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Living with parents or grandparents increases social capital and survival: 2014 General Social Survey-National Death Index

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ABSTRACT

Introduction: After nearly a century-long trend toward single-family living arrangements, people in wealthy nations are increasingly living in multi-generational households. Multi-generational living arrangements can, in theory, increase psychological, social, and financial capital—factors associated with improvements in health and longevity.

Methods: We conducted a survival analysis using the 2014 General Social Survey-National Death Index, a prospective multi-year survey. We explored whether single generational living arrangements were associated with a higher risk of mortality than multi-generational living arrangements.

Results: We explored this association for different groups (e.g., the foreign-born and those with high self-reported stress in family relationships). Healthy subjects who live in two-generation households were found to have lower premature mortality (hazard ratio 0.9, 95% confidence interval = 0.82, 0.99). Otherwise, we found little evidence that living arrangements matter for the respondents' risk of premature mortality.

Conclusions: Healthy people living in two-generation households have longer survival than healthy people living on their own.

Introduction

After a long post-war decline in households with multiple generations of family members living under the same roof, the proportion of multi-generational households in the US and other wealthy nations is now again increasing (Bengtson, 2001; Taylor, Passel, & Fry, 2010). In the US and other commonwealth nations, this increase has been attributed to growing numbers of foreign-born groups for whom it is more normative to live with one's relatives. More recently, the Great Recession and housing crises brought many generations together out of economic necessity, promoting adult children and their parents to move in together. By 2014, 19% of the U.S. population lived in multi-generational housing (Bengtson, 2001; Taylor et al., 2010).

Historically, as nations industrialized, it became common for children to strike out on their own after reaching adulthood, often leaving for towns far from their families as they went to college and then work. Ferrarini (2006) Some have hypothesized that this process of individualization led to the dissolution of family ties, and that this reduced structural social capital may have impacted health (Kawachi, Subramanian, & Kim, 2010; Szreter & Woolcock, 2004).

Multi-generational households share common resources, such as

food, childcare, eldercare, heat, electricity, transportation, and rent, thereby reducing the cost of living relative to individual or single family living arrangements. In multigenerational households with parents and adult children, if one individual has a greater share of the resources there tends to be a redistribution of these resources to other family members (Glick & Van Hook, 2011). By sharing resources, multi-generational living arrangements can, in theory, allow families to “upgrade” their lives, moving to safer neighborhoods and in closer proximity to loved ones, thus increasing well-being. In addition, multi-generational living arrangements might improve financial resources, buffer stress, reduce loneliness, enhance intellectual sharing, and generate structural social capital, thereby elevating the level of one's health (Adler & Kwon, 2002; Anonymous, 2013; Cohen & McKay, 1984; Kawachi et al., 2010; Kemper & Murtaugh 1991; McFall & Miller, 1992; Minkler, 1999; Putnam, 1995; Woolcock & Narayan, 2000; Zarit, Reeve & Bach-Peterson, 1980).

However, there are also reasons to believe that health and longevity would not be positively affected, or could even be negatively influenced by multi-generational living. While some have lamented the loss of the traditional multi-generational household in the post-war era, others rejoice in the freedom that it brings to the individual (Oyserman, Coon,

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& Kemmelmeier, 2002). With this freedom comes autonomy and the ability to avoid unwanted interpersonal conflict (including inter-generational cultural differences) which may lead to stress and have deleterious health effects. Multi-generational households may also be more crowded than single generational households, a risk factor for poor health in its own right (Gove, Hughes, & Galle, 1979). When one person becomes ill, it can affect the entire household, and this can be fatal when, for instance, a child with influenza infects an elderly adult (Anonymous, 2001). Sharing of food from a common bowl, sharing utensils, or sharing toothbrushes and razors differ by culture, and can also lead to the spread of infectious agents, such as meningitis or hepatitis B.

