

Cohort Differences in the Relationship between Living Arrangements and Health among Older Adults in a Transitional Society

Abstract

Objective: Little is known about cohort variations in the relationships between living arrangements and psychological and physical health among older adults. The current study evaluates whether cohort differences in the intergenerational relationships affect the variations in the health benefits of multigenerational living arrangements, and how they do so. **Method:** Using panel regression models with lagged variables based on South Korean data, we compare the shape of the relationships between living arrangements and health conditions of two cohorts of older adults. **Results:** The study finds that living arrangements have a different impact on the health of aging populations in different birth cohorts. Among older adults in recent cohorts, living in a multigenerational household is negatively associated with psychological well-being. The cohort variations in health implications are partly explained by children's marital status and home ownership. **Discussions:** The cohort variations reflect the changing sociodemographic status of children and family values.

Keywords: living arrangements, cohort difference, intergenerational circumstance, psychological well-being, aging in Asia

Background

The living arrangement is an important factor that affects health for older adults, particularly in societies where public support for the aging population is limited and geriatric care is often provided in the form of co-residence with offspring. Previous research has reported mixed findings on the relationships between living arrangements and older adult's health and psychological well-being. Multigenerational co-residence tends to enhance the well-being of aging parents (Jeon et al., 2013; Zunzunegui et al., 2001), while some other studies found that co-residence is not necessarily beneficial to aging parents' health (Li et al., 2009; Michael et al., 2001; Sereny, 2011; Hughes & Waite, 2002). Recent studies documented that the health benefits of co-residing with offspring may vary by measures of health status. According to a study using the longitudinal survey from China, living with children is positively associated with older adults' self-rated health while it is negatively associated with parental physical and cognitive functioning (Zhou et al., 2018). A follow-up study of older European adults found that co-residence positively influences parental mental health (Courtin & Avendano, 2016).

Informal caregiving provided by the family may entail both benefits and costs (Connidis & McMullin, 2002; Pillemer & Suitor, 2002). Co-residing family members provide economic resources and practical support, which improve health behaviors and health outcomes of older adults. The changes in family structure (e.g., increase in divorce, decrease in fertility, and delayed the timing of home-leaving) and economic transition increase costs of informal old-age caregiving from family (Pillemer & Suitor, 2004; Wightman et al., 2013). There has been a decline in the number of children who provide support for aging parents and families are experiencing changing patterns of intergenerational exchange (Zhou et al., 2018).

Rapid industrialization, the emergence of modernization, and increased internal migration have led to an erosion of traditional values of filial obligations (Cheung & Kwan, 2009; Tsutsui et al., 2013). Older adults are increasingly living alone or only living with a spouse by self-choice. Young adult children who experienced an economic downturn are likely to delay marriage and co-reside with parents to rely on parental resources. Parents are likely to save for their retirement and provide financial help to adult offspring who delay leaving home. In this context, intergenerational co-residence may not necessarily contribute to increasing economic resources in the family network. Co-residence can be a source of daily friction such as reduced freedom, which may increase the level of stress among older adults (Zhou & Qian, 2008). Further studies are needed to address mechanisms underlying the changing associations between living arrangements and various types of health outcomes.

Birth cohort, a proxy for the sociocultural experiences shared by a group of individuals, often shapes the life course event patterns (Elder, 1994). Different birth cohorts may reach life stages that mark transitions to marriage, parenthood, and household headship at different ages (Henretta et al., 2018). Family decisions regarding living arrangements are affected by societal changes indicated by the birth cohort. Since dramatic changes in demographic and economic conditions have occurred in the past few decades in many Asian countries, different birth cohorts have a different pace of family formation process and role entitlements. The demographic trends, including delayed marital transition and childbearing, make young adults choose to continue to live with their parents, putting a different complexion on intergenerational transfers (Silverstein & Giarrusso, 2010; Yu & Kuo, 2016). The growing preferences for more egalitarian gender roles and personal privacy lead to an increase in older adults' decision to stay living independently. Parents' normative

expectations about multigenerational living arrangements may decrease significantly across cohorts. For example, older parental cohorts of the early baby-boomer generation who experienced vast economic growth may have stronger expectations to live with children particularly when they are in need. In contrast, recent cohorts with children who have experienced a financial crisis may have a lower expectation of material support from their children.

Living arrangements affect the exchanges of emotional support in the family networks, which can be associated with the psychological health of older parents. Families in many Asian countries have experienced more rapid cultural transitions since state-led industrialization, which is referred to as “compressed modernity” (Chang & Song, 2010). The more recent cohort may have a stronger preference for privacy for themselves and independence (Hareven, 1994). While cohort variations in living arrangements may exist in every society, the variations in psychological responses toward multigenerational living circumstances across cohorts may be more pronounced in Asia. Yet, whether and how different cohorts of parents have different mental health consequences related to co-residence or living alone remain to be explored in this area.

