of Health, Aging, and Retirement

[1]Liaoning dropped out of the survey in 1997 and was replaced by another Northeastern province, Heilongjiang. Liaoning came back starting in 2004.

[2]The coresidence rate would have been even higher if it was estimated from grandparents' perspective, because a grandparent typically has more than one grandchildren given the past fertility schedule in China.

in Europe (SHARE). Figure 1 also shows that, consistent with the patrilineal and patrilocal norm in China, coresidence with paternal grandparents is about three times higher than that with maternal grandparents on average. In addition, five percent of the households are skipped-generation households (10 percent of the coresidential households), not an insignificant proportion.

CHILDCARE LOAD BY CORESIDING GRANDPARENTS

A high prevalence of coresidence between grandparents and young grandchildren clearly signals a strong sense of structural solidarity between generations. It is often assumed that grandparents who coreside with grandchildren provide help in childcare. Nonetheless, what remains unclear is the extent of help that these grandparents provide. This issue can be further explored in the CHNS, which asks all household members over age 6 whether they spend any time feeding, bathing, dressing, holding, or watching children age 6 or under who live in the household, and if so, how many hours of childcare they provided in the last week. This item not only allows us to examine grandmother's and grandfather's childcare hours, but also to compare them with those of the mother.

Table 1 compares hours of childcare per week by coresidential grandparents and mothers in China, 1991–2004. As reported in Table 1, the difference in time spent on childcare for pre-school aged children between mothers and grandmothers is remarkably small (4 hours on average). Unsurprisingly, grandfathers play a relatively small role in childcare (seven weekly hours on average, compared with 21.1 hours by grandmothers and 25.3 hours by mothers). After we stratify our sample into three groups based on children's age (children under age one, children aged 1–3, and children aged 4–6), the results further indicate that time spent on childcare by grandmothers actually exceeds that by mothers except for the infant group (under age one). Heavier involvement by mothers in the child's first year of life is expected, given the higher caregiving demands of infants. Overall, the comparison suggests that grandparents—especially grandmothers—play an extremely important caregiving role, arguably as significant as that of mothers, for the type of functional caregiving tasks examined in this analysis.

THE ROLE OF NON-CORESIDENTIAL GRANDPARENTS

Coresidential grandparents play an important role in childcare, yet non-coresidential grandparents are also actively involved in childcare by caring for grandchildren in their own homes. In addition to the childcare question for household members, the CHNS asks whether children under 6 are cared for by non-household members and whether the child is being cared for in 1) the household; 2) the home of the child's paternal grandparents; 3) the home of the child's maternal grandparents; 4) daycare centers, or 5) the home of other relatives. Figure 2 shows locations of childcare for children who are taken care of by people outside of the home. Because childcare can take place in multiple locations, the categories are not mutually exclusive. Daycare center is the most frequently reported option for households that use outside help for childcare. The proportion of children who were cared for in daycare centers is about 50 percent.

Paternal grandparents' households were the second most popular destination for care of young children (27 percent), followed by nearly 13 percent in maternal grandparents' households. This provides another piece of supplementary evidence that grandparents serve as important alternative childcare providers. The pattern displayed in Figure 2 is consistent with Figure 1, in that there still exists a strong patriarchal norm in Chinese society.

MULTIVARIATE ANALYSIS

Our descriptive analysis demonstrates a high level of functional and structural solidarity between grandparents and grandchildren when it comes to caregiving for young grandchildren. To what extent is grandparents' childcare involvement a response to familial needs and how does it adjust to the structural context and personal constraints? To answer these questions, we turn to multivariate analysis. We include 429 households with children aged 0–6 where at least one grandparent is present from 1991, 370 from 1993, 346 from 1997, 367 from 2000, and 372 from 2004. We stack the data into a household-year structure. About 42 percent of the sample is retained in 1993, 24 percent in 1997, 33 percent in 2000, and 29 percent in 2004. It is important to note that many households are not followed up in the CHNS when the children in the household age out of the target range (0–6). Due to the interval between waves, most of the children in sampled households aged out of the restricted age range at every other wave. The actual attrition rate due to follow-up loss (e.g., grandparents no longer coresiding with grandchildren or the entire household lost to follow-up) is low, about 11 percent cross years. On average, a household is observed 1.7 times across waves.

