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Grandparenthood in China and Western Europe: An analysis of CHARLS and SHARE

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ABSTRACT

Grandparenthood is a fascinating research area that not only brings together three generations and multiple roles in different life domains, but also echoes social contexts across historical times and places. Comparative research on grandparenthood, however, rarely includes non-western countries. This article seeks to answer the question of how grandparenthood differs between Western Europe and China by using comparable representative surveys of older adults. We extend the literature in two ways by showing that: 1) compared to Western Europe, becoming a grandparent occurs earlier and is virtually universal in both Urban and Rural China – the probability of being a grandparent is over 80% for Chinese by the time they are 55, while the same cannot be said for Western Europeans until they are aged between 70 and 80; and 2) the role-overlaps with grandparenthood are different for older Chinese and Western Europeans. The probability of being a working grandparent in Rural China is about twice that in Western Europe, while the rate is similar to Western Europeans for Urban Chinese. Chinese grandparents are also more likely to live with their children than Western Europeans. Conversely, as all family transitions come earlier for Chinese but life expectancy is shorter, the probabilities that grandparenthood overlaps with widowhood and filial roles are similar to that in Western Europe. Taken together, this study provides an overarching picture of the characteristics of grandparenthood in different societies that are fundamental to the meaning, performance, and impact of grandparental roles and relevant to a better understanding of grandparenthood worldwide.

1. Introduction

Demographic changes affect the intergenerational family structure and increase the supply of grandparents (Dykstra & Hagestad, 2017). With increases in life expectancy, grandparents are more likely to see their grandchildren born, grow up, and even reach adulthood (Bengtson, 2001; Dykstra & Hagestad, 2017; Hagestad, 2006). Meanwhile, along with a decline in fertility, there is also a fall in the average number of grandchildren that a grandparent has (Uhlenberg, 2005). To date, the demography of grandparenthood has been well researched in North America (Kemp, 2004; Margolis, 2016; Szinovacz, 1998; Uhlenberg, 2005) and Europe (Arpino, Gumà, & Julià, 2017; Dykstra et al., 2006; Leopold & Skopek, 2015a, 2015b). Cross-national comparative analyses of grandparenthood, however, are rare (Leopold & Skopek, 2015b). Very few studies have focused on grandparenthood in non-western societies like China and how it differs from Europe and North America (Timonen & Arber, 2012; Usui & Tsuruwaka, 2012). The available literature on grandparenthood in China mainly focuses on multigenerational coresidence, grandparental care (e.g. Chen, Liu, & Mair, 2011; Feng & Zhang, 2018; Silverstein & Zhen, 2013), and the outcomes of grandparenting for the well-being of the oldest and youngest family members (e.g. Baker & Silverstein, 2012; Chen & Liu, 2012; He, Li, & Wang, 2018; Zeng & Xie, 2014; Zhou, Mao, Lee, & Chi, 2017), with most of this research employing qualitative methods or using quantitative analyses of small samples from targeted areas. What is still unclear, however, is how the basic dimensions of grandparenthood in China differ from elsewhere.

Expanding on previous research, this study examines grandparenthood using a comparative approach in two distinct contexts: China and Western Europe. First, we ask how the probability of being a grandparent and the number of grandchildren differ in the two continents. Next, we explore to what extent the overlap between grandprenthood and other life roles (in work, family, and residence domains) is different. To answer these questions, we draw on data from high

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quality, comparable, and representative surveys: the China Health and Retirement Longitudinal Survey (CHARLS, 2012-13) and the Survey of Health, Ageing and Retirement in Europe (SHARE, 2012-13). Taken together, our analysis encompasses 40,910 individuals, with detailed information on their later life stages.

The term Western Europe in this article broadly refers to advanced capitalist countries in continental Europe, excluding former socialist European nations or what are often referred to as New Member States. As the post-socialist countries in Eastern Europe endured the legacy of pro-natalist policies before 1990, the demographic trends there are different from (and even sometimes contrary to) those in Western Europe (Leopold & Skopek, 2015b) and therefore have been omitted from our analyses. A focus on grandparenthood in both Western Europe and China is highly pertinent for a number of reasons. Both are facing the challenge of an aging society, but the speed of aging in China is much faster than that historically experienced in Western Europe. The dramatic increase in average life expectancy in China from 58 in 1970 to 75 in 2015 (OECD, 2017) has compounded the rapid population aging process. The total fertility rate in China has also declined dramatically from 5.47 children per female in 1970 to 1.67 in 2014, whereas the EU-15 witnessed a much slower fall from 2.7 to 1.3 in the same period (OECD, 2017).

By analyzing grandparenthood from a comparative perspective, this article makes two primary contributions to understanding it in the later life-course. First, it expands cross-national grandparenthood research to non-western societies. This is relevant to achieving a better understanding of grandparenthood worldwide. The rapid demographic changes in China are expected to reconstruct individual life courses and have consequences for grandparenthood. The characteristics of grandparenthood that we explore are fundamental to the meaning, performance, and impact of grandparent roles. Second, our study is representative of all mainland China, instead of certain provinces or regions. The rural-urban divide reflects different levels of modernization and institutional contexts. Urban areas are much more developed than rural areas (Knight & Song, 1999). This difference is institutional, socio-economic, cultural, and demographic, and is also the driving force of social inequality in China (Xie, 2011). We argue that Urban China may more strongly resemble Western Europe, which is regarded as a modern society, than Rural China. Accordingly, understanding differences between China and Western Europe, as well as between Urban and Rural China, is essential for understanding how social contexts shape grandparenthood.

The article is organized as follows: Section 2 presents the background and how grandparenthood is expected to vary in Chinese and Western European contexts; Section 3 describes the data and methods; Section 4 presents the results; and Section 5 contains the discussion and identifies possible further research issues.