Context matters: aging families in Korea

With a less generous public support system, family traditionally plays a crucial role in meeting the demand for support for the aging population in Korean society; older parents are likely to gain benefits through co-residence with their married children (Kim et al., 2015). Korean family has experienced changes in the structure as life expectancy increased, birth rates dramatically declined, and the unemployment rate among young adults increased in recent years. The relationship between living arrangements and aging parents' well-being

becomes more unpredictable over time, as social shift reshaped dynamics of intergenerational exchange and norms about the multigenerational co-residence.

Urbanization has led to an enormous occupational transition from rural primary product sectors to service and manufacturing sectors, which increased internal migration among younger generations. With the high internal migration flows and reduced fertility rates, extended families have declined; the share of individuals living in the multigenerational households in Korea has fallen from 18.8% in 1970 to 5.3% in 2015 (KOSTAT, 2015). Instead, the number of older adults aged 65 or above who live alone continued to increase in both rural and urban areas. Older people accounted for around 23.5% of one-person households in 2015 and the percentage of elderly living alone increased to 33.5% in 2016 (KOSTAT, 2017), the highest in Asia next to Japan (Yeung & Cheung, 2015).

The rapid social and economic transitions have reshaped family support patterns across cohorts in Korea. For instance, the cohort that experienced the Pacific War in early life spent their later life during the economic development that is unparalleled in history. Their children (i.e., the baby-boomer generation) spent their young adult years with strong economic optimism and had opportunities for upward mobility. Through educational expansion, most of them could obtain a higher socioeconomic status than their parents. Given that multigenerational living arrangement is a main culturally approved mechanism to express filial piety (Kim & Cook, 2011), parents in the pre-war cohort may take pride in co-residing with their children and have strong expectations to receive care from them. For this cohort, living alone or living away from children may be considered undesirable living conditions and be negatively related to psychological well-being.

In contrast, early baby boomer parents who have experienced both economic growth

and crisis over the life course are likely to prefer to live alone if they have the ability to live independently. Since the Asian financial crisis in the late 1990s, an increasing number of young adults has greater cost of sustaining independent living and continue living with parents as a consequence of the rise in unemployment and housing prices (Kang & Sawada, 2003). Their parents are likely to shoulder a higher burden of providing practical support to co-residing offspring compared to the older cohorts (Chang et al., 2009). For them, co-residing with children is associated with the risk of conflicts and negative mental health outcomes.

The parents of recent cohorts also have better access to the public old-age care system and pension services. The national pension program was started in Korea in 1988 and was gradually expanded to include agricultural workers in rural areas in 1995, and to the self-employed in city areas in 1999 (Moon, 2002). The non-contributory basic old-age pension program and long-term care insurance for older adults were initiated in 2008. Thus, the expectations of family old-age caregiving are changing in late birth cohorts and the psychological meanings of multigenerational co-residence and living alone become ambivalent for them.

This study evaluates three relevant questions on the relationships between living arrangements and aging population's psychological and physical well-being using data based on a high-quality longitudinal survey in Korea: (1) how are different types of living arrangements associated with older adults' depression, life-satisfaction, and self-rated health, (2) do the relationships between living arrangements and health outcomes vary across parental birth cohorts, (3) what factors explain the cohort differences in the health consequences of living arrangements for parents. We expect that the cohort variations in the

relationships are reduced after adjusting for upward financial transfers from children to parents, children's marital status, and home ownership. The study particularly contributes to the understanding of the extent to which exogenous trends modify the psychological meanings of multigenerational living arrangements, which affect individuals' health in later life.

Data

The analysis is based on nationally representative data collected in the Korean Longitudinal Study of Aging (KLoSA), which has followed up with individuals aged 45 or older since August 2006. The households which participated in the first wave were tracked every other year until the end of 2016. The comprehensive information on an individual's socio-demographic characteristics, health status, health behaviors, family relationships, working status, and intergenerational financial support are included in the survey. We compare the health implications of living arrangements for aging parents across two different birth cohorts in this data: 1) the older cohort born during the Japanese colonial era (1933–1940), whose children are baby boomers; and 2) the younger cohort born during the period of country's liberation from Japanese colonization (1941-1948), whose children experienced the Asian financial crisis in their early and mid-life.

