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Original Article

Step-grandparenthood in the United States

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Abstract

Objectives: This study provides new information about the demography of step-grandparenthood in the United States. Specifically, we examine the prevalence of step-grandparenthood across birth cohorts and for socioeconomic and racial/ethnic groups. We also examine lifetime exposure to the step-grandparent role.
Methods: Using data from the Panel Study of Income Dynamics and the Health and Retirement Study, we use percentages to provide first estimates of step-grandparenthood and to describe demographic and socioeconomic variation in who is a step-grandparent. We use life tables to estimate the exposure to step-grandparenthood.
Results: The share of step-grandparents is increasing across birth cohorts. However, individuals without a college education and non-Whites are more likely to become step-grandparents. Exposure to the step-grandparent role accounts for approximately 15% of total grandparent years at age 65 for women and men.
Discussion: A growing body of research finds that grandparents are increasingly instrumental in the lives of younger generations. However, the majority of this work assumes that these ties are biological, with little attention paid to the role of family complexity across three generations. Understanding the demographics of step-grandparenthood sheds light on the family experiences of an overlooked, but growing segment of the older adult population in the United States.

Keywords: Grandparenting, Life course analysis, Family structure.

More adults today will live to see their grandchildren reach adulthood than a century ago (Uhlenberg, 2005). With the share of grandparents increasing over time, recent research points to the importance of grandparents in shaping grandchildren's outcomes. Grandparents influence grandchildren's socioeconomic well-being indirectly via wealth transfers to parents (Cox & Stark, 2005) and may influence grandchildren's social mobility (Chan & Boliver, 2013; Knigge, 2016; Zeng & Xie, 2014). Grandparents frequently provide childcare for young grandchildren, allowing parents—the middle generation—to work and to accumulate savings that improve the economic well-being of younger generations (Compton & Pollack, 2014; Luo, LaPierre, Hughes, & Waite, 2012). Grandparents are also part of the family social safety net, called upon to assist the younger generation in times of instability and financial hardship (Seltzer & Bianchi, 2013). Yet almost all of the research on grandparenthood is based on *biological* relationships, with little attention paid to *step-grandparents*. Even the most basic demographic characteristics of step-grandparenthood are unknown, with little attention paid to who becomes a step-grandparent and variation in exposure to the step-grandparent role.

Compared to stepfamily ties across two generations, we know comparatively less about the characteristics of families with step-grandparents (Sweeney, 2010). Step-grandparenthood may represent a family institution that remains distinct from step-parenthood, in part, because step-grandparenthood may be less fraught than the step-parent–child relationship. Grandparents tend to have fewer responsibilities than parents and the arrival of a first grandchild may signal a shifting family role that is celebrated regardless of the relationship to the middle generation. However, it is likely that the meaning of grandparenthood for step-grandparents differs for those with close versus distant relationships to the middle generation. The little research thus far points to a broad range of interactions between step-grandparents and step-grandchildren (Chapman, Coleman, & Ganong, 2016), but demographically, step-grandparenthood remains understudied.

This article aims to broaden the scope of what is known about the demography of step-grandparents. We do so by comparing the prevalence of biological and step-grandparenthood across birth cohorts and examining educational and racial/ethnic differences in step- and biological grandparenthood. In addition, we describe demographic exposure to the step- and biological grandparent role to show their potential significance in later life. We focus on the prevalence of step-grandparenthood across the adult life course from ages 35 and older, combining information from the Panel Study of Income Dynamics (PSID) and the Health and Retirement Study (HRS). Our paper adds to a growing body of research that examines the demography of grandparenthood (Arpino, Guma, & Julia, 2017; Leopold & Skopek, 2015; Margolis, 2016) by explicitly documenting the rise in family complexity attributable to step-grandparenthood over the past decades.

Background

There are two ways in which individuals can become a step-grandparent. The first way occurs through the marriage or partnering of the grandparent. That is, an individual becomes a step-grandparent by marrying/partnering with someone who has, or will have a biological grandchild through offspring from a previous relationship. The second possibility is that an individual becomes a step-grandparent when her/his biological child marries/partners with an individual with children from a previous union. In describing these pathways, we combine marriages and cohabiting unions. We do not distinguish between the two types of unions because of the large role that cohabitation has played in the growth of family complexity in recent decades (Cherlin & Seltzer, 2014).

Historically, changing norms surrounding re-marriage after divorce and cohabitation, which rose dramatically beginning in the 1970s, have led to an increase in blended families. The Baby Boomers were the first U.S. cohort to experience high divorce and re-marriage rates in their early adulthood, and they continue to experience higher rates of marital instability as they enter into their 50s and 60s, compared to earlier cohorts (Cherlin, 2010; Kennedy & Ruggles, 2014; Lin & Brown, 2012). These older adults are also becoming grandparents. Thus, we expect to see step-grandparenthood increase from earlier to later cohorts.

Whereas the vast majority of older Americans are grandparents (Monte, 2017), not all become step-grandparents. Socioeconomic differences in fertility patterns and marital stability contribute to subgroup differences in the likelihood of becoming a step-grandparent. College-educated women have fewer children and have children later in life than women with less education (Martinez, Daniels, & Chandra, 2012), meaning that women with college degrees will likely become grandparents later in life, if at all, compared to those without a college education (Seltzer & Bianchi, 2013). In addition, non-marital childbearing and marital disruption are more common among those who did not complete college (Lin & Brown, 2012; Raley & Bumpass, 2003). Taken together, these trends suggest that compared to women without a college education, women with college degrees tend to have fewer grandchildren and fewer step-grandchildren than those without a college degree.