We use random-effects regression to model childcare activities by grandparents. The analytical strategy is illustrated by the following equation:

$$W_{ijt}=aH_{ijt}+\mathrm{b}G_{ijt}+K_{ijt}+\mathrm{d}C_{jt}+\mathrm{e}M_{ijt}+\alpha_{ij}$$

We model the weekly childcare hours (W_{ijt}) by grandparents in household i in community j at time t (1991, 1993, 1997, 2000, 2004), as a function of the characteristics of the household, the grandparents, the grandchildren, and the mother's work activities (if the mother is present in the household). Although our descriptive analysis suggests that grandmothers provide more hours of care than grandfathers, we do not distinguish between them and instead use the sum of weekly childcare hours provided by grandparents in the household in the multivariate analysis. Thus, each household consistently contributes one record per survey year, reducing the problem of non-independence. For about a third of the households in the sample where only one grandparent resides, the dependent variable is the care hours of the one grandparent (either grandmother or grandfather). Our preliminary analysis shows that grandfathers often become much more involved in childcare when grandmothers are not present.

With the use of panel data, we are in a much better position to control for the effect of possibly unobserved variables, indicated by α_{ij} in the equation (Hsiao 1986). For example, altruism is often considered an important influence on patterns of intergenerational exchange and support (Lee, Parish, and Willis 1994). However, it is often difficult to assess the influence of family altruism, as it is extremely rare to have direct measures. Some grandparents may be more altruistically motivated or may enjoy spending time with children much more so than others. Such a characteristic of the grandparent could appear as an unmeasured individual-specific, time-invariant error component, producing heterogeneity bias, which can seriously affect coefficient estimates (Petersen 1993). The panel data and the use of random-effects models allow us to correct for such unmeasured heterogeneity. We treat the residual as a time invariant random variable and assume it takes a normal distribution $N(0, \sigma_{ij})$. All the predictor variables in the model are time-varying and the coefficient estimates represent weighted averages of the within-individual (i.e., change over time) and between-individual effects (Gould 2001).

We include five groups of independent variables in the model, the descriptive statistics of which are presented in Table 2. Collectively, these characteristics represent the overlapping structural, cultural, and strategic contexts of grandparents' caregiving. For household characteristics (H_{ijt}), we include measures of household structure, namely, whether the household is patrilocal versus matrilocal, whether it is a skipped-generation household, and whether both grandparents are present in the house. We also include per capita family income (logged) and whether anyone works in the state sector (as a proxy for availability of daycare centers).

Age (average age of two grandparents if they are both present), whether one of grandparents is working or not, and education (if either grandparent has higher than primary school education) are included in our analysis as grandparents' characteristics (G_{ijt}). An average grandparent in our sample is 60 years old with less than primary school education and is actively working (see Table 2). We did not include grandparents' health conditions because of a concern for endogeneity. Most of the grandparents in the sample are healthy. Grandchildren's characteristics (K_{ijt}) such as gender, age in years, and presence of other children aged 0–6 and 7–14 years in the household are also included in the model. An average grandchild in households with coresidential grandparents in our sample is a three year old without siblings. To control for the local community context, we also include community level characteristics (C_{jt}) such as urban/rural residence, percent of agricultural labor force, and availability of daycare center. The availability of daycare centers in the community increased from 27 percent in 1991 to 52 percent in 2004 (results not shown), reflecting a recent trend in the growing acceptance and increasing supply of daycare services in China.

The last group of variables that we include in the model captures mother's work patterns (M_{ijt}). The CHNS asks questions on work activities such as wage work, agricultural fieldwork, and sideline activities (e.g. fishing, having a small household business, raising livestock, and gardening). Following measures used in previous research (Entwisle and Chen 2002; Short et al. 2002), we construct a modified typology of work patterns that takes into account different types and combinations of work activities. The five category typology captures both the intensity and compatibility (with childcare) of mothers' work in a transitional economy such as China:

- Wage workers, mothers with a full time wage job in industry or services;
- High-intensity farmers, mothers who participate in both agricultural fieldwork and any sideline activities;
- Fieldworkers, mothers who do agricultural fieldwork but do not participate in sideline activities (reference category);
- Sideline workers, mothers who participate only in sideline activities;
- Others, a residual category including women with no income generating activities from wage, farm or sideline activities.

RESULTS

Table 3 presents the results from the random-effects models examining predictors of weekly childcare hours by coresidential grandparents. We begin with a model of household characteristics only, and then subsequently add grandparents' characteristics, children's characteristics, community characteristics and mothers' work patterns. Overall, the results suggest that the amount of childcare provided by grandparents adjusts to the needs of family, yet at the same time is reflective of the cultural climate and constrained by their personal needs.