2. Background and theoretical framework

2.1. Grandparenthood: linked lives in places

Two principles of the life course are highlighted in our study. The first is that of linked lives, which emphasizes that family members in succeeding generations are emotionally, financially, practically, and morally reliant on and responsible for each other (Bengtson, Elder, & Putney, 2012; Hagestad, 2003; King & Elder, 1995; Mueller & Elder, 2003). Unlike other self-initiated adult transitions, becoming a grandparent is a 'counter-transition' (Hagestad & Burton, 1986) that is not only conditioned by the fertility process of parenthood (timing, space, and total fertility) of the oldest family generation (G1), but is also contingent on the children's (the middle generation, G2) transition to parenthood. The second principle, is that of historical time and place (Elder, 1975), which emphasizes that lives are contextualized by geographic location and period. Comparatively, the social-historical settings differ sharply between Western Europe and China, thereby contributing to different dynamics in the context of grandparenthood.

In the last few decades of the twentieth century, most Western European countries witnessed a transition into a post-traditional demographic (Lesthaeghe, 2010; Puur, Sakkeus, Põldma, & Herm, 2011). Postponement of marriage and first birth have led to increased gaps between successive family generations. Moreover, individualized life courses contribute to greater heterogeneity in later life (Herlofson & Hagestad, 2012). Leopold and Skopek (2015b) investigated how the transition to grandparenthood changed across the pre- and post-war cohorts (1929–1958) in East and West Germany, finding that the average age of grandparenthood was delayed by three months per year between the two cohorts in both societies. Apart from fertility postponement in both the oldest and middle generations in a Canadian sample, Margolis (2016) found increased rates of childlessness in both generations, contributing to a delay in the transition to grandparenthood. Using data from 13 European countries, Arpino et al. (2017) studied the association between family histories, especially partnerships and fertility, and the demography of grandparenthood. Their results reflected high heterogeneity in the timing of grandparenthood and the number of grandchildren at different ages across various family trajectories. Earlier childbearing, shorter spaces between higher order fertility, and more offspring led to a higher prevalence of grandparenthood among people in their fifties compared with individuals who had alternative family trajectories.

China has been viewed as a traditional, familial society (Margavio & Mann, 1989), which is characterized by extended households, parental control, and lower status for females (Thornton & Philipov, 2009; Thornton & Xie, 2016). Universal marriage and the short time between marriage and childbearing are still prevalent (Cai, 2008; Feng & Quanhe, 1996; Raymo, Park, Xie, & Yeung, 2015; Xu, Li, & Yu, 2014). The strong cultural expectation on children (e.g. 'duo zi duo fu': the more children - sons, the greater prosperity) is also sustained in contemporary China (Zheng, Shi, & Tang, 2005). These factors structure children's fertility and shape their parents' transition to grandparenthood.

However, the household registration system (*Hukou*[1]) and different implications for family planning policies[2] for rural and urban residents

[1] The *Hukou* system has origins in China dating back to ancient times. The current system in mainland China started in 1958 with Regulations of the People`s Republic of China on Residence Registration (National People's Congress, 1958). It was not until the 1980s that the Notice of the State Council on Issues concerning Farmers' Permanent Residence Registration in Townships (No. 141 [1984], State Council) and Regulations of the People's Republic of China concerning resident identity cards (1985) were introduced; restrictions have been loosened on movement from rural areas to local cities. With reforms in the following decades, the system was generally characterized by a gradual opening. In 2014, the State Council issued Opinions of the State Council on the Further Promotion of Reform of the Household Registration System (No. 25 [2014], State Council), which announced that the legislation eliminated the distinction between agricultural and non-agricultural *Hukou*.

[2] Family planning policy in China was first introduced in the 1950s as a State recommendation, and evolved to the Fourth Five-Year Plan in 1971. Beginning in the 1970s, Chinese residents were encouraged to 'marry and give birth at [an] older age, have two children at most, and have the second birth at least three years later', according to the Report on the First Meeting of the Family Planning of State Council Leading Group (1973). In 1978, this report was approved by the CPC Central Committee and 'required that divisions above the county level had to establish family planning offices, and each Commune had to appoint full-time family planning officers'. This requirement formed the administrative basis for the strict population policy of the 1980s. Until 2001, Population and Family Planning Law was passed by the State Council, which codified the policy and previous regulations, and transformed the family planning policy to the status of law. In 2016, the One-Child Policy was formally phased out and changed to a two-child policy for all, according to Population and Family Planning Law (Revision) (2015). An important feature of China's current population policy is that its formulation and implementation is

contribute to a broad gap within China (Xie, 2010). The household registration system was developed in the 1950s and separates urban and rural residents through agricultural and non-agricultural *Hukou* to limit and control internal migration. The policy aimed to prioritize the socio-economic development of urban areas, and, subsequently, rural residents have been disadvantaged in terms of economic and educational opportunities and access to welfare provision. Accordingly, while global modernization forces have shifted the Chinese economy and introduced greater autonomy and gender equality for urban Chinese, traditional familial cultures are sustained for people in rural areas. Simultaneously, different family planning policies have been applied to urban and rural residents. From the 1970s, relationship formation and the childbearing behaviors of Chinese were strongly affected by the 'later childbearing, wider spacing, and fewer children' population policy, as well as later the One Child Policy (OCP) (Feng & Quanhe, 1996). The OCP (1980s-2015) was enforced at the provincial level, but the regulations provided additional fertility opportunities under a variety of conditions and never resulted in a completed fertility rate around one. Although it was most strictly enforced in densely populated urban areas, rural families faced fewer restrictions for an additional child, primarily if the first child was female or disabled (Zheng et al., 2005).

In terms of the consequences for grandparenthood in Chinese families, an extreme case is a 4-2-1 family, which highlights the consequence of marriage between two only children, resulting in one child, two parents, and four grandparents (Qi & Guo, 2007; Thomese & Cong, 2015). From the grandchildren's perspective, Jiang and Sánchez-Barricarte (2011) estimated that the survival probability of four grandparents at old age (60 or older) is 60%, and children can expect to share over 30 years with at least one grandparent. However, the 4-2-1 families are relatively rare and mainly limited to urban areas and certain OCP cohorts (Feng, 2015; Qi & Guo, 2007); grandparenthood in China is more heterogeneous than the 4-2-1 extended family image. There is also still a lack of understanding from the grandparents' perspective.