Each cohort is observed over two waves in 2006 and 2014. The age range is from 66 to 73 years in the baseline wave and from 68 to 75 years in the follow-up wave. For example, for the older cohort, living arrangements are measured in 2006 when the cohort members were aged 66–73, and their health outcomes are measured in 2008 at ages 68–75. This is same for the recent cohort's variables measured in 2014 and 2016. The study design allows the assessment of the two different cohorts of the same ages over time. It also allows

longitudinal examination of health implications of living arrangements among older adults while addressing selection issues in the relationships. The data structure is illustrated in Table 1. Missing information on the variables of living arrangements and health outcomes were 1.79% of the total sample. Mortality was the main reason for attrition and it accounted for around 14% of the observation loss. In the final analysis, we include 1,825 individuals of the older cohorts and 1,408 of the younger cohorts. The current data have been analyzed using the full-information maximum likelihood (FIML) and multiple imputation to deal with missing information and attrition as we can make the “missing at random” assumption.

[Table 1 about here]

Measures

Health outcomes

We have multiple indicators of the psychological and physical well-being of older adults, in terms of depressive symptoms, life satisfaction, and self-reports of health.

Depression score is measured by the Center for Epidemiological Studies Depression (CES-D) scale. The CES-D score is a brief screening instrument that assesses depressive symptoms experienced during the most recent week. The clinical items are comprised of two aspects of mental status that are positively phrased (feel pretty good, generally satisfied) and that are negatively phrased (loss of interest, trouble concentrating, feeling depressed, feeling tired or low in energy, feeling afraid, trouble falling asleep, feeling alone, and hard to get going) (Irwin et al., 1999). The summed scores of the 10 items, with scores reversed for the positively phrased items, served as the measure. Thus, higher scores indicate greater distress. The alpha coefficient for the CES-D's items is 0.81, which suggests that the depression scale is highly reliable.

The concept of “life satisfaction” refers to a global assessment of a person’s general quality of life (Diener & Lucas, 1999). The life satisfaction measure is rated on a 100-point scale with higher scores indicating higher satisfaction. The response scale ranges from 0 (completely dissatisfied) to 100 (completely satisfied). Previous research documented that single-item measures of life satisfaction show a satisfactory level of reliability (Dineer et al., 2013).

We utilize self-rated health as a subjective indicator of physical health. Self-rated health is known to be a comprehensive, feasible, and comparable measurement of general health status (Lee, 2017). In a survey, respondents are asked: “In general, would you say your health is excellent, very good, good, fair, or poor?” The self-rated health scale ranges from 1(excellent) to 5(poor).

Living arrangements

We perform a cluster analysis based on a hierarchical agglomerative method, considering older adults’ marital status, household size, and child co-residence. The children include biological children and children-in-law. We use visual description of a dendrogram to select a proper number of groups. Older adults’ living arrangements are categorized into four different clusters. The categories are defined as follows: 1. living alone, 2. living with a spouse only, 3. living with a spouse and children and/or grandchildren, 4. living with children and/or grandchildren without a spouse. For example, a widowed individual who lives in a household size of one and reported that all children live separately is coded as living alone. A married parent whose household size is two and all children live separately is coded as living with their spouse only. Variables for grouping living arrangements are derived from the previous year’s survey.

Confounding variables

We include demographic characteristics of parents such as age and the region of residence (city or rural area). We measure individuals' socioeconomic status by their educational attainment, house ownership, the ownership of real estate assets, saving deposits and insurance. Educational attainment is coded as follows: elementary school or below, middle school, high school, and some college or higher. Real estate property includes land and the buildings on it. We also include the following health-related behaviors based on participants' self-reports: smoking (smoke currently or no smoking) and drinking habits (drink currently or never). Variables are time-lagged in the models.

Children's characteristics

We include measures for the socio-demographic characteristics of children which may be plausible as mediators of the cohort differences in the health consequences of living arrangements. First, we control for upward financial support from children, based on the question of whether any child provides regular financial support to parents (no regular financial transfer or receiving regular financial transfer). The proportion of children who have been married is considered in the model. Another mediator, the proportion of children who owned their house is coded as a continuous variable. The number of children and the oldest child's characteristics including age and educational attainment are additionally considered. The oldest child's educational attainment is grouped into as follows: (1) with high school education or less, (2) with some junior college-level education, and (3) with a college degree or above.