Whether induced by or reduced by multi-generational living arrangements, emotional states and stressors have been hypothesized to influence health and longevity by causing the “fight or flight” response to be active for longer than is “normal” by evolutionary standards (McEwen, 1998). Specifically, by experiencing constant psychological stress in modern society, rather than short-term stress in response to a predator, the body’s stress regulatory systems become disrupted in ways that predispose one to heart disease, infection, and other maladies. In theory, there could be distributional effects, by which the stress response is activated among some within multi-generational households but not others.

For instance, those who perceive themselves to be unhappy might benefit from the additional emotional support and environmental structure provided by living with family members, while those who otherwise perceive themselves to be content might not. Those who have fewer intellectual resources (e.g., a lower IQ or educational attainment), who are sick (measured by self-rated health), or who are poor might benefit more from multigenerational living arrangements than those who are not. This is because vulnerable populations might benefit from resource sharing to a greater extent than the average person.

Many foreign-born groups may also be more accustomed to such living arrangements and, on average, find them to be less stressful than native-born groups do. Thus, foreign-born households might reap the benefits of multi-generational living arrangements, while suffering fewer stressors associated with living with relatives. If so, foreign-born households might also benefit to a greater extent than native-born households.

Likewise, race and culture may play an outsized role in determining the benefits or harms associated with living arrangements among the foreign-born. As one example, Latino immigrants having higher rates of residence with extended family than non-Hispanic White immigrants (Sarkisian, Gerena, & Gerstel, 2006; Wilmoth, 2001). In such households, older adults tend to provide a disproportionate share of the household resources. Recent immigrant parents heralding from Asian and Central and South America, on the other hand, are more likely to live in homes in which their adult children provide the majority of the household income (Glick & Van Hook, 2011). Thus, culture can influence the way that financial resources are shared, leading to different impacts associated with multi-generational households for different groups.

Finally, cultural expectations play a role in the living situations of older immigrants for whom normative arrangements often involve co-residing with family. Such co-habitation may improve the social integration of this older, immigrant population (Pillemer, 2000). On the other hand, multigenerational living may also negatively affect the mental health of the foreign-born, since it tests familial ties, which may be strained across the generations due to changing cultural identity and beliefs (Thomas, 1995).

In this paper, we set out to understand the relationship between multi-generational household arrangements on health as well as longevity. We explore the impact of various factors as predictors in this relationship, such as immigration status, race, ethnicity, stress, happiness, and IQ. We hypothesize that those with fewer intellectual, emotional, health, or financial resources might benefit more from living

with other family members than those with a greater support system. For example, single people may benefit more than married couples. We also explore the impact of demographic characteristics: age, race, and ethnicity (Hispanic or non-Hispanic), on multi-generational living arrangements. To the extent that there are differing norms by different sub-groups, we wish to capture such effects.

Methods

Data

Our analysis was performed using the 2014 General Social Survey-National Death Index (GSS-NDI) dataset, which links annual and bi-annual GSS survey data from the 1978–2010 GSS surveys to NDI data through 2014 (Anonymous, 2011). The 2014 GSS-NDI provides 36 years of data representative of the US (non-institutionalized) civilian population. It includes a total of 44,174 participants – 12,558 of which were deceased as of 2014. After excluding participants living in households with children under 18 years of age and removing those with missing data on income, age, gender, race, education, and immigration status, 25,882 participants remained.

We previously published a manuscript describing the GSS-NDI data, its validity, and how it can be downloaded (Anonymous, 2011). It is important to note that, within the GSS-NDI, it is common for questions to be skipped in some years. While the resulting missing values reduce statistical power, they do not introduce bias associated with compositional changes within the cohort. For example, while multi-generational family variables were asked in all years, our measure of psychological stress was asked of only 716 few respondents. However, the respondents were nonetheless representative of the broader panel samples as a whole. This can influence survival follow-up, and introduce period or cohort bias in the analysis. This is addressed in the statistical analysis section below.