2.2. Being a grandparent in Western Europe and China

The demography of grandparenthood in China has received little attention. For the contemporary elderly (G1, those born between 1920 and 1960), the second demographic trend started earlier in Western Europe. Moreover, the patterns of low and delayed fertility pertain only to the middle generation (G2) in China. Nevertheless, the change in demographic processes was greater and took place earlier in Urban China than Rural China, but included only a small proportion of childlessness (Zhang & Liu, 2007). Western Europe has shown an increase in childlessness for the cohorts born after 1940 (Dykstra, 2009). We therefore expect that:

H1a. Grandparenthood comes earlier and is universal in both Urban and Rural China compared to Western Europe.

H1b. The average number of grandchildren a grandparent has is larger in Rural China than in Urban China and Western Europe.

H1c. The average ratio between the number of grandchildren (G3) and the number of children (G2) a grandparent has is higher in Rural and Urban China than in Western Europe.

(*footnote continued*)
localized. Under instruction from the central government, the planning and operation of the policy is under the control of local governments, especially provincial governments. In order to meet the social, economic, and cultural conditions of different regions, local governments are relatively flexible when carrying out the national policy (Jiang, Li, & Feldman, 2013), where exceptions were allowed for many social groups.

2.2.1. Grandparenthood & working

The grandparenthood experience is influenced by the conjunction with roles in other later-life domains. Dropping out of the labor market is the crucial transition in later life. Contexts set the opportunity structure of labor force participation and the intersection of work with grandparenthood (Szinovacz, 1998). Policies produce different life chances for individuals depending on whether they are in or out of the labor market. With the increase of longevity, retirement has become marked out as a distinct phase in life with the expansion of pensions (both first and second pillar) in western societies (Kohli & Rein, 1991). In the United States and Europe, grandparenthood generally overlaps with the role of worker (Leopold & Skopek, 2015b).

There is still a lack of assessments of the overlaps between grandparent and working roles in the Chinese context. There was a continuously high labor force participation rate soon after the founding of the People's Republic in 1949 (Zhou, Tuma, & Moen, 1996). With China's economic reforms, young rural-urban migrants move to cities, but agriculture is still a vital industry with a massive rural population (the proportion of rural residents was up to 45.23% in 2014; National Bureau of Statistics of China, 2015). Older people left behind in rural areas have needed to take charge of agricultural work, thus increasing their workload and postponing their age of leaving the labor force (Chen, Lucas, Bloom, & Ding, 2016; He & Ye, 2014; Pang, de Brauw, & Rozelle, 2004). Moreover, the pension system[3] has been limited for rural residents over the past few decades, with less than 5% of the rural elderly receiving a pension (Thomese & Cong, 2015). Labor income is thus the primary source of funds for the elderly in Rural China, along with financial transfers from adult children (Cai, Giles, O'Keefe, & Wang, 2012:45–68). According to the Sixth National Population Census, the labor force participation rate is around 43% for rural residents aged 60 or older, and 41% reported that income from work was their primary income source (National Bureau of Statistics of China, 2011). In contrast, retirement and pension systems have been well developed for urban residents. The current retirement age is 60 for men and 55 for female civil servants and 50 for other female workers (China's State Council, 1978[4]). More than 50% of urban residents older than 60 rely on a pension, with only 13% depending on their labor income (National Bureau of Statistics of China, 2011). Rural and urban residents diverge regarding later-life labor force participation patterns: rural elders increased their rates of participation while urban elders reduced theirs (Connelly, Maurer-Fazio, & Zhang, 2014).

In terms of heterogeneity in working contexts, it is reasonable to expect that Chinese grandparents are facing role overlaps between grandparenting and work, given our assumption that the transition to grandparenthood is earlier. However, a younger retirement age eligibility for Chinese urban residents may offset some of the role overlap, at least for Urban Chinese, while the more extended work time in old age may exacerbate the difference between Rural China and Western Europe. Thus,

H2.1. The probability of simultaneously working and being a grandparent is higher in Rural China than in Urban China and Western Europe.

2.2.2. Grandparenthood & family

With the increase in longevity, prolonged years of shared life with other family members have become more common, not only with grandchildren, but also with a spouse (Szinovacz, 1998) and parents (Bengtson, 2001). As family members are aging together, the demand from elderly parents may coincide with the initiation of the

[3] For a brief review of pension policies in China, see Liu and Sun (2016).

[4] *'State Council Temporary Measures on Providing for Old, Weak, Sick, and Handicapped Cadres'* and *'State Council Temporary Measures on Workers' Retirement, Resignation'* (1978 No.104).

grandparental role. Very few studies focus on the overlap between the widowed and grandparent roles, but empirical evidence has shown that widowed grandparents have less contact with their grandchildren (Uhlenberg & Hammill, 1998).

Comparatively, demographic differences in Western Europe and China imply that the role-overlaps of grandparenthood in the family are complex. Mortality trends suggest that Western Europeans live longer than Chinese. Life expectancy at birth in 2015 is around 76 in China and 81 in Western Europe (OECD, 2017). Thus the chance of having a living parent or spouse when becoming a grandparent is greater in Western Europe than China. Alternatively, as Chinese are becoming grandparents at a relatively younger age than Western Europeans, the parallel changes in the experience of the grandparent role and the loss of parents or a spouse may indicate fewer differences between China and Western Europe in family role overlaps. Furthermore, due to rapid socio-economic development and health-care improvements, China witnessed a rapid decline in mortality and an increase in life expectancy in a much shorter period than Western Europe. In this case, the probability of being a grandparent with a living parent or spouse may become even greater in China than Western Europe.

This consequence of mortality change has been identified in an earlier study of the overlap between grandparent and filial roles in Germany (Leopold & Skopek, 2015a). Even though the resemblance of trends in age at grandparenthood and at the loss of parents applied equally to East and West Germany, the earlier transition into grandparenthood meant that East Germans' experiences of grandparenthood preceded the loss of living parents; this is reversed in West Germany. In the absence of empirical studies in China, the literature still lacks an assessment of grandparents' linked roles. We hypothesize:

H2.2a. Being a grandparent with a living parent is more likely in both Urban and Rural China than Western Europe.

H2.2b. Being a widowed grandparent is more likely in both Urban and Rural China than Western Europe.