Significant racial/ethnic differences in fertility patterns, non-marital childbearing, and divorce also contribute to variation in grandparenthood and step-grandparenthood. African American and Hispanic women have children earlier than White women and the overall number of children they have also tends to be higher (Hayford, Guzzo, & Smock, 2014). African American women are substantially more likely to have children outside of a marital or cohabiting union compared to Whites and thus more likely to bring children with them into a first marriage or cohabiting union (Martinez et al., 2012). At nearly every age, including late in life, divorce rates are higher for African American than for White women (Lin & Brown, 2012; Raley, Sweeney, & Wondra, 2015). Combined, these patterns suggest that compared to women who completed college and non-Hispanic White women, women without a college education and African American women in particular are more likely to have stepchildren and step-grandchildren. The proliferation of step-kin ties has potential negative implications for these women. Because step-kin ties are associated with less social and economic support in later life (Pezzin, Pollak, & Schone, 2008; Seltzer, Yahirun, & Bianchi, 2013), greater family complexity may compound existing social and economic disadvantages faced by women with less education and African Americans in old age (Seltzer & Yahirun, 2013). At the same time, family complexity may weaken the ability of the oldest generation to fulfill what Hagestad (2006) calls the "reserve army" duty of grandparent support to the middle and youngest generations.

Whereas assessing cohort changes in step-grandparenthood tells us about the rising importance of step-grandparenthood as a family institution, a separate picture of the significance of step-grandparenthood emerges when we begin to understand how it fits into the life course of adulthood. Delays in biological grandparenthood are now being documented, as a correlate of postponed fertility (Leopold & Skopek, 2015). It is unclear whether or not step-grandparenthood is also delayed. Lin and Brown (2012) find that the divorce rate is much higher among middle-aged than older adults. The higher rates of disruption in middle age suggest that individuals may be more likely to enter into step-grandparenthood in "middle" and "young" old age, than in "old" old age, but the relative timing of the transitions into biological and step-grandparenthood are difficult to anticipate. The timing of when people become step-grandparents is tied in complex ways to their fertility and union histories and affects their lifetime exposure to the grandparent and step-grandparent roles.

Gender differences in the timing of fertility, union formation, and disruption may also affect how step-grandparenthood fits into the life course. For women, the first entry into grandparenthood may be step-grandparenthood because women are usually younger than their male spouses or cohabiting partners who have had more time to have children in prior relationships. Women likely become step-grandparents earlier in life than men and in addition to their greater longevity, will be exposed to the step-grandparent role for a longer period of time than men.

The Current Study

This study asks the following questions: First, how has the prevalence of biological and step-grandparenthood changed over birth cohorts? Given declining and delayed fertility, later cohorts may be less likely to have any biological grandchildren, while the rise in stepchild relationships should be reflected in a rise in step-grandparent relationships across birth cohorts. Second, who becomes a step-grandparent? We investigate educational and racial/ethnic differences in step-grandparenthood compared to biological grandparenthood and predict that the least advantaged are more likely to have step-grandchildren. Third, what is an individual's expected lifetime exposure to step- versus biological grandparenthood? Exposure estimates tell us about the prominence of step-grandparenthood in the family lives of adults in the United States.

Data and Methods

Data

We use data from the HRS and the PSID. The two datasets have complementary strengths. The HRS has a large sample size of adults over age 50, with sufficient observations to examine subgroup differences. The PSID sample includes individuals between 35 and 50 years old, allowing us to examine individuals who may become grandparents at comparatively earlier ages.

The HRS is an ongoing biennial U.S. panel survey that is nationally representative of individuals over age 50. The sample includes multiple cohorts to enable a comparison of step-grandparenthood by age across socio-historical periods. We use data from the cross-sectional sample and combine the RAND P public use file with the RAND Family D data file (Bugliari et al., 2016, 2017).

We include information for all HRS birth cohorts whether or not they had any children. We use two HRS samples, one to describe step-grandparenthood across cohorts (N = 33,821 individuals), and one to describe variation in who is a step-grandparent in 2010, as well as the transitions to step-grandparenthood using the life table (N = 20,337 individuals). Among those with children, we consider only offspring who are still alive at the time of the relevant interview, and those who are ages 18 or older to make the sample comparable to the PSID sample (described below). We exclude respondents who were assigned weights of zero in 2010 (or in the relevant year for the cohort analysis).

To examine parents' biological or step relationship to each of their offspring, we use information on "good" links, those in which characteristics of the persons in the family data are evaluated by RAND as reasonably consistent in gender, age, relationship, and name across survey years (Bugliari et al., 2017). Because respondents report about children at each survey wave, we create a summary indicator of the child's biological or step relationship to the respondent. We develop our own variable to indicate the biological or step relationship of each child to the respondent instead of relying on the RAND "best guess relationship" because the RAND variable does not correct for errors in the relationship codes in the 2010 wave (personal communication, RAND HRS Help, July 2017). To address the 2010 errors, we rely on the relationships reported in the adjacent waves, 2008 (Wave 9) and 2012 (Wave 11), if available. Importantly, our analyses focus on the experiences of individuals in the 2010 (wave 10) observation year because it allows us to examine the full age spectrum of individuals aged 51 and older. The 2012 (wave 11) observations do not include 51- and 52-year-olds due to the HRS design. For 86% of children, the relationship codes are consistent across waves. When they are inconsistent, we use the most common relationship type.