As expected, grandparents in skipped-generation households undertake a tremendous amount of caregiving. When children's parents are absent, they spend seven hours more in childcare per week than those living in households with the parents present. This finding is consistent across models, regardless of covariate adjustments. Models 1 and 2 also indicate that being a paternal grandparent increases grandparents' time spent on childcare. However, the effect is no longer statistically significant in subsequent models. This finding suggests that, while the patriarchal norm may still linger in China, grandparents' help is more reflective of other individual and household characteristics than family lineage alone.

At the same time, we find that childcare hours by grandparents are modified by their personal needs (see Model 2 and later models). Older and working grandparents spend less time in childcare than their counterparts. Due to employment obligations, having at least one working grandparent in the household reduces time spent on childcare by four to six hours per week. Similarly, older grandparents may have worse health, which may prevent them from spending more time caring for grandchildren.

Children's age is another important indicator of childcare demands (see Model 3 and later models). Unsurprisingly, grandparents in households with younger children spend significantly more time in childcare than those with older children. Further, grandparents spend eight more hours in childcare if there is more than one child aged 0–6 years at their residence. Interestingly, gender of the grandchild does not influence the time that grandparents spend on childcare. This finding indicates possible weakening of the norm of son preference, as many families only have one child because of China's one-child policy.

None of the community factors introduced in our analysis significantly influenced the time spent by grandparents on childcare (see Model 4 and later models). While daycare centers become increasingly available, grandparents' childcare involvement does not seem to decrease accordingly. These non-effects could reveal a deep cultural emphasis on grandparents' involvement with care for grandchildren, which prevails across regions, economic structures, and community resources.

The final model (Model 5) is based on a smaller sample, where mothers of the children are present in the household and their work patterns are introduced as another important gauge of potential childcare demand. The results clearly indicate that grandparents' level of care adjusts to mothers' work demand. As expected, in households where mothers work in wage jobs—and consequently have the least degree of flexibility in their daily/weekly schedule—grandparents provide the most amount of childcare. Compared with mothers who exclusively engage in agricultural fieldwork, which is often considered to be relatively compatible with childcare, mothers who are labeled as high intensity farmers (those combining fieldwork and sideline activities) get almost seven more hours of help from grandparents per week. In sum, the findings point to the importance of grandparents as potential childcare substitutes, particularly when mothers' work load is the most demanding.

DISCUSSION AND CONCLUSION

In the past half century, revolutionary changes, drastic government policies, and economic reforms have powerfully shaped family forms in contemporary China. Nonetheless, strong family obligations have not only survived but also remain central in Chinese family life. Evidence from this paper clearly testifies to the cohesiveness of linked lives and the adaptive intergenerational solidarity between grandparents and their children in contemporary China.

Intergenerational solidarity is prominently displayed in several different dimensions. First, the rate of coresidence between grandparents and young grandchildren in China is considerably high compared to many other societies, facilitating childcare involvement by

grandparents at a structural level. Second, a sizable proportion of young children are cared for in grandparents' houses. Third, grandparents who coreside with their grandchildren (grandmothers in particular) spend almost as much time in childcare as the mother (except for children in their first year of life). The extensiveness of care, the prevalence of coresidence, and the substantial involvement of non-coresidential grandparents indicate an exceptionally high level of structural and functional solidarity between Chinese grandparents and their families.

Results from our multivariate analysis further suggest that, despite increasing availability of daycare centers, grandparents continue to serve as important alternative childcare providers. Embedded within the changing historical-spatial context of China, the intergenerational relationship is remarkably adaptive. As a result of parental absence, grandparents in skipped-generation households are intensely involved with childcare. This is no trivial issue given that one tenth of the children in the sample live in such households. At the same time, in households where the parents are present and where the mother's work is less flexible (e.g., wage work) and more intense (e.g., combining fieldwork and sideline activities), grandparents contribute more of their time to caregiving. The availability of grandparent help often frees up time for other family members, particularly mothers, to pursue more lucrative opportunities in a transitional economy. This type of arrangement is consistent with previous studies of families in transitional economies (Chen 2004; Hermalin, Roan, and Perez 1998; Korinek et al. 2006; Short et al. 2002).