2.2.3. Co-residential grandparenthood

Co-residence with grandchildren is rarely recorded in the European literature (Kertzer & Karweit, 1991), although previous findings suggest that the co-residence of parents and their adult children is not uncommon, but does vary across European societies (Hank & Buber, 2009). A recent study in Europe shows that the arrival of grandchildren increases the probability of proximity, but decreases the likelihood of living with adult children (Isengard & Szydlik, 2012). In China, the three-generation household was stable at about 16.5% between 1982 and 2010, while the proportion of 'skip-generation households' increased from 0.7% to 2.26% (Hu & Peng, 2015).

Household structure and intergenerational co-residence not only reflect a family's needs, but are also constrained by contexts. Generally, the proportion of individuals living with adult children in later life is higher in China than European countries (Emery & Djundeva, 2018). This is usually explained by strong familialism and the filial piety culture, which is distinct in China (Chen & Liu, 2012; Chen, 2005; Chen et al., 2011; Hamilton, 1990; Kamo & Zhou, 1994; Lee, 2004; Zhang, Gu, & Luo, 2014). While Chinese are characterized by extended families and the authority of older generations (Whyte & Ikels, 2004), Western Europeans typically favour independent residence of younger and older family relations (Reher, 1998).

Social welfare arrangements also influence intergenerational solidarity and contribute to the differences in the co-residence status of grandparents in China and Western Europe. Eldercare and childcare arrangements are, to varying degrees, provided publicly or are accessible via the market in Western Europe (Esping-Andersen, 1999). Co-residence is thus loosely associated with a family member's needs. In contrast, the restricted availability of formal supports in China necessitates intergenerational co-residence (Emery & Djundeva, 2018; Guo, Chi, & Silverstein, 2012). Individuals in Urban China are less likely to live with children than those in Rural China, as Hukou segregates the pension and welfare arrangements. Urban residents have access to public childcare, hospitals, and elderly care facilities, while rural residents do not. Individuals in Urban China are not, however, necessarily better off, as the increasing demands for care facilities and care-related leave are mostly unmet (Xie & Zhu, 2009). Alongside individual characteristics or familial structures, specific housing markets in different countries will also shape co-residence (Rosenzweig & Zhang, 2014). Taken together, there is a reason to see higher intergenerational co-residence even in Urban China compared to Europe. Guided by the principle of 'historical time and place', and exploring the residential status from the grandparents' perspective, we expect that:

H3. Grandparents are more likely to live with children in Rural China than Urban China, while this is improbable in Western Europe.

3. Methods

3.1. Data

Our empirical analysis used samples from two representative survey data sources: the China Health and Retirement Longitudinal Study (CHARLS) and the Survey of Health, Ageing and Retirement in Europe (SHARE). Both are representative panel surveys of the non-institutionalized older population. They are also part of a family of surveys modeled on the American Health and Retirement Study (HRS) and provide a unique opportunity to study grandparenthood from a comparative perspective. We used the second wave of CHARLS, with fieldwork completed in 2013, and the fifth wave of SHARE, which was fielded in 2012/13. Information from the harmonized datasets (www.g2aging.org) was used whenever available. We restricted our sample in all countries to respondents who were aged over 50 at the time of interview, as the age eligibility of SHARE is 50, which is five years older than for CHARLS.

3.2. Measures

For grandparental status, we used a dichotomous indicator of whether a grandchild (G3) exists, and if so, the total number of grandchildren. The total number of grandchildren in SHARE was taken directly from the aggregated variable in the harmonized dataset. For CHARLS, this variable was derived from the response to the question: 'How many children does [CHILDn's NAME] have?' in the family section of the 2013 CHARLS follow-up questionnaire. The number of children (G2) was limited to biological living children and obtained using the constructed variable in the harmonized dataset. Regarding the generational family structure, we calculated the average of the ratios between the number of grandchildren (G3) and the number of children (G2) by gender and age groups, i.e. we compared the 'contribution' of each child to producing the grandchild generation.

Work status was taken from the harmonized dataset: 'currently working'(CHARLS) and 'working for pay' (SHARE). Having a filial role was defined by the presence of at least one surviving parent at the time of interview. Widowhood was derived from the current marital status, which was taken from the harmonized dataset and pertained to respondents who has ever married or ever been in a partnership. Co-residence was indicated by whether the respondent was living with a child in the same household. All these variables were coded as dichotomous variables that equal 1 if the respondents occupy the status and 0 otherwise.

The analysis included age and gender. This was done in order to better understand the role of population composition in structuring differences in grandparental status.

3.3. Analytical strategy

Probit models were used to estimate the probability of being a grandparent at different age groups, and zero-truncated negative binomial regression models were used to examine the number of grandchildren conditional on grandparenthood. To access the role overlaps with grandparenthood, we used probit estimations to examine the probability of obtaining each combination of intersected roles for different age groups. This enabled us to include the entire older adult population rather than only those who were grandparents.

Simultaneous analyses were applied to *Western Europe*, *Urban China*, and *Rural China*. We dropped samples from the Czech Republic, Slovenia, and Estonia in the fifth wave of SHARE. Israel was also excluded. In detail, *Western Europe* covers 11 advanced capitalist countries: Austria, Belgium, Switzerland, Germany, Denmark, Spain, France, Italy, Luxembourg, the Netherlands, and Sweden. There is heterogeneity within Western European countries. However, we argue that, compared to China, these nations share a similar cultural background, have experienced the transition into a post-traditional demographic phase in a relatively similar time slot, and are regulated by relatively similar social welfare policies. We conducted additional analyses for each country and for welfare regime group to test the robustness of our findings using country groups (results are available upon request). The issue of regression to the mean must be taken into account, but the differences compared to China were consistent in all the analyses.

The Chinese samples were separated using their current household registration status (*Hukou*). Respondents with non-agricultural Hukou were considered to be from Urban China, while others were taken to be from Rural China. It should be noted that there was a tiny proportion (1.36%) of people in our sample with a 'unified residence' Hukou or no Hukou, as well as a group of migrants who live in an urban area but have an agricultural Hukou. However, as these people are loosely regulated by family planning policies and have limited access to social welfare, the potential bias caused by including them in Rural China is limited in the cohorts in this study.