We broaden our analysis with data from the PSID to identify step-grandparents younger than age 51. The PSID began in 1968 with a national sample of about 18,000 people. Its genealogical design follows the original 1968 sample members and their descendants as they form their own households. Weights are available to make the PSID nationally representative of the U.S. population in a given year. Note, however, that immigrants as well as native-born ethnic minorities such as Hispanics and Asians are underrepresented in the PSID because of its origin as a sample of individuals in 1968 households (PSID Main Interview User Manual, 2013). We combine data from the 2013 Core interview with the 2013 Rosters and Transfers Module (R & T Module). Although the PSID sample includes adults of all ages, we restrict the analysis to individuals who are ages 35–50 years old, and are household heads or spouse/partners of household heads in 2013. Our final PSID sample consists of 4,116 individuals.

Measurement of Step-grandparenthood

Both the HRS and the PSID identify step-grandparents based on the eldest generation's relationship to step offspring who have become parents. In the HRS, grandparenthood is determined by direct questions at each wave of the panel about whether or not their offspring have children (i.e., grandchildren of the respondent). Grandparenthood is determined in the PSID by using the R & T Module of the 2013 survey. The R & T Module asked respondents about whether each of their and, if relevant, their spouse/partner's, offspring ages 18 and older has children, akin to the HRS strategy. Unlike the HRS, the PSID only identifies step-offspring acquired in the respondent's current marriage or cohabiting union.

The PSID strategy underestimates the prevalence of step-grandparenthood to the extent that former step offspring and parents remain in each other's lives. Respondents whose unions have ended may not report about former stepchildren (i.e., stepchildren from previous unions) due to the ambiguous social norms surrounding whether the relationship depends on the continued existence of the marriage between the parent and stepparent (Coleman, Ganong, Russell, & Frye-Cox, 2015). Reports about former stepchildren by individuals who are no longer married or cohabiting with their stepchildren's biological parent are likely to over-represent close relationships and relationships in which the stepparent helped raise the stepchildren (Coleman et al., 2015).

In supplemental analyses, we compared the PSID and HRS samples by examining the estimates of step-grandparenthood among coupled respondents ages 51 and older. We exclude former stepchildren from the HRS sample to make the samples similar. Estimates are similar for the two data sources for women across all age groups, and for men ages 51–59 (see Supplementary Appendix Table A1).

Unfortunately, neither the HRS nor the PSID identify step-grandparents who acquire this role when a biological offspring becomes a stepparent, for instance by marrying someone who has children from a previous relationship. Direct observations of step-grandparenthood through the marriages or unions of the middle generation, rather than the marriages or unions of the eldest generation (the approach we use), are not available in any contemporary U.S. surveys, as far as we know. By identifying potential step-grandparents among respondents who are married and identify stepchildren through a spouse, our estimates capture the lower bound of exposure to step-grandparenthood. We consider the implications of this omission in our discussion.

Methods

We use percentages to describe variation in who is a biological versus step-grandparent across birth cohorts and across individuals of different educational and racial/ethnic backgrounds. These subgroup analyses primarily use data from HRS because of the larger samples sizes in that study. Because the samples of single men in both the PSID and HRS are relatively small, we restrict attention in much of the analysis to men and women who are partnered and single women. When percentages are based on sample sizes smaller than 50, we suppress the results in the tables and do not report them in the text.

We use life tables to examine exposure to the biological or step-grandparent role. Specifically, we use the Sullivan method previously adapted to calculate disability-free life expectancy (Jagger, Cox, Le Roy, & EHEMU team, 2007; Sullivan, 1971) and rely heavily on the examples and notation used by Jagger et al. (2007). The Sullivan method is advantageous for our purposes because it has few data requirements. Unlike multistate life tables, which require longitudinal data to study the transition into grandparenthood for specific birth cohorts, the Sullivan method uses age-specific prevalence data on grandparent status (πG_x), which we obtain from the 2010 cross-section of the HRS and the 2013 R & T PSID. In addition, we use mortality data from the United States. Vital Statistics (Arias, 2014), which provide the person-years lived in each age interval from x to $x + n\left({}_nL_x\right)$. We adjust the U.S. mortality data by fixing the starting point of our life table at age 35. This means that we assume an arbitrary starting number (radix population) of 100,000 at age 35 for the number of individuals surviving to age x (l_x) (see Jagger et al., 2007, p. 6).

Using HRS and PSID data, we calculate the prevalence of grandparenthood at each age interval from x to $x + n$ $\left(\pi_n G_n\right)$ by the respondent's gender from age 35 to 109, with the PSID contributing observations for ages 35–50 and the HRS contributing to ages 51 and above. The prevalence rates are estimated in 5-year intervals with the two exceptions for age groups 45–50 and 51–54 because we choose not to combine the two data sources. We close the life table with an open age interval from age 80 upwards. To arrive at the expected number of years that individuals spend as a grandparent at any given age $\left(eG_x\right)$, we use the following steps. First, to calculate the person-years spent in the age interval as a grandparent $\left({}_nLG_x\right)$, we multiply the total years of life spent in each age interval $\left({}_nL_x\right)$ (e.g., 35–39, 40–44, 45–50, 51–54, etc.) taken from the modified U.S. Vital Statistics data (Arias, 2014) by the prevalence of grandparenthood $\left(\pi_n G_x\right)$ in that interval (Equation 1 below). Next, we calculate the total person-years lived as a grandparent $\left({}_nTG_x\right)$ by summing across the age intervals above age x (Equation 2). Finally, to calculate the life expectancy of grandparenthood $\left(eG_x\right)$, or the remaining years spent at each age interval as a grandparent, we divide the total years lived as a grandparent at age x $\left({}_nTG_x\right)$ by the number of individuals surviving to age x (l_x) (Equation 3). Thus, the entire calculation for life expectancies of grandparents is shown in Equation 4.