Analytical strategy

We use a series of multilevel linear and ordered logit regression models to understand the longitudinal relationships between living arrangements and the parents' health status. To disentangle cohort effects from age effects, we compare different birth cohorts of individuals at the same age across the survey years. The data are reshaped in the form of person-years of observations to include time indicator that addresses the time of each measurement while controlling for period effects. In the first model, we focus on the relationships between living arrangements and parental depressive symptoms, life satisfaction, and self-rated health, net of parent's socioeconomic characteristics and health behaviors. In the second model, we add interaction terms between living arrangements and parents' birth cohorts to investigate whether different cohorts have different health consequences from co-residence with children. In models 3 to 6, we adjust the inter-cohort variations for children's characteristics including intergenerational financial transmission, children's marital status, and their house ownership. We shed light on whether cohort difference in the relationship between specific living arrangements and psychological well-being remains when the child's independence, e.g., the proportion of married children, is held constant. We use clustering weights to address data structure in which multiple individuals can be observed within a family.

Results

Table 2 presents the means of the variables for the baseline. The recent cohorts are less likely to live with children and more likely to live with a spouse only. The proportion of married parents in multigenerational co-residence decreases from 23.4 % in the pre-war cohorts to 19.3 % in recent birth cohorts. The percentage of children who provide regular material support for their parents decreases from 40% in the pre-war cohort to around 30% in

the recent cohort. More recent cohorts have smaller numbers of children; the mean number of children is 3.8 for the older cohort and 2.9 for the later cohort. The age of the oldest child is slightly lower among more recent cohorts, which may be due to delayed fertility. The proportion of married children and who own their house substantially decline across parental birth cohorts. For example, the mean value of the proportion of married children is around 0.83 among pre-war older cohorts while the value is 0.76 among parents in recent cohorts. The children of pre-war cohorts are less likely to be educated but they are more likely to own their house compared to the children of recent cohorts.

[Table 2 about here]

Tables 3a, 3b, and 3c summarize the results of the panel regressions with lagged variables. Table 3a displays the factors associated with depressive symptoms. According to Model 1 older adults living with children are more likely to be depressed compared to their counterparts living with a spouse only, net of socioeconomic characteristics. We also find higher levels of depression if the parent lives alone than the parent who lives with a spouse. Individuals with higher schooling and assets tend to have lower levels of depressive symptoms. More recent cohorts are less likely to be depressed than the pre-war cohorts. The results of Model 2 suggest that the relationship between multigenerational living arrangement and depression differs across parental birth cohorts. The negative mental health implication of intergenerational co-residence is stronger for more recent cohorts. For recent cohorts, widowed parents who live with children are more likely to be depressed than their counterparts who live with a spouse while the relationship is not statistically significant for preceding cohorts. The proportion of married children is negatively associated with depression, which moderately reduces the magnitudes of interaction terms. However,

children's financial support for parents and their house ownership provide very little explanation for the cohort variations in the relationship with living arrangements.

[Table 3a about here]

Living alone and living with children are negatively associated with older adults' life satisfaction (Table 3b). The significant interaction effect indicates that the negative consequence of co-residence with offspring is more pronounced among recent cohorts. The interaction terms are partly explained by cohort differences in children's characteristics that might influence the intergenerational support: (1) lower marriage rates in the children and (2) lower proportion of children who are homeowners. Children of the more recent birth cohorts are less likely to be married and more likely to become dependent on parents, which account for a portion of the cohort variations in the link between multigenerational living arrangement and life satisfaction. Parents who receive regular financial support from children are likely to have higher life satisfaction even if the variable slightly explains the cohort variations. When controlling for all mediators in Model 6, the strength of the interaction is substantially attenuated.

[Table 3b about here]

Model 1 of Table 3c shows that those who live alone are likely to report poorer self-rated health than those who live with a spouse (1: excellent to 5: poor). Yet, the strength of the relationship decreases for parents of more recent cohorts (Model 2). Parents of the pre-war cohort who co-reside with adult children tend to report better health status. Recent parental cohorts in multigenerational households report poorer health than ones with more independent living arrangements. The result is consistent with our prior analyses of depression and life satisfaction. Given that self-rated health is a subjective measurement, it

appears to reflect a wide range of psychological conditions sensitive to family circumstances including stress and dissatisfaction. Model 3 to 6 also show that adding upward financial transfers, children's marital status, and their home ownership in the model significantly reduces the strength of the interaction terms for birth cohorts. Parents with more children who are married and who own a house are likely to report better health status after controlling for parental economic status. This result implies that cohort differences in children's characteristics have driven the decrease in benefits of intergenerational co-residence over time.

[Table 3c about here]

Discussion

The current study examines whether living circumstances are prospectively linked to older adults' health outcomes by using panel regression models with lagged variables. The research extends prior studies by focusing on factors underlying the cohort variations in health consequences of living arrangements. Informal care provided by intergenerational co-residence becomes less common in Korea because of increasing internal migration and changes in family values and plausible benefits of co-residence decrease over time.