Following a listwise deletion of missing values and other restrictions, our analytical sample consisted of 32,483 individuals in Western Europe and 8427 in China (24% in Urban China and 76% in Rural China). Table 1 shows the descriptive overview of our sample in terms of different indicators of interest by the studied regions and genders. The table indicates that the average age of the Western European sample was about three years older than that of the Chinese sample. We observed a lower level of never being married and less childlessness for both Chinese men and women. For the respondents who have children, the average number for the Rural Chinese (3.02 for men, 3.17 for women) was larger than that for Western Europeans (2.41 for men, 2.42 for women), while the Urban Chinese parents had a similar number of children compared to Western Europeans. All analytical models were run separately using design weights but they did not change the substantive results presented here.

4. Results

4.1. The probability of being a grandparent and the number of grandchildren: when and how many?

More than half of our samples had become a grandparent. The proportions differed among those in Rural China, Urban China, and Western Europe, as shown in Table 1: 89.03% of men and 94.73% of women in Rural China and 80.96% of men and 79.40% of women in Urban China are grandparents. These figures were much higher than the proportion of grandparents in Western Europe (only 59.32% for men, 66.5% for women).

Fig. 1 shows the estimated probability of being a grandparent at different age groups for each region. For the youngest age group (50–54), estimates show the probability is 57.1% for men and 60.5% for women in Urban China and 77.7% for men and 88.8% for women in Rural China; meanwhile, 23.8% of men and slightly more than 30% women in Western Europe have experienced this transition. The finding that more than half of those aged 50–54 are grandparents in both Rural and Urban China, suggests that a considerable proportion of Chinese entered grandparenthood before their early 50 s. For the oldest age group (80 +), the curves of the three regions converged. Almost all Chinese are grandparents by their 80th birthday, but the probability for Western Europeans is less than 80% for men and less than 85% for women. The proportion of those that are grandparents for all groups aged over 55 is above the 80% mark in China. This is not the case for Western Europeans until they are aged 70–80 years old. These results are in line with Hypothesis 1a, namely that the transition to grandparenthood is earlier and more prevalent in both Rural and Urban China than Western Europe.

Conditional on grandparenthood, the number of grandchildren in

Table 1
Descriptive statistics on the total sample, parents, and grandparents by region and gender.
Source: 2nd Wave CHARLS and 5th Wave SHARE.

	Men			Women		
	Rural China	Urban China	Western Europe	Rural China	Urban China	Western Europe
Total	*N = 3,218*	*N = 1,066*	*N = 14,121*	*N = 3,206*	*N = 937*	*N = 18,362*
Age	63.32	64.57	66.38	63.46	62.82	66.77
	(8.70)	(8.93)	(9.94)	(9.95)	(9.73)	(10.64)
Never married (%)	3.39	0.94	8.99	0.22	0.11	6.93
Childless (%)	4.16	2.81	13.92	0.78	2.03	11.22
Grandparent (%)	89.03	80.96	59.32	94.73	79.40	66.50
Parents	*N = 3,084*	*N = 1,036*	*N = 12,155*	*N = 3,181*	*N = 918*	*N = 16,302*
Average number of children	3.02	2.49	2.41	3.17	2.34	2.42
	(1.45)	(1.35)	(1.20)	(1.52)	(1.41)	(1.25)
Grandparent (%)	92.61	82.92	68.26	95.00	80.50	74.15
Grandparents	*N = 2,865*	*N = 863*	*N = 8,376*	*N = 3,037*	*N = 744*	*N = 12,210*
Average number of grandchildren	4.79	3.38	3.75	5.35	3.12	4.01
	(3.61)	(2.58)	(2.67)	(3.97)	(2.46)	(2.95)
Currently working (%)	75.29	39.40	27.63	60.03	22.98	22.56
Have a living parent (%)	18.05	17.61	16.57	21.44	22.85	18.92
Widow/Widower (%)	14.17	9.15	10.00	35.27	35.89	28.44

Standard deviation in parentheses.