We conclude from our analysis that grandparents' care for grandchildren is simultaneously an expression of cultural continuity as well as a demonstration of the malleability of linked family lives. Contrary to the common fear that filial piety is facing its demise, it is "well and alive" in China (Whyte 2003). However, the structure of how filial duties are understood and delivered has fundamentally shifted. The historically hierarchical intergenerational relationship is replaced by one that emphasizes mutual care and reciprocal exchanges, reflecting a contemporary renegotiated and reinterpreted "intergenerational contract," in which both generations have taken new steps to invest (Croll 2006). Thus, while grandparents caring for grandchildren can be perceived as consistent with a historically strong tradition of intergenerational ties, it can also be seen as a pragmatically functional response to the needs of both generations.

The study also has a number of limitations. Our multivariate analysis focuses on coresidential grandparents only. Although we have information on non-coresidential grandparents, the extent of care they provide remains unclear. Previous studies note the importance of networked and modified extended family, where non-coresidential parents and children provide regular help to each other (Bian, Logan, and Bian 1998; Logan, Bian, and Bian 1998; Unger 1993). It is also important to acknowledge that coresidence does not happen randomly and could be affected by work and childcare arrangements (Chen 2005). In addition, although we model a range of predictors of childcare provision by grandparents, the issue of causality cannot be easily sorted out. For example, grandparents' involvement in childcare and mothers' work configuration may be planned jointly. Grandparents' childcare could be an adaptation to mothers' work demand. At the same time, grandparents' care could free women from childcare responsibility, allowing them to pursue economic opportunities opened up during the economic reform. Hence, grandparents' availability for childcare could act as a determinant for women's work. The challenge for causal modeling also demonstrates the interconnectedness of familial relationships and the complex nature of household economy.

As a consequence of improved longevity and changes in family structure, Bengtson (2001) predicted that grandparents would fulfill more family functions in America and that the

multigenerational bond would become "a valuable new resource for families in the 21st century." We expect the same to hold true in China. While the strength of the intergenerational bond has deep cultural and historical roots and may not seem to be a new phenomenon in China, the nature of the intergenerational tie has profoundly changed. Grandparents, instead of being on the receiving end of the intergenerational flow of resources, now become an important source of support for the family, and are likely to be increasingly so in the 21st century. The demographic trend in China conforms to a global trend. First, life expectancy in China has increased to 73 in 2009 (Population Reference Bureau 2009), which allows for longer shared years of life between grandparents and grandchildren. Second, due to accelerated decline of fertility and mortality, the proportion of the population aged 65+ in China is about 8 percent but will quickly climb to 14 per cent in 2025 (Chen and Liu 2009). As Uhlenberg (2009) forcefully argued, one of the positive consequences of population aging was that grandparents with significant social and economic capital could bring advantages to grandchildren, particularly those who were disadvantaged. In China, those "only children" who were born after the initiation of the one child policy in the early 1980s have now entered into childbearing age, which will make the "4-2-1 family pattern" (four grandparents, two married persons—one couple, and one child), increasingly common. A heightened level of exchange between grandparents and their family could immensely benefit adult children and grandchildren alike. On the other hand, this phenomenon could undoubtedly be a challenge for meeting the needs of older people. As with many studies, our findings raise theoretical and empirical questions about the future of the family and the grandparental role in China. How will family adaptive strategies and intergenerational solidarity affect grandparents' well-being? What are the long-term consequences for parents and grandchildren across the life course?

Counter to classically theorized Parsonian perspectives (family convergence theory and modernization theory of aging) which posit that modernization is associated with the disintegration of intergenerational ties and the decline of the status of aged family members, our analysis demonstrates the dynamically adaptive nature of linked family lives as well as the enduring strength of intergenerational solidarity in the face of social change. Situated within this milieu of circumstances, Chinese families draw upon traditional concepts of filial piety while negotiating real-world labor market and family constraints. Although the intergenerational story of this particular study is China-specific, the fluctuating dynamic between traditional norms and modern family adaptations to shifting contexts is likely applicable to other transitional societies.