Measures

Our primary outcome of interest was all-cause mortality hazards. Our primary independent variable was the number of generations of “direct” family members residing in the participant’s household at the time of the questionnaire, for which we have data from 1978–2010. These “direct” family members include grandparents, parents, children, parents-in-law, and children-in-law, but not collateral relatives such as nieces, nephews, aunts, and uncles.

Our variable of interest, famgen, had over nine different classifications in the GSS. For example, a child living with his or her parents was classified differently than a child living with his or her grandparents. Because these sub-groups tend to be small in number (and therefore have limited statistical power), we recoded the predictor variable to an ordinal categorical variable with three levels: one-, two-, or three- or more direct family generations living in the household with the participant. Initially, there were 7 categories in famgen variable: 1 generation (19,500 subjects); 2 generations, children (5122 subjects); 2 generations, grandchildren (147 subjects); 2 generations, parents (227 subjects); 3 generations, children, parents (253 subjects); 3 generations grandchildren (617 subjects); and 4 generations (26 subjects).

Because there the number in some subgroup is small, we collapsed them into three categories.

The health and longevity of the participant was the outcome of interest.

By law, those under the age of 18 are required to live with a parent or guardian, so we excluded households with members under the age of 18 within the two-generational category. However, we ran the analyses, both with and without those under the age of 18 in the definition of the three- or more generational category, as a sensitivity analysis. Examples of two-generational households include a parent and child, where the child is over the age of 18, or one that contains children and

grandparents. An example of a three-generational household is one with a child of any age, a parent, and a grandparent.

We included income, age (continuous), race (black/white/other), gender (male/female), and educational attainment (highest degree) as baseline control variables in the association between household family generations and mortality. We controlled for income and educational attainment because income and education are known independent predictors of adult health and because those having lower levels of income or education are less able to establish independence and thus, are more likely to live in multi-generational family households.

We also conducted stratified analyses to explore the effects of multi-generational living on mortality among particular subgroups including “place of birth” (born in US/outside of US); “self-reported health” (healthy = self-reported health as excellent or good and unhealthy = self-reported health as fair or poor); “Do you agree life at home is rarely stressful?” (low = agree or strongly agree and high = neither agree nor disagree, strongly disagree, and disagree); “would you say that you are very happy, pretty happy, or not too happy?” (low = not too happy and high = pretty happy and very happy); social capital was measured as “Generally speaking, would you say that most people can be trusted?” (low = cannot trust and depends and high = can trust); and verbal IQ (low = 1–6 correct words” and high = 7–10 correct words).

Analyses

We conducted a Cox proportional hazard survival analysis and studied the time between entry to the study and death. The coefficients are presented as hazard ratios, allowing for a straightforward interpretation: change in the relative hazard of mortality for a unit change in the independent variables. We pre-specified our models, used a p value of 0.05, and considered a change in mortality hazards change of 10 percentage points to be a meaningful change.

We conducted power analyses with a beta = 0.8 and alpha = 0.05. Under these parameters we could detect an effect size of 0.04 for single-generational households, 0.08 for two generational households, and 0.19 for three-generational households. Therefore, we were somewhat limited in our ability to detect reasonably large effects within sub-group analyses of 3 generational households. Our strategy was therefore to explore the direction of the effect, and to conduct non-stratified analyses with covariates if needed.

To explore the contribution of various variables in the relationship between multi-generational family households and mortality hazards, we performed a series of sensitivity analyses and explored the effect of gender interactions, adding an interaction term into the Cox models to investigate whether and how the coefficient changed. We also explored the effect of verbal IQ, using validated wordsum scores, and conducted a stratified analysis by verbal IQ. Specifically, we transformed wordsum scores into a dichotomous variable to represent high and low verbal intelligence, splitting approximately half the population into each group. Because the sample size with wordsum scores was not large, we ran the analysis separately for overall effects. We did the same for trust as a measure of social capital. These analyses are available upon request.

Finally, we conducted a stratified analysis on the variables as defined above.