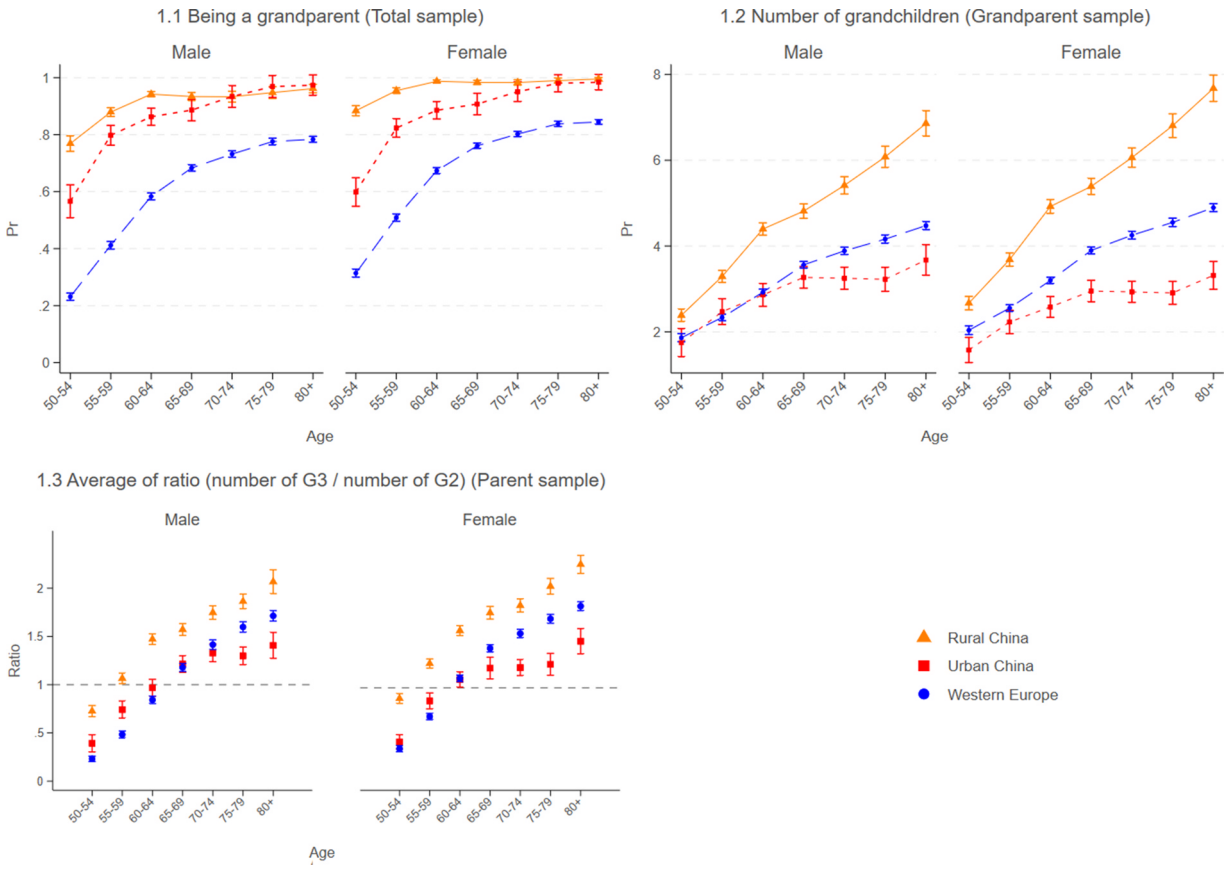

Fig. 1. Predictive margins of being a grandparent and the number of grandchildren, and the average ratios between the number of grandchildren (G3) and the number of children (G2), by age and gender with 95% Cis.
Source: 2nd Wave CHARLS and 5th Wave SHARE.

Western Europe is, on average, almost one unit lower than Rural China and the lowest in Urban China (see Table 1). Fig. 1.2 illustrates the zero-truncated negative binomial estimated number of grandchildren. The marginal predictions present the patterns of regional differences at various age groups. For grandparents in Rural China, there is partial support for Hypothesis 1b, in that both men and women have more grandchildren than their counterparts in Western Europe and Urban China in each age group. However, there is a trend of divergence with aging in Urban China and Western Europe. Our hypothesis that the number of grandchildren that Urban Chinese grandparents have is similar to Western European grandparents is only true for men younger than 70 and women younger than 60. Grandparents in Urban China aged 65 years old or above have three grandchildren on average, which is about one fewer than grandparents in Western Europe. However, it is not possible to attribute this to a cohort or age effect with the available data.

Fig. 1.3 illustrates the regional differences in the linked-life dynamics of grandparenthood, showing the ratios between the number of grandchildren (G3) and the number of their children (G2). For Rural Chinese parents aged between 50 and 54, the number of grandchildren is slightly fewer than the number of children, while for older age groups this number is around twice the number of children. For Urban Chinese and Western European parents, there is a clear reversal from more children to more grandchildren at the cut-off point of 65. All the ratios are below 1 for those younger than 65, and the differences between Urban China and Western Europe are only significant for men. By the age of 65, all the ratios increase to more than 1, and the gradient of ratios between Urban China and Western Europe reverses; however, the differences are significant for all women but only for men aged 75 years old or above. Moreover, the ratios for women in Urban China aged over 65 years old are consistent at 1.2 across the age groups. These results suggest that Rural Chinese parents have more grandchildren than children, and the intergenerational differences are larger than those in Urban China and Western Europe. While not in line with Hypothesis 1c, our samples illustrate a complex picture showing potential commonality for men across Urban China and Western Europe, while for women the lowest ratio was found in Urban China, indicating a similar generational structure with low fertility in both G1 and G2. The right-censoring problem should, however, be considered when interpreting the results. Given the age range in our sample, the younger respondents are still at high risk of having more grandchildren, as their children are still at fertile ages.

4.2. *Grandparenthood and other life domains: more roles?*

Fig. 2 illustrates the estimated probability of simultaneously being a grandparent and working, having a living parent, being widowed, or co-residing with children, respectively.

As the graphs in the top left of Fig. 2 show, the curves of Rural China are well above the others, indicating that the highest probability of being a working grandparent is in Rural China, followed by Urban China, and Western Europe. By the age of 59, the probability of simultaneously working and being a grandparent is 77.3% for men and 70.2% for women in Rural China. In Urban China, this is around 54.1% for men and 33.8% for women, and in Western Europe only around 30% for men and women. After the age of 60, the predicted probability of being a working grandmother in Urban China is almost as low (less than 30%) as in Western Europe. The probability of being a working grandfather in Urban China is between the rates for Rural China and Western Europe, except for the age group 75 or older, where rates