The status of family members who have "linked lives" plays an important role in shaping an individual's psychological well-being (Elder et al., 2003). The strength of the relationship between intergenerational living arrangements and parental psychological health depends on children's characteristics. The association between co-residence with adult children is negatively associated with the psychological well-being of older adults, but the negative effect is observed among successive birth cohorts. More recent parental cohorts who live with offspring experience a higher level of depression than those who live with a spouse

only. They also have a lower level of subjective life satisfaction. The study provides some evidence supporting that inter-cohort variations in children's socio-demographic characteristics explain cohort differences in the negative implications of the elderly's multigenerational living arrangements.

Individuals of the same cohort experience the same effect of social forces at the same time (Chen et al., 2010). A large proportion of children of recent cohorts have experienced increased competition to have a better job and more strains to form a family due to an economic downturn (Kang & Sawada, 2003). They are likely to delay marital transitions and home purchase. Parents are less likely to expect to receive financial support from children. According to the analyses, the likelihood that children provide regular material support to parents has declined across cohorts. Recent studies document that a growing number of adult children who co-reside with parents reflects trends of delayed marriage and low fertility in Asia (Kins & Beyers, 2010; Yu & Kuo, 2016). Unmarried children may receive more support from their parents compared to married counterparts. In additional analyses (not shown), we could find that parents are more likely to provide financial support for unmarried children. Although children who live with parents may develop a closer relationship with parents, the delayed departure from home may make parents feel that their children are still in need of their help, which may increase the level of parental stress in the long run.

In contrast to prior research, older adults of successive cohorts who live away from children are not necessarily to have poorer health outcomes. Additional analyses not shown here reveal that recent cohorts who live with a spouse only or live alone still tend to have social and emotional support from children and to be more physically active. The finding also suggests that traditional family norms that prioritize the parent-children relationship and filial

obligation shift to the one that emphasizes the spousal relationship and independent lifestyles. It is also true that recent parental cohorts are major beneficiaries of long-term care subsidy and pension programs and they are less likely to be economically disadvantaged relative to earlier cohorts.

The study has some limitations. Unfortunately, there is a lack of nationally representative longitudinal data that provides an accurate amount of intergenerational resource transfers. Further study using a comprehensive measure of intergenerational exchange across different cohorts may enable us to understand complicated health implications of living arrangements. This study does not directly test age-period-cohort effects, but the findings still support the relevance of socio-cultural conditions indicated by birth cohorts as important factors in understanding the health implications of different types of living arrangements. Teasing out period and cohort effect is difficult to be completely addressed when using conventional methods. However, the major purpose of the study would not be separating the effect of the period and sensitivity analyses showed that the distribution of predictors was not significantly changing during the survey period. We also examined whether the possible selection bias would affect the results. We performed the same analyses by excluding people with very poor self-rated health, severe disability, mental health problems, and chronic diseases at baseline. The results were highly consistent irrespective of baseline health status.

Considering rapid demographic and economic transitions in Korea, addressing the complicated relationships between living arrangements and various health outcomes among older adults has important implications. Although prior studies argued that co-residence with children may enhance parental health by pooling resources from family networks the current

study found that more recent cohorts who have independent living arrangements are likely to have better mental health outcomes. The study contributes to the existing literature in terms of pointing out differential implications of intergenerational circumstances for a healthy aging process by birth cohorts. We aimed to understand the mechanisms underlying the cohort variations in the meanings of co-residence with children in a context that faces rapid population aging. Further studies are needed to evaluate whether macro-level societal changes lead to changes in health benefits of multigenerational living arrangements in other Asian societies with different family culture.

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Table 1. Survey years and ages observed for each parental birth cohort

Cohort name	Birth cohort	Individual age at each observation	
		66-73	68-75
Earlier cohort (Parents of baby boomers)	1933-1940	2006	2008
Recent cohort (Parents of children who experience economic recession)	1941-1948	2014	2016

Table 2. Baseline sample distribution (%) or mean (SD) by cohort (Age: 66-73; N= 3,233)