$$ {}_nLG_x = \left({}_nL_x\right)\left(\pi_n G_x\right) \quad (1) $$

$$ {}_nTG_x = \sum\left[\left({}_nL_x\right)\left(\pi_n G_x\right)\right] \quad (2) $$

$$ eG_x = {}_nTG_x / l_x \quad (3) $$

$$ eG_x = \frac{\sum\left[\left({}_nL_x\right)\left(\pi_n G_x\right)\right]}{l_x} \quad (4) $$

We perform the same calculations for biological and step-grandparents using prevalence rates of biological and step-grandparenthood from all age-eligible respondents in the PSID and HRS and analyze life expectancies of biological grandparenthood and step-grandparenthood separately for men and women. Our adoption of the Sullivan method parallels that of Margolis (2016) who constructs life tables of grandparenthood for Canadians. An important point to note is that the life table estimates we present are for a synthetic cohort. We cannot distinguish age from cohort differences with the cross-sectional data used to estimate the lifetables. Specifically, different cohorts are represented at each age interval. In the first step in our descriptive analysis, however, we exploit the multi-cohort design of the HRS to report the prevalence of biological and step-grandparenthood at specific ages. This provides suggestive evidence on the implications of timing differences in step-grandparenthood across cohorts. We return to this issue of age and cohort differences in step-grandparenthood in the discussion.

Results

Prevalence of Biological and Step-grandparenthood Over Birth Cohorts

Table 1 compares the prevalence of individuals who are biological and step-grandparents across five different birth cohorts by age. Data are drawn from 10 waves of the HRS and information on all cohorts is used. We examine prevalence rates by 5-year age intervals, with the exception of the first age interval, which is for ages 51–54. Panel A presents information on biological grandparenthood and step-grandparenthood is assessed in Panel B.

Panel A shows, not surprisingly, that the percentage of individuals who are biological grandparents increases with age for both genders. The experiences of some birth cohorts are incompletely captured in the HRS, but the age pattern is consistent across cohorts for all ages included in the HRS. For example, among women born between 1931 and 1941, 65.4% of women between the ages of 51 and 54 had a biological grandchild and by ages 65–69, 86% had at least one biological grandchild.

There are, however, birth cohort differences in grandparenthood. Comparing percentages across the rows indicates a decreasing share of both women and men who are biological grandparents, at least until age 65, when mortality differences across cohorts are likely to have a greater effect on the prevalence estimates than at younger ages. The most extreme comparison is between those individuals born between 1931 and 1941, where almost two-thirds (65.4%) of women ages 51–54 are biological grandmothers, compared to those born between 1954 and 1959, where only 38.2% are biological grandmothers at that age. A similar trend is evident for biological grandfatherhood, although the share of men who report being a biological grandparent is lower than women across all cohorts. That significant percentages of women and men are already grandparents by the time they are first observed in the HRS data points to the importance of including observations on younger individuals in the life table analysis (below).

Countering the decline in biological grandparenthood in middle age, Panel B shows a slight increase in step-grandparenthood across birth cohorts. At almost each age interval, the percentage who have a step-grandchild increases from earlier to later cohorts. Among women born between 1931 and 1941, 10.7% have at least one step-grandchild by the time they reach ages 51–54. For the most recent birth cohort, those born 1954–59, 13.1% of women are step-grandmothers by that age. Increases for men are similar in direction, but even more dramatic, with 5.3% of men in the 1931–41

Table 1. Percent of Individuals Who are Grandparents by Gender, Birth Cohort, and Age

	Women							Men						
	51–54	55–59	60–64	65–69	70–74	75–79	80+	51–54	55–59	60–64	65–69	70–74	75–79	80+
Panel A: biological grandparents														
Birth cohort														
1923 or earlier	—	—	—	—	80.8	79.7	78.2	—	—	—	—	80.7	80.6	80.3
1924–1930	—	—	—	81.4	84.6	86.5	86.1	—	—	—	74.7	81.0	83.9	84.5
1931–1941	65.4	77.4	82.5	86.0	86.9	86.9	—	51.1	65.8	76.3	82.2	85.1	86.1	—
1942–1947	56.4	71.0	78.4	80.6	—	—	—	44.6	62.0	72.7	77.4	—	—	—
1948–1953	47.6	62.3	69.6	—	—	—	—	35.4	49.6	57.9	—	—	—	—
1954–1959	38.2	43.7	—	—	—	—	—	27.5	36.8	—	—	—	—	—
Panel B: step-grandparents														
Birth cohort														
1923 or earlier	—	—	—	—	7.2	8.0	8.1	—	—	—	—	12.0	12.0	13.4
1924–1930	—	—	—	6.9	8.7	10.3	11.1	—	—	—	9.7	11.5	13.1	13.1
1931–1941	10.7	12.0	13.5	14.9	15.1	13.2	—	5.3	6.8	8.9	11.2	11.8	10.2	—
1942–1947	12.1	15.0	17.7	16.6	—	—	—	7.4	11.6	14.3	15.9	—	—	—
1948–1953	13.0	17.1	17.6	—	—	—	—	13.7	18.6	18.5	—	—	—	—
1954–1959	13.1	13.9	—	—	—	—	—	13.0	11.9	—	—	—	—	—

Note: HRS 1992–2010 (Rand Family D file; Rand P file). Weighted using individual weights. "—" denotes inapplicable for the date range (1992–2010) for those particular birth cohorts. HRS = Health and Retirement Study; PSID = Panel Study of Income Dynamics.

cohort having a step-grandchild by the time they are ages 51–54 compared to 13.0% of men in the 1954–59 cohort.

