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# Childhood Background Measures and Their Associations With Later-Life Physical, Mental, and Social Health in the National Social Life, Health, and Aging Project

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## Abstract

**Objective:** We describe each childhood background measure available in the National Social Life, Health, and Aging Project (NSHAP), report preliminary population estimates for each measure by age and gender, and validate the childhood measures by showing that the associations between the NSHAP childhood measures and later-life health outcomes are consistent with previous studies on this topic.

**Method:** Childhood background measures included family life happiness, family structure, parental educational attainment, perceived financial situation, experience of violence, witness of violence, childhood health, and place of birth. We measured self-rated health, depressive symptoms, and social support to assess later-life physical, mental, and social health. Logistic and linear regression models were used for the binary and continuous outcome variables, respectively.

**Results:** Older age groups were more likely than those in younger age groups to report a poor financial situation in childhood, lower parental education, and intact family structure and were less likely to have experienced or witnessed a violent event as a child. Growing up in a happy and well-educated family was associated with better physical, mental, and social health in older ages.

**Discussion:** NSHAP childhood data included a variety of measures assessing the family social environment during childhood, providing a valuable resource for the study of early-life determinants of health and well-being over the life course.

**Keywords:** Cohort differences, Cumulative advantage/disadvantage, Early origins of health, Life course analysis

Early childhood is a critical period that serves as a foundation for health and well-being in adulthood (Ferraro et al., 2016; H. Lee, 2019; Luo & Waite, 2005; Zhang et al., 2016). One of the most important factors affecting lifelong health is a positive family environment during childhood (McEwen & McEwen, 2017). Considerable work has shown that parental warmth, an intact family structure (e.g., two-parent household), and financial stability during childhood predict better health for young adults (Chen & Harris, 2019; Gilman et al., 2003; Meadows et al., 2006). Recent evidence suggests that this protective effect carries over into late adulthood (Chopik & Edelstein, 2019; Ferraro et al., 2016; H. Lee et al., 2021), highlighting the important role of early-life factors in shaping people's overall health over the life course.

The National Social Life, Health, and Aging Project (NSHAP) has collected information on respondents'

childhood background since 2010, allowing researchers to address questions of how later outcomes are shaped by early-life circumstances. The childhood background measures in the NSHAP include questions about family life happiness, childhood socioeconomic status (SES), family structure, and exposure to violence during childhood, along with childhood health and place of birth. A major strength of the childhood measures in NSHAP is its unique coverage of happiness of family life during childhood. Although there has been theoretical interest in exploring the impact of early family life beyond childhood into the later stages of the life course (Carr & Springer, 2010; Ferraro & Shippee, 2009), existing surveys of older adults often lack information on childhood family life. While several major studies of older adults including the Health and Retirement Study (HRS), Midlife Development in the United States (MIDUS), and the Wisconsin Longitudinal Study (WLS) have collected measures of family structure, conflict, and abuse during childhood along with childhood SES and health, there has been limited effort to measure positive family memories, and no population survey has included questions about how happy the respondent's family life was during childhood. This paper discusses the notable implications of integrating the measure of childhood family social environment into the studies of older adults.

In the first section of this paper, we review a life course framework that guides the conceptualization and measures of childhood exposures in population surveys. We then outline each childhood measure available in the NSHAP and report preliminary population estimates for each measure by age and gender using the NSHAP 2015 round of data. We provide evidence for the validity of these measures by showing how they are related to later-life physical, mental, and social outcomes. We focus in this paper on providing information to researchers interested in using the measures of childhood available in NSHAP. We conclude with future directions and potential research ideas.

## Background

### Theoretical Roots and Conceptualization of Childhood Measures in Life Course Research

Understanding the short- and long-term consequences of childhood exposures has been a central topic in life course research (Smith et al., 2021). There has been an extensive theoretical literature of a life course perspective in multiple social science disciplines. Focusing on one's socioeconomic origin, early sociological theories viewed childhood SES, often characterized by parental education and occupation, as key early-life exposures that can have a long-term impact on offspring's social status (Blau & Duncan, 1967; Dannefer, 2003; O'Rand, 1996). Recently, this literature has expanded to link early socioeconomic context to health in later life (Ferraro et al., 2016; Hayward & Gorman, 2004; Luo & Waite, 2005). Scholars in demography and epidemiology focused on traumatic life events such as war, famine, physical abuse, and family adversity (Barker, 1995; Elder, 1974; Felitti et al., 1998), while others considered childhood illnesses and place of birth as critical markers for adult outcomes (Case et al., 2005; Glymour et al., 2011; Goodman et al., 2011; Topping et al., 2021).