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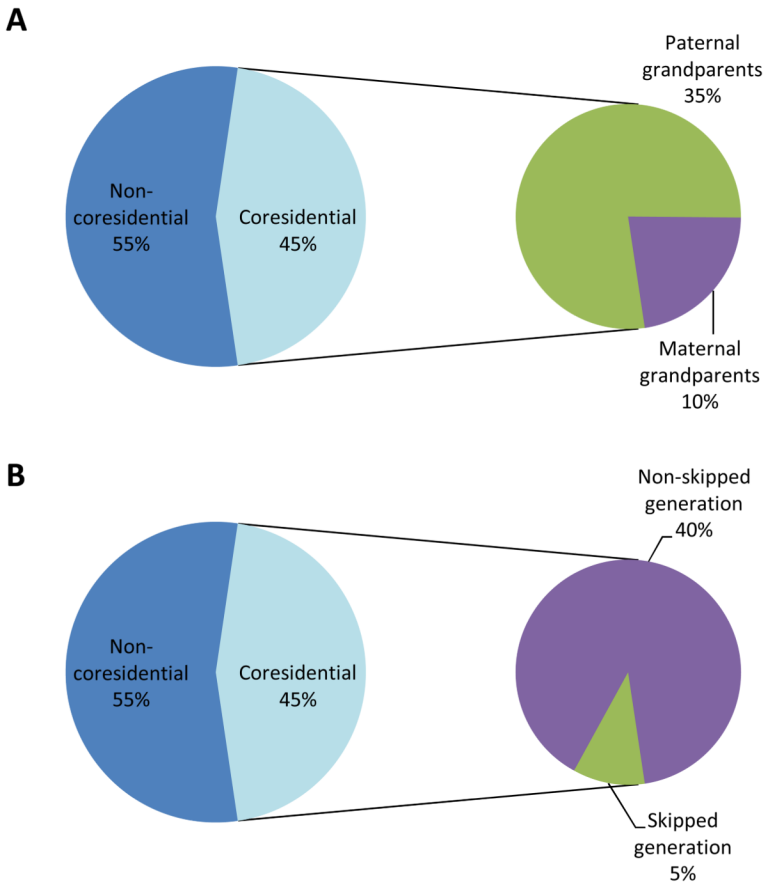

Figure 1.
Living Arrangements with Grandparents for Households with Children Aged 0–6, CHNS, 1991–2004

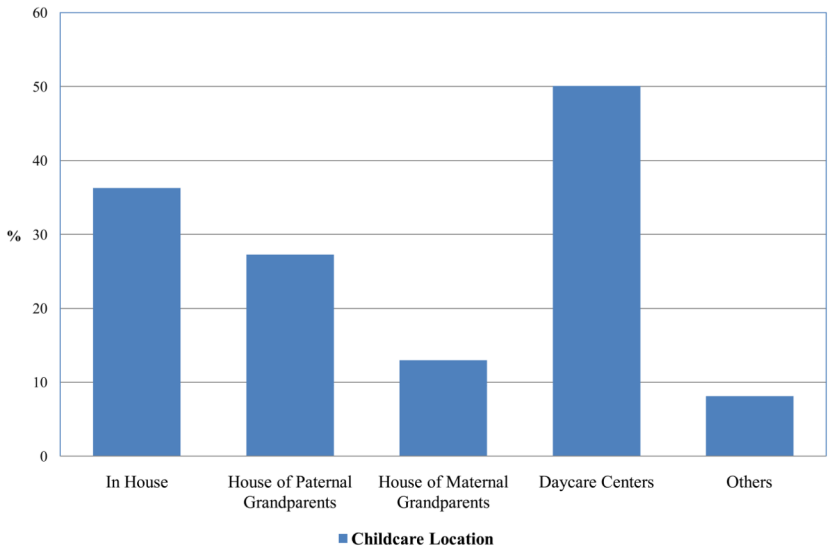

Figure 2.
Percent of Households with Children Aged 0–6 Cared for by Non-Household Members by Location of Childcare, CHNS, 1991–2004

Table 1

Average Weekly Hours of Childcare by Co-Residential Mothers and Grandparents, CHNS, 1991–2004

		Mother	Grandmother	Grandfatherrandparent (Sum)	
Total	Mean (S.D.)	25.271 (22.682)	21.169 (22.676)	7.360 (14.969)	23.087 (25.862)
	N	1138	1317	1027	1884
Children Under Age 1	Mean (S.D.)	39.691 (24.598)	20.667 (21.760)	6.321 (14.301)	22.799 (24.669)
	N	149	162	134	197
Children Age 1–3	Mean (S.D.)	26.748 (22.245)	24.322 (23.540)	8.224 (15.362)	26.984 (26.962)
	N	555	622	477	782
Children Age 4–6	Mean (S.D.)	18.431 (19.742)	17.642 (21.394)	6.704 (14.700)	18.902 (24.294)
	N	434	533	416	905