Characteristics	Earlier cohort (1933-1940) (N=1,825)	Recent cohort (1941-1948) (N=1,408)
<u>Respondents' characteristics by cohort</u>		
Living arrangements		
Living alone	13.38	13.0
Living with a spouse only	50.0	60.7
Living with a spouse and children	23.4	19.3
Living with children without a spouse	13.22	7.0
Educational attainment		
Elementary school or below	68.27	49.24
Middle school	11.23	19.74
High school	14.41	23.20
Some college or higher	6.08	7.81
Female	54.9	55.6
Living in a rural area		
Urban area	39.67	39.87
Rural area	60.33	60.13
House ownership	79.29	87.50
Real estate assets ownership	12.88	21.24
Whether have saving deposits/insurance	39.9	52.34
Current smoker	16.33	11.15
Current drinker	30.90	33.03
<u>Health outcomes</u>		
Depression (CES-D score, 0-10)	4.35 (3.00)	3.01 (2.76)
Life satisfaction index (0-100)	57.55 (19.17)	62.34(15.82)
Self-rated health		
Excellent	1.48	0.58
Very good	21.48	20.3
Good	33.75	51.28
Fair	34.19	23.51
Poor	9.10	4.33
<u>Children's characteristics by cohort</u>		
Number of children	3.81 (1.42)	2.93 (1.13)
Age of the oldest child	47.02 (5.26)	46.18 (4.81)
Educational attainment of the oldest child		
High school education or less	63.56	40.77
Some junior college-level education	4.8	8.3
A college degree or above	31.64	50.93
Upward financial transfer		
Regular transfer	40.0	30.2
Never or no regular transfer	60.0	69.8
Proportion of married children	0.83 (0.25)	0.76 (0.30)
Proportion of children who own a house	0.35 (0.34)	0.32 (0.35)

Table 3a. Ordinary least squares regression model for depressive symptoms (N= 3,233)

VARIABLES	M1 Coefficient (SE)	M2 Coefficient (SE)	M3 Coefficient (SE)	M4 Coefficient (SE)	M5 Coefficient (SE)	M6 Coefficient (SE)
Living arrangements at baseline						
(ref. Living with a spouse only)						
Living alone	0.443** (0.161)	0.281 (0.222)	0.272 (0.223)	0.265 (0.222)	0.258 (0.222)	0.257 (0.222)
Living with a spouse and children	0.304* (0.145)	-0.133 (0.186)	-0.122 (0.189)	-0.226 (0.192)	-0.163 (0.188)	-0.206 (0.194)
Living with children without a spouse	0.508** (0.181)	0.191 (0.220)	0.216 (0.222)	0.104 (0.223)	0.170 (0.220)	0.127 (0.225)
Recent cohort (vs. Earlier cohort)	-0.905** (0.120)	-1.240** (0.153)	-1.234** (0.153)	-1.248** (0.153)	-1.245** (0.152)	-1.267** (0.153)
Interaction terms						
Living alone*Recent cohort		0.322 (0.308)	0.321 (0.308)	0.296 (0.308)	0.320 (0.308)	0.309 (0.309)
Living with a spouse and children*Recent cohort		1.034** (0.277)	1.019** (0.277)	0.974** (0.275)	1.011** (0.276)	0.959** (0.276)
Living with children without a spouse*Recent cohort		0.842* (0.369)	0.824* (0.369)	0.805* (0.369)	0.828* (0.369)	0.800* (0.370)
Respondent characteristics						
Education (ref. Elementary school)						
Middle school	-0.241+ (0.146)	-0.230 (0.145)	-0.195 (0.148)	-0.197 (0.147)	-0.193 (0.147)	-0.195 (0.147)
High school	-0.205 (0.148)	-0.220 (0.147)	-0.148 (0.153)	-0.155 (0.153)	-0.145 (0.153)	-0.150 (0.153)
College or above	-0.609** (0.215)	-0.629** (0.212)	-0.547* (0.225)	-0.562* (0.225)	-0.522* (0.225)	-0.553* (0.225)
Female	0.243+ (0.124)	0.247* (0.123)	0.306* (0.131)	0.288* (0.131)	0.304* (0.131)	0.299* (0.132)
Rural area	0.279* (0.115)	0.276* (0.114)	0.256* (0.115)	0.265* (0.114)	0.268* (0.114)	0.264* (0.114)
House ownership	-0.481** (0.151)	-0.488** (0.151)	-0.462** (0.152)	-0.441** (0.152)	-0.427** (0.154)	-0.421** (0.153)

Table 3a. Ordinary least squares regression model for depressive symptoms, continued

	M1	M2	M3	M4	M5	M6
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
Real estate ownership	-0.293*	-0.295*	-0.297*	-0.281*	-0.284*	-0.285*
	(0.137)	(0.137)	(0.137)	(0.137)	(0.137)	(0.138)
Whether have savings	-0.172+	-0.183+	-0.167	-0.155	-0.161	-0.149
	(0.103)	(0.103)	(0.103)	(0.103)	(0.103)	(0.104)
Children characteristics						
Age of the oldest child			-0.010	-0.001	-0.005	0.003
			(0.015)	(0.016)	(0.016)	(0.016)
Regular financial transfer from children			-0.100			-0.089
			(0.116)			(0.116)
Proportion of married children				-0.480*		-0.436*
				(0.228)		(0.222)
Proportion of children who own a house					-0.238	-0.167
					(0.173)	(0.177)
Constant	4.790**	4.975**	5.456**	5.413**	5.269**	5.286**
	(0.303)	(0.306)	(0.653)	(0.654)	(0.669)	(0.667)
Observations	3,233	3,233	3,233	3,233	3,233	3,233

Robust standard errors in parentheses; ** $p < 0.01$, * $p < 0.05$, + $p < 0.1$; age, number of children, self-rated health, and health behaviors are controlled for in all models. Schooling of the oldest child is controlled for in model 2 to model 6.