In addition, similar to biological grandparenthood, we see a general pattern of increasing step-grandparenthood with age for most cohorts. For example, 13.0% of women born between 1948 and 1953 had a step-grandchild at ages 51–54; this share increased to 17.6% by ages 60–64. Those born between 1931 and 1941 and during World War II (1942–1947) are the slight exception to this, with small decreases in the share with a step-grandchild in later ages, compared to younger ages, for both women and men. Gender differences in the likelihood of having a step-grandchild also vary across cohorts. In earlier cohorts born before 1931, the prevalence of step-grandfatherhood is somewhat higher than the prevalence of step-grandmotherhood at all ages. However, for those born between 1931 and 1947, women are more likely to have a step-grandchild than men. Women and men in the two most recent birth cohorts have more similar percentages of step-grandparents than in earlier cohorts.

Characteristics of Step-grandparents and Biological Grandparents

Our second research question asks who becomes a step-grandparent and how step-grandparents might differ from biological grandparents. Table 2 presents the prevalence of step- and biological grandparenthood by an individual's partner status. We focus on partnership status because stepchildren and grandchildren acquired through stepchildren enter a family through the respondent's marriage or cohabitation. Panel A shows the prevalence rates for those ages 35–50 years old in the PSID sample. Panel B shows the results using those ages 51 and older in the HRS sample. In the first row of Panel A, 69.6% of women and 75.6% of men are married or cohabiting between ages 35 and 50. In later life, women (57.3%) are even less likely to be partnered than men (75.1%). The larger gender difference for the older age group is due, in part, to women's higher life expectancy and their lower likelihood of re-marriage at older ages, compared to men. Among those 35–50 years old, single women are much more likely than single men to be grandmothers (21.5% vs. 8.9%) ($p < .001$). This may be due to women's earlier age at childbearing and their greater likelihood to live with and maintain ties to offspring after divorce or nonunion childbearing (Gunnoe & Hetherington, 2004, Stykes, 2011; Sweeney, 2010). Single women ages 51 and older are also more likely than single men to be grandparents, but the gender gap is proportionately smaller, 68.9% for women versus 51.1% for men ($p < .001$).

Among adults ages 51 and older, the only age group for which the data include single grandparents' reports about

Table 2. Grandparent Type by Gender, Partnership Status, and Age

	Women			Men		
	Single	Partnered	All	Single	Partnered	All
Panel A: ages 35–50 (PSID)						
Partnership status (row %)	30.4	69.6	100.0	24.4	75.6	100.0
Any bio grandchildren	21.5	12.7	15.4	8.9	9.5	9.4
Any step-grandchildren	n/a	7.1	5.0	n/a	6.0	4.6
No grandchildren	78.5	82.4	81.2	91.1	85.9	87.2
1+ grandchild(ren)						
Bio only	21.5	10.5	13.8	8.9	8.1	8.3
Step only	n/a	4.9	3.4	n/a	4.6	3.5
Both bio and step	n/a	2.3	1.6	n/a	1.4	1.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	769	1,489	2,258	364	1,494	1,858
Panel B: Ages 51 and older (HRS)						
Partnership status (row %)	42.7	57.3	100.0	24.9	75.1	100.0
Any bio grandchildren	67.3	62.6	64.6	48.3	58.8	56.2
Any step-grandchildren	7.7	18.2	13.7	7.3	15.1	13.2
No grandchildren	31.2	31.7	31.5	48.9	35.5	38.8
1+ grandchild(ren)						
Bio only	61.2	50.1	54.8	43.8	49.4	48.0
Step only	1.5	5.7	3.9	2.8	5.7	5.0
Both bio and step	6.1	12.5	9.8	4.5	9.4	8.2
Total	100.0	100.0	100.0	100.0	100.0	100.0
N	5,380	6,180	11,560	2,088	6,689	8,777