One variable, psychological stress, was only asked in the years 1989, 1998, 2002, 2004, 2006, 2012. In total, there are 713 subjects who responded to the stress question included in our analysis. Because the question was missing from early period/cohorts which may have had more or less stress in general than later cohorts, we did explore period and cohort trends on all variables to ensure that such biases were not likely relevant.

The GSS-NDI was approved by the Columbia University Institutional Review Board.

Table 1
Descriptive data for the analytic sample. 2014 General Social Survey-National Death Index.

	1 Generation Households	2 Generation Households	3 Generation Households	Total
N	19,500	5496	886	25,882
Age (%)				
Under 25	8.0	14.3	14.5	9.5
25–34	17.5	21.5	19.4	18.4
35–44	12.7	22.3	18.6	15.0
45–54	15.6	20.9	24.7	17.1
55–64	16.5	12.6	13.4	15.5
65 and over	29.7	8.5	9.4	24.5
Sex (%)				
Male	47.3	32.0	30.2	43.5
Female	52.7	68.0	69.8	56.5
Race (%)				
White	88.0	75.9	63.1	84.6
Black	12.0	24.1	36.9	15.5
Immigration (%)				
Native Born	94.5	94.5	93.1	94.4
Foreign Born	5.5	5.5	6.9	5.6
Income (%)				
Under \$25,000	50.8	49.9	49.4	50.5
\$25,000 or more	49.2	50.1	50.6	49.5
Education (%)				
Less than High School	20.4	19.7	29.1	20.5
High school graduate	49.4	57.5	58.0	51.4
Some college	5.5	6.7	6.0t	5.8
More than College	24.7	16.1	6.9	22.3
Self-reported health (%)				
Healthy	74.5	75.2	73.1	74.6
Not healthy	25.5	24.9	27.0	25.5
Stress (%)				
High	25.5	24.9	27.0	25.5
Low	56.8	37.3	11.1	51.8
Happiness (%)				
High	87.8	83.6	83.9	86.7
Low	12.2	16.4	17.1	13.3
Social capital (%)				
High	40.3	33.0	25.4	38.3
Low	59.7	67.0	74.6	61.8
Verbal intelligence quotient (%)				
High	44.7	35.8	25.3	42.0
Low	55.3	64.2	74.7	58.0

Results

Two and three generational households were more likely to be female, black, and foreign-born than single generational households (Table 1). The proportion of each group increases with the number of generations present. For example, females comprise roughly half of single generation households, but nearly 70% of 3-generation households. While about 20% of respondents living within single generation households are high school dropouts, nearly 30% of respondents in 3-generation households are high school dropouts. Nevertheless, the self-rated health, self-rated happiness, and self-rated stress of the respondent is remarkably consistent as the number of generations living within the household increases.

These underlying socio-demographic characteristics are important determinants of the health of the respondent. Unadjusted models show

Table 2
Numbers of participants, numbers of deaths among these participants, and hazard ratios for two- and three-generational households relative to single generational households. 2014 General Social Survey-National Death Index.