Table 3b. Ordinary least squares regression model for life satisfaction (N= 3,233)

VARIABLES	M1 Coefficient (SE)	M2 Coefficient (SE)	M3 Coefficient (SE)	M4 Coefficient (SE)	M5 Coefficient (SE)	M6 Coefficient (SE)
Living arrangements at baseline						
(ref. Living with a spouse only)						
Living alone	-0.291** (0.095)	-0.346** (0.132)	-0.305* (0.131)	-0.297* (0.130)	-0.275* (0.131)	-0.275* (0.129)
Living with a spouse and children	-0.206* (0.083)	-0.050 (0.118)	-0.071 (0.119)	0.080 (0.120)	0.023 (0.117)	0.037 (0.121)
Living with children without a spouse	-0.232* (0.106)	-0.104 (0.135)	-0.152 (0.135)	0.014 (0.136)	-0.046 (0.133)	-0.038 (0.137)
Recent cohort (vs. Earlier cohort)	0.123+ (0.069)	0.214* (0.088)	0.195* (0.087)	0.202* (0.087)	0.219* (0.087)	0.251** (0.087)
Interaction terms						
Living alone*Recent cohort		0.145 (0.185)	0.141 (0.181)	0.179 (0.181)	0.142 (0.181)	0.144 (0.180)
Living with a spouse and children*Recent cohort		-0.375* (0.153)	-0.330* (0.154)	-0.286+ (0.154)	-0.311* (0.153)	-0.255 (0.152)
Living with children without a spouse*Recent cohort		-0.376+ (0.210)	-0.314 (0.210)	-0.296 (0.208)	-0.324 (0.207)	-0.290 (0.209)
Respondent characteristics						
Education (ref. Elementary school)						
Middle school	0.319** (0.087)	0.317** (0.087)	0.213* (0.087)	0.216* (0.086)	0.209* (0.086)	0.211* (0.086)
High school	0.408** (0.083)	0.412** (0.083)	0.215* (0.085)	0.225** (0.086)	0.208* (0.085)	0.213* (0.085)
College or above	0.764** (0.122)	0.770** (0.123)	0.526** (0.127)	0.536** (0.127)	0.469** (0.126)	0.508** (0.127)
Female	0.192* (0.074)	0.192** (0.074)	0.068 (0.078)	0.096 (0.078)	0.072 (0.078)	0.069 (0.078)
Rural area	0.095 (0.068)	0.095 (0.068)	0.142* (0.067)	0.124+ (0.067)	0.114+ (0.067)	0.125+ (0.067)
House ownership	1.023** (0.092)	1.031** (0.092)	0.963** (0.091)	0.936** (0.091)	0.883** (0.092)	0.881** (0.091)

Table 3b. Ordinary least squares regression model for life satisfaction, continued

	M1 Coefficient (SE)	M2 Coefficient (SE)	M3 Coefficient (SE)	M4 Coefficient (SE)	M5 Coefficient (SE)	M6 Coefficient (SE)
Real estate ownership	0.311** (0.078)	0.310** (0.078)	0.312** (0.077)	0.285** (0.078)	0.282** (0.077)	0.293** (0.077)
Whether have savings	0.224** (0.060)	0.223** (0.061)	0.180** (0.060)	0.167** (0.060)	0.165** (0.060)	0.152* (0.060)
Children characteristics						
Age of the oldest child			0.019* (0.010)	0.008 (0.010)	0.007 (0.010)	-0.001 (0.010)
Regular financial transfer from children			0.228** (0.068)			0.203** (0.068)
Proportion of married children				0.564** (0.142)		0.441** (0.144)
Proportion of children who own a house					0.543** (0.096)	0.460** (0.097)
Constant	4.115** (0.191)	4.067** (0.193)	3.143** (0.385)	3.194** (0.388)	3.571** (0.395)	3.544** (0.397)
Observations	3,233	3,233	3,233	3,233	3,233	3,233

Robust standard errors in parentheses; ** p<0.01, * p<0.05, + p<0.1; age, number of children, self-rated health, and health behaviors are controlled for in all models. Schooling of the oldest child is controlled for in model 2 to model 6.