Conceptually, there are three models in life course research that explain the association between childhood exposures and later outcomes (Ben-Shlomo & Kuh, 2002; Ferraro & Shippee, 2009; Lyu & Burr, 2016). First, *the critical period model* suggests that childhood experiences and exposures may directly influence later-life health as early childhood circumstances become "embodied" to affect later health (Hertzman, 1999). The argument is that exposure to low SES may represent key sources of stress that can launch a lifelong pattern of physiological deterioration that influences health over the life course. For example, older adults who grew up with parents with low levels of education and low-skilled occupations on average show poorer health and shorter life expectancy than their more advantaged peers (Luo & Waite, 2005; Montez & Hayward, 2014). Research also finds that early experiences shape the progression of disease; those growing up in disadvantaged homes experience faster cognitive decline (Lyu & Burr, 2016) and functioning decline (Haas, 2008). While childhood health reflects a wide range of experiences (Elo & Preston, 1992), prior work finds that childhood SES and health independently predict adult health (Case et al., 2005; Luo & Waite, 2005; Montez & Hayward, 2014). In addition, a growing body of research shows that place of birth is associated with adult health and mortality, even for individuals who did not remain in their state of birth (Gilsanz et al., 2017; Glymour et al., 2011; Topping et al., 2021; Zhang et al., 2016). For example, these studies have found that a southern birth or early-life residence in the U.S. Stroke Belt is associated with higher risk for cognitive impairment and dementia mortality. Glymour and Manly (2008) posited that differences in the early-life social conditions, educational experiences, and school quality in the South may play a role in explaining the health disadvantage over the life course. The effect of childhood SES and health and place of birth in previous studies (e.g., Zhang et al., 2016) remained significant independent of adult experiences, suggesting that early-life experiences and exposures exert long-term influences on health in later adulthood.

Second, *the accumulation model* suggests that exposures to advantages or adversities at different life stages have a cumulative dose/response effect on adult health. In this model, childhood experiences are considered to set in motion adult experiences that in turn influence health status. The theory of cumulative advantage/disadvantage suggests that early disadvantage can lead to further adversity in adulthood (e.g., poor education, unemployment, lack of social support), whereas early advantage can foster the development of skills or experiences that benefit health over time (Dannefer, 2003). Childhood and adulthood experiences

thus combine to yield lifelong profiles of social standing that can damage or protect health. The literature suggests that no one factor at any one life stage has a large impact on health, as poor adult health results from an accumulation of risk. For example, studies have found that individuals with higher SES advantage at various stages across the life course had better physical, mental, cognitive, and oral health in older ages relative to those who were less advantaged at each of these points (H. Lee, 2019; Luo & Waite, 2005; Marden et al., 2017).

Third, an alternative approach for conceptualizing the accumulation of risk is *the social mobility model*. The social mobility model considers that the continuity and changes in adverse experiences between childhood and adulthood may affect adult health. In this model, those who remain in adverse conditions from childhood to adulthood are hypothesized to be in worse health than those who rise in their social position because this later advantage could compensate for early risk and lead to better health. Each of the three life course models may make unique contributions to understanding life course pathways to adult health disparities.

Together with these theories, there has been an increasing effort to develop and integrate measures of childhood into population surveys. Childhood measures are often collected as self-administered questionnaires (e.g., leave-behind questionnaire [LBQ]) or included with in-person or telephone interviews. Respondents are asked to indicate if an event occurred to them in a specific period of time in childhood (e.g., from birth to age 16). They are also asked to describe a particular family situation during childhood (e.g., financial situation). Possible responses vary from the binary yes or no choice to Likert scale ratings that reflect severity or frequency of an event or experience.