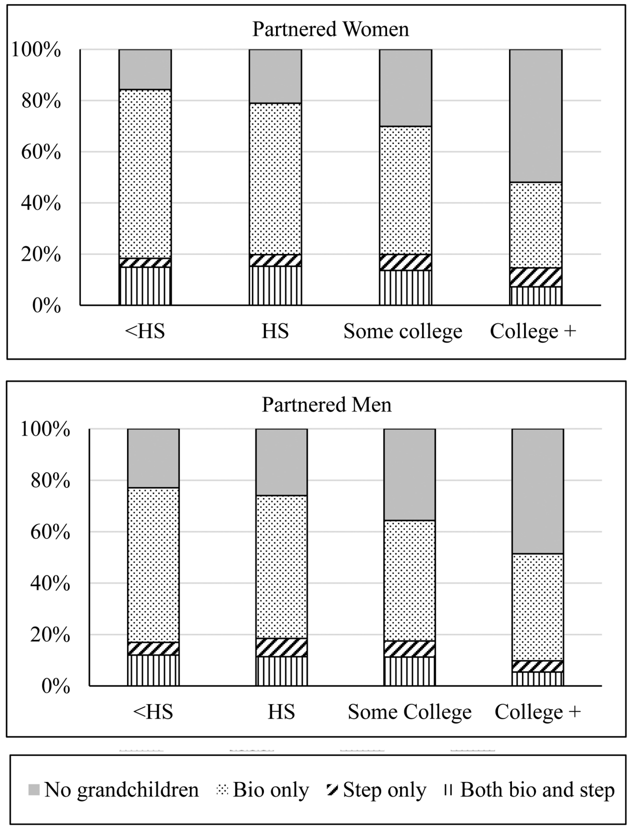
Note: PSID 2013 R & T module and HRS 2010 (Rand Family D file; Rand P file). Percentages weighted using 2010 individual-level weights for the HRS and 2013 individual-level weights for the PSID. n/a denotes that PSID does not collect information on the stepchildren of non-partnered men and women. HRS = Health and Retirement Study; PSID = Panel Study of Income Dynamics.

stepchildren, 18.2% of women and 15.1% of men who are married or cohabiting have step-grandchildren, compared to only 7.7% of single women and 7.3% of single men who are step-grandparents. Note that sample sizes for coupled men and women differ due to age differences between spouses/partners. The table also indicates whether a grandparent has biological grandchildren only, step-grandchildren only, or both biological and step-grandchildren. Significant minorities of older adults have a combination of biological and step-grandchildren. For instance, 12.5% of married or cohabiting women have both biological and step-grandchildren. For men who are partnered, the percentage with both types of grandchildren is 9.4%.

The next two figures present differences in grandparenthood by characteristics associated with socioeconomic well-being for individuals ages 51 and older. Figure 1 presents educational differences in grandparenthood in later life. The top panel for married or cohabiting women, shows that those with a high school degree are much more likely to have a grandchild compared to women with a college degree. Nearly 80% of women with a high school degree only are grandmothers, compared to 48% of women who have college degrees. College-educated women are less likely to have any step-grandchildren (14.6%) compared to women with a high school degree (19.8%) ($p < .001$).

The bottom panel of Figure 1 shows that educational differences in grandfatherhood for married or cohabiting men at this age follow the same pattern for women. Compared to men with less education, college-educated men are much less likely to be grandfathers, and they are less likely to have step-grandchildren. However, when comparing men and women, one noteworthy difference is that college-educated men are slightly less likely (9.8%) than college-educated women (14.6%) to report being a step-grandparent ($p < .001$). This may be due to age differences between men and women at remarriage and gender differences in the overall likelihood of re-marrying.

Figure 2 shows racial/ethnic differences in grandparent type among women ages 51 and older by partnership status. In the top panel, the distribution of types of biological and step-grandchildren is similar across groups for single women. However, for partnered women, the distribution of types of grandchildren differs among the racial/ethnic groups, as shown in the bottom panel. Among partnered women, the most striking difference is in the combination of biological and step grandchildren. African American women are much more likely than women in the other racial/ethnic groups to have both biological and step-grandchildren, 27.3% of African Americans, compared to 11.7% of Whites ($p < .05$) and 8.9% of Hispanics ($p < .001$). More generally, partnered African American women are twice as likely to be step-grandmothers compared to Non-Hispanic Whites ($p < .001$), and are more than 2.5 times as likely to have any step-grandchildren compared to Hispanics ($p < .001$). Racial/ethnic differences in the likelihood of being a step-grandparent between African American women and



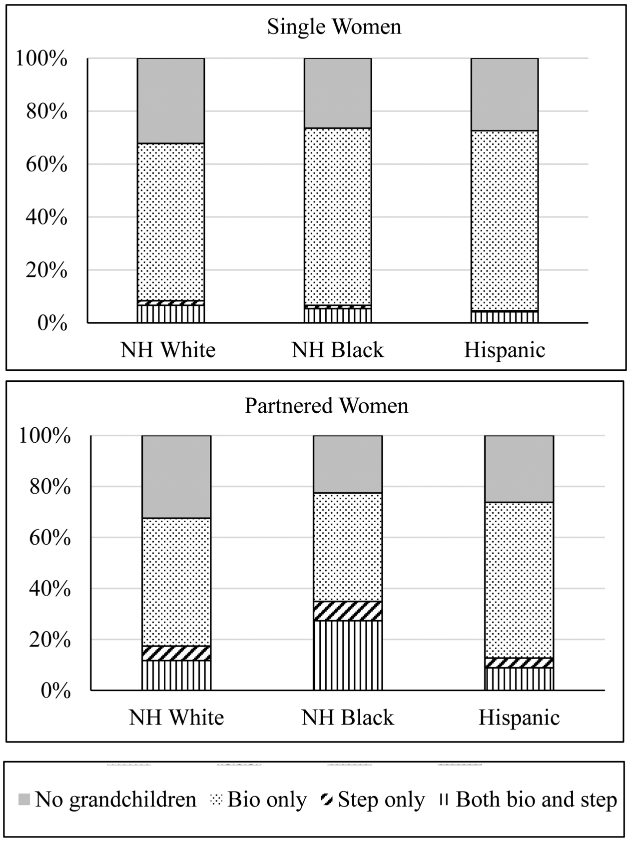
Source: HRS 1992-2010 (Rand Family D file; Rand P file). Weighted using individual weights.