Table 2

Descriptive Statistics of Selected Independent Variables, CHNS, 1991–2004 (N=1,884)

	Mean	S.D.
Household Structure and Characteristics		
Paternal household (maternal household=0)	0.783	0.413
Skipped household (non-skipped household=0)	0.104	0.305
Both grandparents present (one grandparent present=0)	0.670	0.467
Logged per capita income	6.972	0.841
State sector (none working in the state sector=0)	0.261	0.434
Grandparent Characteristics		
Age	59.403	9.286
Working (neither grandparent is working=0)	0.649	0.477
Education (<= primary=0)	0.212	0.397
Child Characteristics		
Gender (girl=0)	0.528	0.499
Age	3.210	1.951
Other children aged 0–6 are present (no=0)	0.149	0.352
Other children aged 7–14 are present (no=0)	0.272	0.436
Community Characteristics		
Urban (rural=0)	0.264	0.436
Percent of agricultural labor force	45.725	34.788
Daycare center (Daycare center not available=0)	0.370	0.474
Mothers' Work Pattern		N=1614
Wage worker	0.359	0.478
High-intensity farmer	0.363	0.479
Fieldworker	0.162	0.368
Sideline worker	0.064	0.244
Other	0.052	0.199

Table 3

Random-Effects Regression Models on Grandparents' Weekly Childcare Hours, CHNS, 1991–2004

	Model 1	Model 2	Model 3	Model 4	Model 5
Household Structure and Characteristics					
Paternal household (maternal household=0)	4.074 * (1.854)	4.191 * (1.845)	3.242 (1.813)	3.217 (1.816)	3.250 (1.766)
Skipped household (non-skipped household=0)	7.176 ** (2.505)	6.912 ** (2.495)	7.801 *** (2.448)	7.842 *** (2.446)	
Both grandparents present (one grandparent present=0)	5.441 *** (1.255)	4.542 *** (1.389)	5.296 *** (1.370)	5.280 *** (1.373)	4.827 *** (1.431)
Logged per capita income	1.676 * (0.676)	1.588 * (0.677)	1.847 ** (0.660)	1.803 ** (0.669)	1.105 (0.764)
State sector (none working in the state sector=0)	3.151 * (1.374)	2.019 (1.449)	2.188 (1.421)	2.426 (1.557)	1.411 (1.652)
Grandparent Characteristics					
Age		−0.299 *** (0.074)	−0.192 ** (0.074)	−0.188 * (0.074)	−0.187 * (0.081)
Working (neither grandparent is working=0)		−4.956 *** (1.412)	−5.851 *** (1.379)	−5.970 *** (1.449)	−4.444 ** (1.518)
Education ((<= primary=0)		0.292 (1.518)	0.800 (1.497)	0.862 (1.503)	0.771 (1.575)
Child Characteristics					
Gender (girl=0)			−0.289 (1.135)	−0.300 (1.135)	0.110 (1.185)
Age			−3.010 *** (0.286)	−3.006 *** (0.286)	−2.888 *** (0.306)
Other children aged 0–6 are present (no=0)			8.042 *** (1.608)	7.990 *** (1.613)	8.939 *** (1.673)
Other children aged 7–14 are present (no=0)			−0.148 (1.273)	−0.083 (1.281)	0.844 (1.373)
Community Characteristics					
Urban (rural=0)				−1.282 (1.800)	−1.939 (1.862)
Percent of agricultural labor force				−0.017 (0.023)	−0.015 (0.025)
Daycare center (Daycare center not available=0)				−1.156 (1.218)	0.037 (1.280)
Mothers' Work Pattern (Reference category: field worker)					
Wage worker					8.839 *** (2.236)
High-intensity farmer					6.724 *** (1.823)
Sideline worker					3.154 (2.921)
Other					−0.391 (3.112)
Constant	−1.228 (5.041)	21.132 ** (7.189)	22.194 ** (7.068)	23.850 *** (7.335)	20.764 ** (7.797)
BIC	17492.100	17493.670	17404.270	17425.300	14882.260

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	Model 1	Model 2	Model 3	Model 4	Model 5
Wald Chi-Square	44.460	65.500	185.070	186.670	174.460
Rho	0.057	0.055	0.091	0.091	0.056
Degrees of freedom	8	11	15	18	21
n	1884	1884	1884	1884	1614

Note: standard errors in parentheses

*** p<=0.001

** p<=0.01

* p<=0.05, two-tailed test