Table 3c. Ordered logit regression model for self-rated health (N= 3,233)

VARIABLES	M1 Coefficient (SE)	M2 Coefficient (SE)	M3 Coefficient (SE)	M4 Coefficient (SE)	M5 Coefficient (SE)	M6 Coefficient (SE)
Living arrangements at baseline						
(ref. Living with a spouse only)						
Living alone	0.313** (0.103)	0.376** (0.145)	0.356* (0.145)	0.347* (0.145)	0.312* (0.144)	0.315* (0.144)
Living with a spouse and children	-0.010 (0.085)	-0.160 (0.128)	-0.145 (0.129)	-0.300* (0.131)	-0.215+ (0.130)	-0.282* (0.132)
Living with children without a spouse	-0.079 (0.120)	-0.262+ (0.153)	-0.230 (0.155)	-0.396* (0.156)	-0.313* (0.154)	-0.379* (0.157)
Recent cohort (vs. Earlier cohort)	-0.174* (0.077)	-0.269* (0.100)	-0.261** (0.101)	-0.284** (0.101)	-0.301** (0.102)	-0.329** (0.102)
Interaction terms						
Living alone*Recent cohort		-0.155 (0.198)	-0.149 (0.199)	-0.189 (0.198)	-0.129 (0.197)	-0.150 (0.196)
Living with a spouse and children*Recent cohort		0.334* (0.167)	0.315+ (0.168)	0.247 (0.170)	0.290+ (0.169)	0.226 (0.169)
Living with children without a spouse*Recent cohort		0.533* (0.236)	0.504* (0.236)	0.430+ (0.242)	0.498* (0.236)	0.452 (0.241)
Respondent characteristics						
Education (ref. Elementary school)						
Middle school	-0.337** (0.096)	-0.335** (0.096)	-0.284** (0.098)	-0.294** (0.098)	-0.283** (0.097)	-0.288** (0.098)
High school	-0.640** (0.096)	-0.641** (0.097)	-0.547** (0.100)	-0.561** (0.101)	-0.539** (0.101)	-0.551** (0.101)
College or above	-0.727** (0.148)	-0.729** (0.149)	-0.618** (0.156)	-0.645** (0.157)	-0.566** (0.156)	-0.612** (0.158)
Female	0.361** (0.089)	0.361** (0.089)	0.407** (0.095)	0.380** (0.096)	0.412** (0.096)	0.402** (0.096)
Rural area	0.190** (0.072)	0.191** (0.072)	0.167* (0.073)	0.179* (0.073)	0.194** (0.072)	0.187* (0.074)
House ownership	-0.537**	-0.547**	-0.514**	-0.490**	-0.430**	-0.426**

Table 3c. Ordered logit regression model for self-rated health, continued

	M1	M2	M3	M4	M5	M6
	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient	Coefficient
	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
Real estate ownership	-0.407** (0.092)	-0.405** (0.092)	-0.409** (0.092)	-0.385** (0.092)	-0.387** (0.093)	-0.384** (0.093)
Whether have savings	-0.300** (0.069)	-0.302** (0.069)	-0.279** (0.070)	-0.255** (0.071)	-0.260** (0.070)	-0.242** (0.070)
Children characteristics						
Age of the oldest child			-0.005 (0.010)	0.010 (0.011)	0.009 (0.010)	0.020 (0.159)
Regular financial transfer from children			-0.141* (0.070)			-0.102 (0.077)
Proportion of married children				-0.752** (0.145)		-0.614** (0.147)
Proportion of children who own a house					-0.623** (0.108)	-0.525** (0.111)
Constant cut1	-5.268** (0.292)	-5.320** (0.293)	-5.629** (0.484)	-5.607** (0.483)	-5.176** (0.490)	-5.237** (0.489)
Constant cut2	-1.928** (0.214)	-1.977** (0.215)	-2.283** (0.444)	-2.253** (0.443)	-1.820** (0.451)	-1.876** (0.450)
Constant cut3	0.081 (0.209)	0.035 (0.210)	-0.265 (0.441)	-0.224 (0.440)	0.212 (0.449)	0.165 (0.447)
Constant cut4	2.263** (0.221)	2.221** (0.222)	1.927** (0.444)	1.977** (0.442)	2.418** (0.452)	2.378** (0.450)
Observations	3,233	3,233	3,233	3,233	3,233	3,233

Robust standard errors in parentheses; ** p<0.01, * p<0.05, + p<0.1; age, number of children, and health behaviors are controlled for in all models. Schooling of the oldest child is controlled for in model 2 to model 6.