Characteristic	N	Deaths	Hazard Ratio (95% CI)			
			2 Generation Households		3+ Generation Households	
All Subjects	25,882	8529	0.95	(0.89,1.01)	1.02	(0.90,1.16)
Healthy	13,381	3642	0.90	(0.82,0.99) [*]	1.02	(0.85,1.24)
Education						
High school and above	20,570	5593	0.94	(0.88, 1.02)	1.05	(0.89, 1.23)
Less than high school	5312	2936	0.93	(0.83, 1.04)	0.92	(0.75, 1.13)
Verbal intelligence quotient (VIQ)						
High	5608	1670	1.07	(0.93,1.22)	1.30	(0.92,1.84)
Low	7733	2704	0.96	(0.87,1.07)	1.03	(0.84,1.25)
Race						
White						
High VIQ	5225	1546	1.03	(0.89,1.19)	1.36	(0.94, 1.96)
Low VIQ	5994	2121	0.95	(0.83,1.08)	0.91	(0.67, 1.23)
Black						
High VIQ	383	124	1.16	(0.74,1.82)	0.85	(0.26, 2.81)
Low VIQ	1739	583	0.92	(0.75,1.12)	1.00	(0.77, 1.32)
Immigration						
Native Born						
High VIQ	5353	1598	1.07	(0.93,1.24)	1.35	(0.95, 1.92)
Low VIQ	7347	2584	0.93	(0.83,1.04)	0.98	(0.80, 1.20)
Foreign Born						
High VIQ	255	72	0.74	(0.37,1.49)	–	–
Low VIQ	386	120	1.40	(0.82,2.38)	0.74	(0.26, 2.10)
Stress						
High	344	53	0.81	(0.36,1.83)	1.11	(0.35, 3.98)
Low	369	72	0.62	(0.19,2.06)	–	–
Happiness						
High	20,787	6998	0.95	(0.88, 1.01)	1.03	(0.89, 1.19)
Low	3188	1153	0.95	(0.81, 1.11)	0.98	(0.72, 1.33)
Social capital						
High	6380	2159	0.96	(0.84, 1.09)	1.05	(0.79, 1.40)
Low	10,299	3379	0.99	(0.90, 1.09)	1.10	(0.92, 1.32)

* p < 0.05

that respondents living in two generational households have about 60% of the mortality risk of those living in single generation households (hazard ratio [HR] = 0.59; 95% confidence interval [CI] = 0.55, 0.62). Likewise, respondents living in multiple generation households have about 70% the risk of those living in single generation households (HR = 0.69; 95% CI = 0.61, 0.78) before adjusting for covariates. This is because females and the foreign-born have substantially higher survival than native-born males. (Data available upon request from authors.)

Main analyses

Table 2 lists the results of Cox survival analyses adjusted for age, race, gender, income, and educational attainment. In general, living with two or more generations under one roof was not protective for health. This was true for participants who were black, white, native born, foreign-born, with high levels of happiness, and with low levels of happiness. However, healthy participants who were living with two generations compared to healthy participants living with a single generation had an increase in survival (hazard ratio [HR] = 0.9, 95% confidence interval [CI] = 0.82, 0.99).

We initially hypothesized that our measures of social disadvantage would predict higher survival among those living in multigenerational households relative to those who live in single generation households. Were the associations for socially disadvantaged groups meaningful and

statistically significant, we would therefore expect our measures of stress and social capital to be significantly different for such households. We would also expect survival to be higher, and would expect these variables to mediate the survival analyses.

While multi-generational living arrangements did not confer a survival advantage for those with social disadvantage, we nevertheless present our mediation analyses here. We present our results in 2 steps. First, we examined the odds of the relevant variable (family stress, social capital, and verbal IQ) for each analysis. Second, we examined whether the relevant variable mediated the relationship between multi-generational living and survival. We find that healthy people living in 3 generational households have a much higher odds of high social capital, measured using the single dimension of trust (odds ratio 0.73, 95% CI = 0.54, 0.98). We also find that social capital plays a weak but statistically-significant role as a predictor of survival for the average household (HR = 0.93, 95% CI = 0.88, 0.99). However, none of the other analyses were statistically-significant, and social capital does not serve as a mediator of the relationship between multi-generational living and survival for healthy adults (results available upon request).

Conclusions

The social support conferred by multi-generational households may tend to consist of stronger structural ties in which money can be lent or given to members in need, family members can be walked home through a dangerous neighborhood, and nutritious meals may shared among many people, which can reduce psychological stress both by conferring support and reducing financial strain (Kawachi et al., 2010). We originally hypothesized that any benefits associated with multi-generational living would be most notable among the most vulnerable members of society—those with fewer financial, social, or intellectual capital. However, we find that living in a two-generational household is only significantly beneficial for healthy participants.