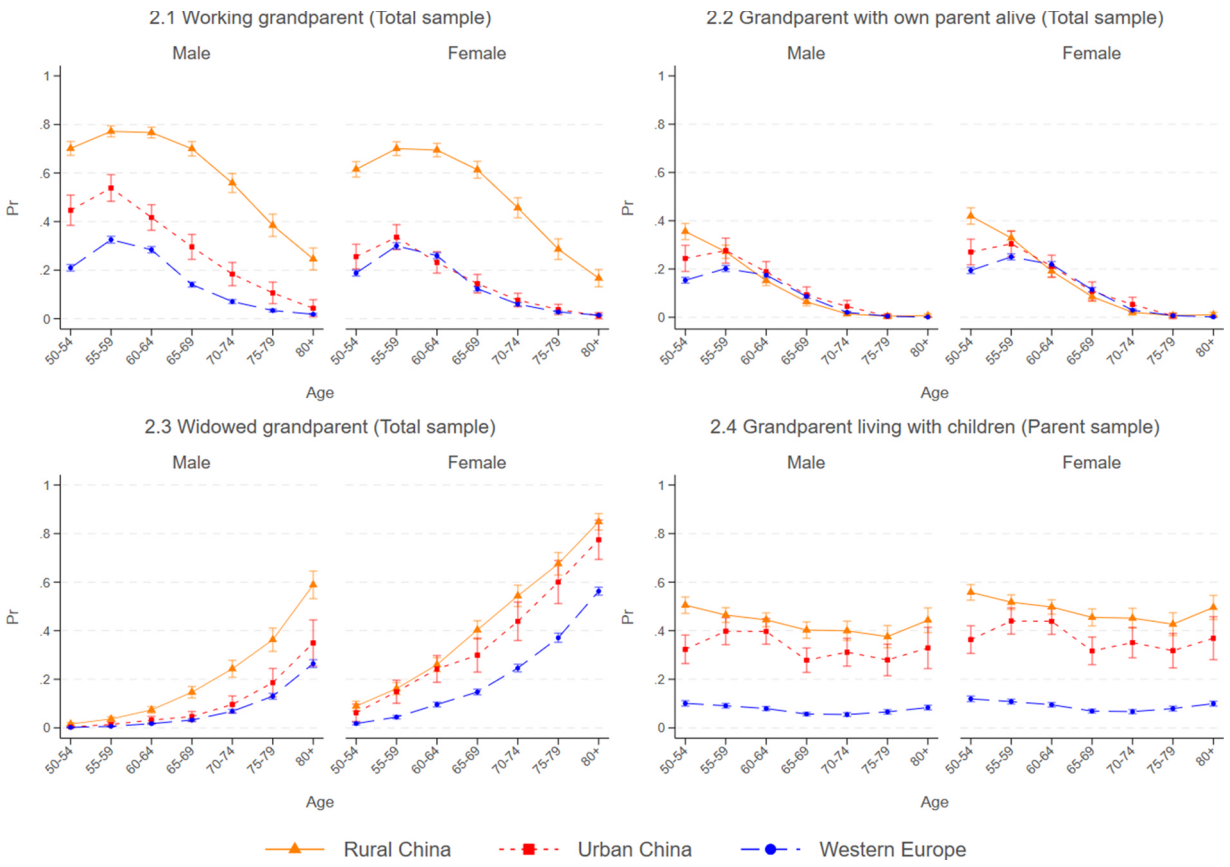

Fig. 2. Predictive margins of roles overlapped with grandparenthood and co-residential status, by age and gender with 95% Cis.
Source: 2nd Wave CHARLS and 5th Wave SHARE.

converged with Western Europe. Rural Chinese, however, are most likely to be working grandparents in each age group. Even for those aged 80 years or older, the probability is 24.3% for men and 16.3% for women in Rural China. These results support Hypothesis 2.1 and also indicate that regional differences are not the same for men and women.

The graphs in the top right of Fig. 2 present the predicted probability of being a grandparent and having a living parent. The results are in line with Hypothesis 2.2a, namely that there is little difference among the regions. For those aged 55 or older, the probability of being a grandparent with a living parent declined from around 20% to 0 for the most advanced ages, with few differences among the three regions. The probabilities only differ between Rural China and the other two regions for those aged between 50 and 54. Especially for Rural Chinese women in this age range, the probability of being a grandmother and having at least one living elderly parent is 40%, which is twice the probability in Western Europe.

The predicted probabilities of being a widowed grandparent in Rural China, Urban China, and Western Europe (lower left of Fig. 2) reveal different patterns for men and women. With the increase in age, the probability of being a widowed grandparent is significantly higher for men in Rural China than Urban China and Western Europe. Meanwhile, for women, the probabilities are similar in Rural and Urban China, but the lowest in Western Europe. However, this is not in line with Hypothesis 2.2b, suggesting a gendered regional difference regarding the overlap between grandparenthood and widowhood.

As the graphs in the lower right of Fig. 2 show, the levels of co-residence are profoundly different between China and Western Europe, with the curves for Rural China well above those for Western Europe for both men and women. Those for Urban China are in between, but nevertheless closer to the levels of rural China. The probability of living with children in Rural China is around 50%, whereas for Urban Chinese this is around 40% for those between 50 and 64 and 30% for those aged 65 or older. In Western Europe, this probability is only around 10% for both men and women. These outcomes support Hypothesis 3 and are consistent with previous findings that multigenerational co-residence is more popular in China than in Western Europe.

5. Conclusion and discussion

Grandparenthood is an important area of research that brings together three generations, multiple roles in different life domains, as well as social contexts across historical times and places. This research provides an overarching picture of grandparenthood in Rural China, Urban China, and Western Europe.

First, salient differences between China and Western Europe emerge in the likelihood and timing of grandparenthood. Consistent with our expectation, our results revealed that the transition to grandparenthood takes place earlier and is virtually universal in China compared to Western Europe. In line with Leopold and Skopek's (2015b) analysis of the timing of grandparenthood, we also found that the probability of being a grandparent is less than 50% for Western Europeans before their 60 s. In contrast, grandparenthood in China occurs more than ten years earlier: over 80% are grandparents by the time they are 55, while the same cannot be said for Western Europeans until men are aged 80 and women 70. Regarding the number of grandchildren, regional differences are pronounced, with particular heterogeneity within China. Rural Chinese grandparents aged 60 or older have four to eight grandchildren, and each child has more than 1.5 children themselves. Urban Chinese grandparents have fewer than three grandchildren, which is even less than their Western European counterparts.

These findings illustrate that traditional expectations and fertility preferences toward early marriage and more children have not demised

in contemporary Rural China, whereas family planning policies contribute to the low number of grandchildren in Urban China. The low number of grandchildren in Urban China combined with similar child-grandchild ratios in Urban China and Western Europe indicate that low fertility in Urban China started even before the introduction of family planning policies (Zhao, 1997). Given the absence of such policies in Western Europe, the strong association between family generations in fertility levels (Anderton, Tsuya, Bean, & Mineau, 1987; Kolk, 2014; Murphy, 2013) is most likely responsible for the wider differences in the number of grandchildren and grandchild/child ratios in that region compared to those in Urban China. Postponed fertility is contributing to the later transition to grandparenthood in Western Europe, whereas increasing rates of childlessness (Dykstra, 2009; Herlofson & Hagestad, 2012) are leading to a lower probability of ever experiencing grandparenthood.

Second, the overlap with grandparenthood of work varies across the three regions. The probability of being a working grandparent is highest in rural China, for both men and women. The probability of being a working grandparent is higher in urban China than in Western Europe among men, but similar for women in these two regions. To date, the circumstances of working grandparents have received limited attention in the Chinese research literature. He and Wang (2015) explored whether involvement in grandchild care affected retirement decisions, but their study restricted itself to people who had worked in government departments, public institutions, and state-owned enterprises. Individuals outside the pension system, including a large proportion of rural residents, was disregarded, thereby overlooking groups most likely to have low incomes. As Raymo and Xie (2000) have shown, Chinese older adults who are not covered by any retirement system compensate meagre public support through gainful employment. For them, caring for grandchildren might be particularly stressful.