## Childhood Background Measures in NSHAP

Although childhood SES and health are important predictors of health in adulthood, other features of the childhood family such as family life happiness, family composition, and family trauma may play an important role. The family environment reflects not only material but also socioemotional resources of caregivers and the quality of one's learning environment critical for healthy development over the life course (H. Lee et al., 2021). Repetti and colleagues (2002) posit that growing up with aggression, conflict, and cold, unsupportive relationships can be particularly detrimental because such risky family environments "create deficits in children's control of and expression of emotions and in social competence, and also lead to disturbances in physiologic and neuroendocrine system regulation" (p. 330). Others suggested that changes in family composition such as parental death, divorce, or separation can compromise health if children growing up in these environments are more likely to experience parental stress, emotional insecurity, and inadequate resources (Carlson & Corcoran, 2001). Exposure to parental abuse in early life may also be an important source of stress for children, consequential for physical, mental, and emotional well-being in adulthood (Felitti et al., 1998).

There is a small but growing body of research supporting an association between family social environments in childhood and later-life health. For example, a study from the HRS shows that individuals who experienced high levels of parental warmth during childhood tend to have better physical and mental health in middle and later life (Chopik & Edelstein, 2019). In another study from the HRS, however, H. Lee and colleagues (2021) found that individuals who were raised in a single-parent household tend to have poorer cognitive functioning relative to those from two-parent households. Using MIDUS and the WLS, others found that childhood abuse has also negative consequences for physical, mental, and biological health among older adults (Ferraro et al., 2016; C. Lee et al., 2017; Springer et al., 2007). In addition to parent–child relationships and family structure, a recent study from the NSHAP reveals that growing up in a happy family during childhood is another important predictor of later-life health, especially for cognitive functioning among older adults (H. Lee & Schafer, 2021). These childhood family characteristics were often significantly associated with later-life health outcomes net of childhood SES and health, suggesting that the studies of the early origins of health may benefit from contextualizing individuals' family social environments during childhood along with their socioeconomic and health background.

Several pathways link childhood family social environments to late-life outcomes. Previous research suggests that supportive parenting and a nurturing family environment promote educational attainment (Melby et al., 2008; Robertson & Reynolds, 2010), and the well educated are more likely to have occupations that come with good health benefits, to do regular health screenings, and to adopt a healthy lifestyle, all of which are associated with good health in later life. Studies in psychology show that growing up in a nurturing, happy family environment may provide strong social attachments and foster emotional competencies (Batcho et al., 2011; Kaufman, 2019), which can help develop social skills, become socially connected, and obtain social support as people age. Indeed, recent evidence using the NSHAP supports the idea that childhood family environments can shape access to social support and social connectedness across the life course, with higher levels of family happiness in childhood associated with greater network density and more kin-centric network composition among older adults (Goldman, 2020).

Given that child development is influenced by multiple social contexts, the NSHAP childhood measures will provide researchers an opportunity to explore the link between later outcomes and a broad set of measures of childhood family life experiences. Specifically, multiple dimensions of

childhood family functioning including family life happiness available in the NSHAP will provide a unique opportunity to address the hypotheses and pathways suggested by those theories of the life course. To provide information to researchers interested in using the childhood background measures in the NSHAP, in the following section, we describe how each childhood background measure was measured. Then we provide preliminary population estimates of each measure by age and gender. NSHAP began to collect information on childhood background beginning in 2010—the childhood measures are fairly new to the life course literature relative to those in the HRS, MIDUS, and WLS. Therefore, we validate the NSHAP childhood measures by showing that the associations between the NSHAP childhood measures and later-life health outcomes are consistent with previous findings in life course research using other aging surveys.

## Method

### Sample

We used data from the 2010 and 2015 rounds of the NSHAP, a nationally representative longitudinal study of community-dwelling older adults. The first round of NSHAP was collected in 2005 from a sample of 3,005 older adults born 1920–1947. In 2010, returning respondents as well as a sample of their coresident partners were surveyed in a second round of data collection. The third round of NSHAP was collected in 2015 and included returning respondents and a new cohort of individuals born during the Baby Boom (1948–1965) as well as their coresident partners. In-home interviews were conducted in each round. At the end of the in-home interview, respondents were asked to complete and return a LBQ, which included the questions on childhood background. The LBQ response rate is 87% in Round 2 and 85% in Round 3.