Figure 1. Grandparent type by education, partnered women and men, ages 51 and older.

non-Hispanic White women cannot be explained by group differences in education (see Supplementary Appendix Table A2).

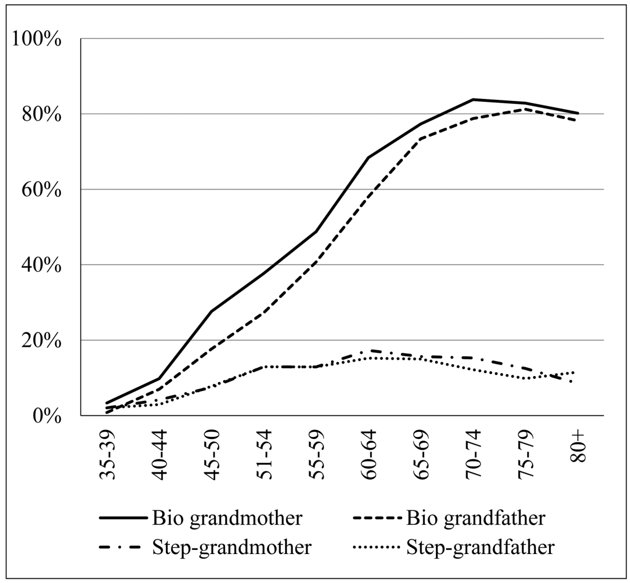
Exposure to Step and Biological Grandparenthood

The results in Figure 3 address our last research question about the extent to which individuals are exposed to step- and biological grandparenthood as they age. Figure 3 shows that for both women and men, the percentages of individuals with a biological grandchild increase with age. The transition to biological grandparenthood occurs earlier in life for women than men; by ages 45–50, over a quarter of women (27.6%) are biological grandmothers, whereas only 17.7% of men that age are biological grandfathers ($p < .001$). At all ages, the likelihood of having a step-grandchild is much lower than the likelihood of having a biological grandchild. Although the share of individuals who report being a step-grandparent increases with age, there are only small differences between men and women in the timing of step-grandparenthood. By ages 45–50, 7.5% of women and 7.8% of men are step-grandparents, and by ages 51–54, when women are still much more likely to



Source: HRS 1992-2010 (Rand Family D file; Rand P file). Weighted using individual weights.

Figure 2. Grandmother type by race/ethnicity and partnership status, ages 51 and older.



Sources: PSID 2013 R&T module and HRS 1992-2010 (Rand Family D file; Rand P file). Weighted using individual weights.

Figure 3. Prevalence rates of biological and step-grandparenthood by gender and age.

be biological grandmothers than men are to be biological grandfathers, the percentages with step-grandchildren are 12.9% for women and 13.0% for men. However, the percentage of adults who are step-grandparents peaks between ages 60 and 64 at 17.3% for women and 15.2% for men ($p > .05$). From ages 65 and older, the percentages with step-grandchildren decrease, probably because these older ages are represented by earlier cohorts in our data.

Another way to look at the exposure to step- and biological grandparenthood is through the life table. Table 3 summarizes exposure to the grandparent role through life expectancy estimates of the number of years that adults ages 35 and older can expect to be a biological grandparent or a step-grandparent. Note that because the life table constructs the experiences of a synthetic cohort using cross-sectional data, the age patterns are not necessarily what one would observe if one were able to observe a single cohort at all ages. The life table uses information from multiple cohorts to simulate the age pattern (see Table 1 for the specific cohorts that are represented at each age interval). Between the ages of 35 and 44, women have approximately 25 years of life remaining as grandmothers, and men have nearly 20 more years as grandfathers.

Among those who reach age 65, women between the ages of 65 and 69 will have nearly 17 more years as grandmothers, and men will have 14 years as grandfathers. The greater number of remaining years for grandmothers than grandfathers likely reflects women's greater life expectancy and their earlier transitions to parenthood compared to men.

Remaining years as a biological grandparent are only slightly less than remaining years as any type of grandparent. This is because remaining years as a step-grandparent are considerably lower than remaining years as a biological grandparent. Women between the ages of 35 and 39 can anticipate nearly 5 remaining years of step-grandmotherhood, and for men at this age, approximately 4 years of step-grandfatherhood. Although these numbers are small, they are not insignificant; at ages 35–39, this accounts for 19% of remaining years as a grandparent of any type. That is, nearly 1 in 5 years spent as a grandparent at this age will be spent as a step-grandparent. Even at ages 65–69, 15% of remaining years as a grandparent are accounted for by years as a step-grandparent.

Discussion

Our results provide a first glimpse of the demographics of step-grandparenthood in the United States. Although recent work has examined how increases in family complexity affect relationships between parents and children in later life (Kalmijn, 2013; Seltzer et al., 2013; Suanet, van der Pas, & van Tilburg, 2013), less attention has been paid to how these patterns connect family members across more than two generations.