Third, consistent with previous findings (Emery & Djundeva, 2018), the probability of being a grandparent and living with their children in the same household is higher in both Rural and Urban China than Western Europe. Note that in both China and Western Europe, grandparents aged 50–54 show a high probability of co-residence with children. Household structures and reasons for co-residence are different, however. Western European grandparents are likely to be living with their young children (who do have children themselves), whereas Chinese grandparents are likely to be living with older children (who do have children themselves). Note that the issues of household structure and family structure, however, are beyond the scope of this study.

Our results show parallels among the studied regions regarding the overlaps between grandparenthood and family roles. The probability of being a grandparent and having a living parent in China is similar to that in Western Europe. Nevertheless, the underlying demographic processes differ. In China, having multiple surviving family generations is linked to having children at a relatively young age, whereas in Western Europe it is linked to living long lives together. The likelihood of being a widowed grandfather is relatively low in both urban China and Western Europe, and relatively high among men living in rural areas in China. Compared to women in Western Europe, women in both Rural and Urban China face a higher likelihood of being a widowed grandmother.

Our results also illustrate that role overlaps with grandparenthood vary by age groups. Previous literature suggests that earlier grandparenthood is more likely to involve a demanding context with multiple roles (Leopold & Skopek, 2015b). The grandparental, rather than the parental, generation may become the 'sandwich' generation (Grundy & Henretta, 2006; Nakazawa, Hyun, Ko, & Shwalb, 2017). As found in this study, individuals in China are more likely to face role overlaps between grandparenthood and both working and filial roles in young-old-age. For young Rural Chinese grandparents, besides working to make ends meet, they are more likely to face role conflicts between caring for their grandchildren and their parents. These findings from the Chinese context are therefore in contrast to the stereotype of 'free' grandparenthood in Western Europe (Leopold & Skopek, 2015b), especially for grandparents in Rural China.

Gender is another dimension where the regional differences in grandparenthood are distinctive. In line with the theory that women's cross-generational ties are characterized by' co-longevity' and long duration (Dykstra & Hagestad, 2017), our findings indicate that female Chinese are more likely to be a widowed grandparent, and children in China are more likely to be born and grow up with only grandmothers, not grandfathers, compared to Western Europeans. Previous research illustrates that the postponement of the transition to grandparenthood is related to female labor market participation and changes in gender roles in European countries (Billari, Liefbroer, & Philipov, 2006; Leopold & Skopek, 2015b; Skopek & Leopold, 2017). This article presents only a partial picture of the links between grandparenthood and work in China. As the measurement only considers working for pay and does not distinguish between agricultural work and other work types, the gender differences for Urban Chinese and gender similarities for Rural Chinese found in this research potentially reflect the institutional cleavages rather than a rural-urban difference in gender roles. More detailed examination of time allocation patterns in daily life is required to explore the gender aspect of grandparenthood (e.g. Chang, Dong, & MacPhail, 2011).

The main limitation of this research is that our assessment of grandparenthood is limited to older adults. From the top (old) generation's point of view, there is a straight line of descendants. In contrast, the bottom (young) generations looking up see forked lines (Uhlenberg, 1996). By anchoring from the top, we cannot identify the generational structures of grandchildren, which have also changed dramatically, and have been described in terms of a widening inequality of kin resources (Herlofson & Hagestad, 2012). Additionally, a more inclusive three-generation perspective is required to address demographic differences and socio-economic contexts in comparative studies. Our findings reflect only the potential dynamics of the multigenerational structure of grandparenthood in China and Western Europe. Future research should investigate not only the number, but also the sets and spaces, of grandchildren, to reflect a more detailed and comparative description of generational and intrafamilial behavioral patterns of grandparenthood in time and place.

To capture the interacting timetables in family networks (Elder, 1975), longitudinal data and retrospective questions extended to the birth of grandchild(ren) are urgently required in the aging era when three-generation families are more common and characterized by a longer shared lifetime (Hank, Cavrini, Di Gessa, & Tomassini, 2018; Herlofson & Hagestad, 2012; Moffitt et al., 2015; Seltzer, 2015). Grandparenthood is a temporal phase and not an event, which means the focus on the sequencing around the transition to grandparenthood may be insufficient to present the experience and meaning of being a grandparent in later life. However, the lack of precise data about the transition to grandparenthood in China's surveys does not allow us to identify the timing of transition to grandparenthood in the present study. Unlike the studies by Leopold and Skopek (2015b) and Margolis (2016), which assessed Kaplan-Meier estimated ages related to grandparenthood, we only explored various probabilities across age groups. Accordingly, the right-censoring problem should be considered when interpreting the results, and the principal limitation of this method is that we cannot identify the age, cohort, and history effects in the cross-regional contexts. Currently, data from CHARLS and similar surveys such as the China Family Panel Studies (CFPS) have not been collecting prospective data on grandparenthood for a sufficient number of years to distinguish between cohort and age effects. Consequently, future research with more detailed data is required to provide a more precise picture of grandparenthood in China, as is comparable evidence from non-western societies.

Despite these limitations, our findings serve as a starting point for future research into the cross-national variation in the social and cultural meaning of grandparenthood and different grandparental effects

across contexts. In this comparative study, we have filled gaps in cross-national knowledge about grandparenthood, which is a significant role in later life. Consideration of the demography of grandparenthood acknowledges a preliminary constraint on the performance of the grandparental role and its effects on: the development of grandchildren (Fomby, Krueger, & Wagner, 2014; Zeng & Xie, 2014), the labor market participation of family members (Goh, 2009; Wen & Hanley, 2015), and the well-being of grandparents (Baker & Silverstein, 2012; Goodman & Silverstein, 2002). By putting grandparenthood into life course contexts, this research has also examined the probability of role interactions of grandparents. Understanding the complex contexts surrounding grandparenthood helps to build a complete conceptual model to analyze the linked development of both grandchildren and grandparents. In addition to the theoretical relevance, the regional differences have particular policy significance. Pension and other social support systems also shape the contexts around grandparenthood through various eligibility and benefit levels, creating differential experiences across social groups (Van Bavel & De Winter, 2013). Further research is needed to assess the policy relevance of grandparenthood, in particular grandparental childcare, from a comparative perspective.

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No potential conflict of interest was reported by the authors.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.alcr.2018.11.003.

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