NSHAP first asked respondents (original cohort) about their childhood background in 2010 (R2) and extended these measures to the new cohort, which entered the survey in 2015 (R3). We merged childhood background data obtained in R2 from the original cohort with childhood background data in R3 from the new cohort and later-life health outcomes reported in R3. Although each cohort was only asked the childhood background questions once, there are 20 respondents from the original cohort who answered childhood questions in both Rounds 2 and 3. Some of these respondents reported different answers across the rounds. When this was the case, we used the answer reported in Round 2. Restricting the data set to respondents aged 50 and older (born 1920–1965) who completed the LBQ yielded a sample of 3,858. Descriptive statistics of the childhood variables presented in Table 2 are based on this sample of 3,858. For our regression analyses, we used data from respondents aged 50 and older (born 1920–1965) with valid data on all childhood variables and covariates ($N$ = 2,719). The missingness largely comes from respondents who were missing on parent's education (father's education: 22.2%; mother's education: 20.9%) with all other childhood measures having less than 5% missingness. For the multivariate regression analyses, the sample size was further reduced to 2,703, 2,682, and 1,929 due to missing values in measures of self-rated health, depressive symptoms, and social support, respectively.

### Childhood Background Measures

Three types of childhood background were measured in NSHAP-LBQ: measures of birthplace; measures of family background (family happiness, parent education, financial status, family structure); and measures of childhood experience/adversity (health status, exposure to violence). First, NSHAP assessed the birthplace of respondents by asking respondents whether they were born in the United States and, if so, in what state they were born. States were grouped into four regions as defined by the U.S. Census Bureau (2010). Second, NSHAP assessed family happiness by asking respondents how much they agree with the statement "When I was growing up, my family life was always happy." Response categories ranged from 1 (I disagree very much) to 6 (I agree very much). Over half of the respondents agreed pretty much (42%) and very much (22%). Approximately one third of the sample agreed a little (10%), disagreed a little (10%), and disagreed pretty much (10%). A small percentage of respondents disagreed very much (6%). Following H. Lee and Schafer (2021), we compared respondents who reported that their family life was always "very much happy" and "pretty much happy" (=1) with those who agreed a little and those who disagreed with the statement.

NSHAP measured parent's education by asking respondents about the highest level of education completed by their father and mother. The original scale ranged from 1 (no formal education) to 6 (≥17 postcollege). About 22% and 21% of respondents had missing data on their father's and mother's education, respectively. Our sample excluded those missing cases but one option that researchers could consider is to add a category for missing parent's education. Preliminary analyses showed that both options yield similar results and the second option preserves the sample size. More than half of the respondents reported their fathers had a high school degree (34%) or less (28%), with 5% of respondents indicating their fathers had no formal education. One quarter of the respondents reported their fathers had some college education (15%) or completed college (10%). Eight percent of respondents reported their fathers had postcollege education. Turning to mother's education, 4% of respondents reported their mothers had no formal education. More than two thirds of the respondents reported their mothers had a high school degree (45%) or less (29%). About one fifth of the respondents had mothers with some college education (11%) or a college degree

(7%), with 3% of respondents reporting their mother having postcollege education. Consistent with previous work (Goldman, 2020), we recoded the response categories into 1 = less than high school, 2 = high school, and 3 = some college or more.

Family financial status during childhood was captured by the question: "During the time from about age 6 to age 16, would you say your family was very well off financially, fairly well off, about average, not so well off, or not well off at all?" About half of the respondents rated their family financial status during childhood as "about average" (45%). Those who rated their family financial status as "very well off" and "fairly well off" made up 3% and 11% of the sample, respectively. Approximately one third of the respondents reported their family financial status during childhood as "not well off at all" (13%) or "not so well off" (28%). Following previous work (H. Lee & Schafer, 2021; Luo & Waite, 2005), we dichotomized the answers into "very well off," "fairly well off," or "about average" (=1) and "not well off at all" or "not so well off" (=0). Family structure is coded as intact for who lived with both of their parents (=1) and not intact for those who did not (=0).