Table 3. Estimates of Individuals' Remaining Years as a Grandparent and as a Biological and Step-Grandparent at Selected Ages by Gender, Adults Ages 35 and Older

	Women's Remaining Years as:			Men's Remaining Years as:		
Age	Any Grandmother	Bio Grandmother	Step-grandmother	Any Grandfather	Bio Grandfather	Step-grandfather
35–39	25.4	23.8	4.9	19.9	18.1	4.2
40–44	25.3	23.7	4.8	19.9	18.3	4.1
45–50	24.8	23.4	4.7	19.7	18.1	4.0
51–54	23.2	22.1	4.3	18.8	17.5	3.7
55–59	21.9	21.0	3.8	17.8	16.9	3.3
60–64	19.7	19.0	3.3	16.3	15.6	2.8
65–69	16.8	16.3	2.5	14.1	13.6	2.2
70–74	13.7	13.4	1.9	11.4	11.1	1.6
75–79	10.5	10.3	1.3	8.8	8.6	1.2
80+	7.9	7.8	0.8	6.6	6.4	0.9

Note: PSID 2013 R & T module and HRS 2010 (Rand Family D file; Rand P file). Mortality data from Arias (2014). HRS = Health and Retirement Study; PSID = Panel Study of Income Dynamics.

Consistent with previous research on stepfamilies more broadly, we find that having any step-grandchildren is more common among those without a college education and African Americans, compared to those who completed college and those who are White. Indeed, our results show that African American women over 50 are more likely to have a step-grandchild than Whites even after accounting for educational differences between groups. African Americans and those without college degrees are more likely to need help from family members because of their poorer health and higher rates of poverty, compared to their more advantaged counterparts (Seltzer & Yahirun, 2013). Yet the greater ambiguity about stepfamily members' responsibilities to each other and the greater tensions in complex families may weaken the support network for these more vulnerable women and further limit the contributions they can make to the well-being of the younger generations in their families (Ganong & Coleman, 2017; Hagestad, 2006). Our work underscores how step-grandparenthood potentially compounds the already significant disadvantages faced by African Americans and less-educated women by tearing at the family safety net (Seltzer & Yahirun, 2013).

Looking at cohort differences in step- versus biological grandparenthood confirms our expectation that step-grandparenthood increases from earlier to later cohorts, with Baby Boomers at the forefront of this trend. Our results show that among older adults ages 51 and older who are grandparents, nearly 22% of grandfathers have at least one step-grandchild, and nearly 20% of grandmothers have at least one step-grandchild. In addition, estimates from our analysis of exposure to the grandparent role suggest that although the share of total years spent as a step-grandparent are relatively small compared to total years as a biological grandparent, they are not insignificant. Even at age 65, 15% of remaining years as a grandmother or grandfather are accounted for by years as a step-grandparent. These "life expectancy" estimates of years remaining as grandparents, provide a useful indicator for step- and biological grandparenthood at the population level, rather than individual-level predictions (Jagger et al., 2007).

Our finding of cohort differences in the likelihood of being a step-grandparent points to a limitation of the life table analysis. The Sullivan method, as with other life table techniques that simulate the experience of a single cohort, requires an assumption that the process of becoming a grandparent or step-grandparent is relatively stable over time so that age or exposure differences are not confounded by cohort differences in exposure or timing of exposure to step-grandparenthood (Jagger et al., 2007; Mathers & Robine, 1997). In the absence of nationally representative, longitudinal data that follow individuals as they age or that include retrospective histories of fertility, union formation, and dissolution, our synthetic cohort study is the first to demonstrate how step-grandparenthood is growing with the complexity of U.S. families.

A related challenge to our study is that the data used here do not allow us to decompose the demographic processes that contribute to trends in step-grandparenthood. Namely, changes in fertility, union formation, and union dissolution across cohorts all significantly affect step-grandparent prevalence differently. Although our analyses hint at ways in which delayed fertility and increased marital stability lead to a higher rate of step-grandparenthood among certain groups, such as those without a college education and African Americans, compared to others, the collection of detailed information about these processes across multiple family generations is also necessary to disaggregate the outcome.

In addition, our estimates provide a lower bound of the prevalence of step-grandparenthood because of the data constraints that only allow us to examine one pathway through which adults become step-grandparents, that is when an adult stepchild has children. Contemporary national surveys lack information about step-grandparenthood achieved when a biological adult child marries or cohabits with someone who has a child from a previous union. Taking account of this other pathway to step-grandparenthood is unlikely to double estimates of its prevalence because of the intergenerational correlation of marital stability (Li & Wu, 2008). Families in which the older generation has experienced union instability and repartnering are more likely to witness instability in the younger generations, compared to families in which the older generation's first union remains intact. Future data collection on marital and fertility histories across more than one generation will enable both upper and lower bound estimates of step-grandparenthood. Finally, this study groups all biological and step-grandparents together, despite significant heterogeneity in the timing and sequencing in which grandchildren appear, as well as the total number of grandchildren individuals have (Arpino et al., 2017). We recognize that this broad-brush classification glosses over important distinctions among grandparents themselves.

Despite these limitations, our study provides a first portrait of grandparenthood that takes account of the dramatic increase in exposure to step-family relationships. These family changes have potentially important effects on the welfare of younger families as well. Although in this study we do not address differences in what step- versus biological grandparents do for grandchildren, our prior work suggests that step-grandparents are less involved in caring for grandchildren than biological grandparents (Yahirun & Seltzer, 2014), echoing other research that highlights weaker ties between step-grandparents and grandchildren compared to biological grandparents and grandchildren (Ganong & Coleman, 1998, 2017). More research is needed to understand differences in the ways that step-grandparents assist the younger generations compared to those with only biological grandchildren. We believe this to be a fruitful future area of research for those who are interested in how the family safety net works for individuals with complex families.

Supplementary Material

Supplementary data are available at The Journals of Gerontology Series B: Psychological and Social Sciences *online*.

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