Though it does trend toward significance for all participants, none of the analyses meet our pre-specified definition of meaningful effect size or statistical significance. Moreover, while social capital (measured as a single dimension of trust) appears to be much higher among 3-generation households relative to single generation households, and while social capital does predict survival, it does not mediate the relationship that we observe. We therefore conclude that multi-generational living arrangements do not provide protective effects in the way that we initially hypothesize.

So what might account for the improved survival among healthy adults living in multi-generational arrangements? While highly speculative, it is possible that sickness, stress, or fewer intellectual resources place additional psychological demands on families, thereby sapping social support rather than conferring it. That is, someone with needs in a household might simply add stress to an already stressful arrangement. It is also more likely that families with less access to social or financial capital are simply living together out of need rather than choice. This, too, could prove to be more stressful for multi-generational family arrangements.

We further initially speculated that having family in the house is protective, but only to the extent that the house is not over-crowded with relatives. We find that having three generations in the house is no different than single-generation households. In this sense our hypothesis that only two-generational households are protective is borne out. We should caution that we do not have information on the size of the house itself (e.g., the number of rooms or square footage), so it any such conclusions are highly speculative.

Some have hypothesized that higher structural social capital provides improved access to resources and explains why foreign-born people living in the US are healthier than native-born people living in the US (Anonymous, 2017). This might also explain why health declines with acculturation. In particular, partially monolingual enclave communities (the “huddled masses”) are thought to have a high degree of

internal support and structural capital (Portes & Rumbaut, 1990). While we did not have data on whether participants resided in a monolingual enclave community, we find no association between multi-generational living arrangements and survival time among the average foreign-born respondent.

Our study had a number of important limitations to consider. Foremost, we utilize a prospective cohort study, so we can only explore associations, not causality. The GSS-NDI does offer a number of useful variables for teasing apart these associations, however, and we find little evidence that many such plausible factors (e.g., as one's happiness) matter in this association. Another limitation is that we were missing some interesting variables, such as whether household members were blood relatives or in-laws. Previous research has shown that women living with the husband's in-laws are at higher risk of premature mortality (Nishi et al., 2010).

While our study is only associational, it is important. The United States is experiencing declines in social capital over time (Koopmans, Geleijnse, Zitman, & Giltay, 2010; Putnam, 2001). It is also undergoing large political divides, and a broader sense that cohesion is breaking down. Finally, it is experiencing declines in life expectancy in some groups, and last year experienced a decline in overall life expectancy (Murray, Kulkarni, & Michaud, 2006). Rebuilding social cohesion is important for national well-being, and it may also even be an important determinant of the length of our lives. Multi-generational arrangements could partially explain the mystery of cyclical mortality, in which mortality declines during recessions in increases during booms (Stevens, Miller, Page, & Filipowski, 2015). Our study does suggest that healthy people may live longer when they live together, but our findings suggest that living together in times of hardship would not help.

Knowing how to build supportive living environments is more than theoretical. It is possible to build incentives for family members to care for their sick or elderly. For example, cash assistance programs can disincentivize multi-generational living by conferring financial autonomy (Greenburg & Shroder, 2004). However, one could conceive of a cash assistance program that paid caregivers of sick family members, or programs that balance household size. The federal poverty level, for example could be altered to favor assistance for larger households. Most critically, it will be necessary to explore the broader social and health impacts of policies that might reduce social stressors and build cohesion, such as Nurse-Family Partnership or possibly even programs that incentivize employment, such as the Earned Income Tax Credit (Anonymous, 2016). Without more experimental and quasi-experimental data, it will be difficult to know which actionable policies support broader social well-being.

Author's statement

The 2014 General Social Survey-National Death Index was approved by the Institutional Review Board of Columbia University Medical Center. The authors have no competing interests to declare. The dataset was funded by the National Institutes of Health R21HD075664.

Ethics approval

Authors Elizabeth Singer, MD, MPH, Boshen Jiao, MPH., and Peter Muennig, MD, MPH received approval by the Institutional Review

Board of Columbia University Medical Center to use the 2014 General Social Survey-National Death Index for this research study.

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