Lastly, NSHAP assessed childhood health using the question: "From age 6 to 16 years, would you say that your health during that time was excellent, very good, good, fair, or poor?" Respondents who rated their childhood health as "fair" or "poor" made up 5% and 1% of the sample, respectively. The majority of the respondents rated their childhood health as "good" (17%), "very good" (30%), or "excellent" (45%). Following previous work (H. Lee et al., 2021; H. Lee & Schafer, 2021; Zhang et al., 2016), we dichotomized childhood health into "good," "very good," or "excellent" (=1) versus "fair" or "poor" (=0). Finally, we examined whether respondents ever witnessed or experienced a violent event when they were 6–16 years of age. Detailed variable descriptions are provided in Table 1.

### Later-Life Health Outcomes

Using the NSHAP 2015 round of data, we measured self-rated health, depressive symptoms, and social support to assess physical, mental, and social health, which have been found to be strongly patterned by childhood background (Goldman, 2020; Springer et al., 2007). We compared respondents who reported "excellent," "very good," or "good" health (=1) with those who reported "poor" or "fair" health (=0), categorizing each group as "good" and "poor" health groups, respectively. Depressive symptoms were measured by using the 11-item version of the Center for Epidemiological Studies—Depression Scale (Payne et al., 2014). Respondents rated how often they experienced each of 11 items over the past week on a 4-point Likert scale ranging from 0 (rarely or none of the time) to 3 (most of the time). Following Payne and colleagues (2014), we combined 2 (occasionally) and 3 (most of the time) into a single category so that the response categories are as follows: rarely or none of the time (=0), some of the time (=1), and much or most of the time (=2). A total score ranges from 0 to 22, with higher scores indicating more depressive symptoms. Cronbach's alpha was .81. Social support from partner, family, and friends was assessed by asking respondents "How often can you open up to [current partner/ members of your family/friends] if you need to talk about your worries?" and "How often can you rely on [current partner/ members of your family/friends] for help if you have a problem?" Response for each item ranged from never (=0) to often (=3). We created a scale by averaging the responses to the six support items by treating older adults without partners as missing. This measure of social support has been validated in previous work (alpha = .67) (Cornwell & Waite, 2009).

### Covariates

Demographic covariates include age (mean [*SD*]: 66.3 [10.1]), gender (1 = female; 55.2%), and race/ethnicity. Four race/ethnicity categories were measured: non-Hispanic White (reference), non-Hispanic Black, Hispanic, and Other.

### Analytic Plan

Descriptive analysis was first conducted to see the distribution of each childhood item by gender and age group (50–59, 60–69, 70–79, and 80–95). We then examined whether childhood background measures could be used as potential predictors of various health outcomes. The application of regression analysis to validate predictive validity of childhood measures has been shown to be appropriate and has been well discussed in previous studies (DeVellis, 2012; Vable et al., 2017). Multivariate regression analyses were carried out using logistic regression for self-rated health and ordinary least squares regression for depressive symptoms and social support. All models control for demographic covariates including age, gender, and race/ethnicity. In addition to demographic characteristics, we also adjusted for survey round (2010 or 2015). Survey weights from the 2010 round were used for the original cohort and the 2015 round were used for the new cohort to account for the complex sampling design of the NSHAP. Preliminary analyses found the regression models face multicollinearity issues when both nativity and regions are accounted for as part of childhood background measures, so we excluded regions from the final model.

## Results

### Descriptive Statistics

Table 2 presents the distribution of childhood measures by age group and gender. The majority of the sample reported

being born in the United States (89.8%). Among those born in the United States, most of them were born in the Midwest (34.7%), followed by the South (30%), Northeast (22%), and the West (13.3%). The share of respondents who reported having a happy family life while growing up shows different patterns for men and women across the age groups. Happy family life is equally prevalent among men in their 50s (63.2%) and 60s (63%). The share of men reporting happy family life rises to 70.1% in their 70s, and then falls to 66.8% among those aged 80 and older. In

**Table 1.** Childhood Background Measures Included in NSHAP 2010 and 2015

| NSHAP constructed variable | Question and response options | Coding scheme |
|---|---|---|
| Born in the United States | Were you born in the United States?<br>0 No<br>1 Yes | Coded 1 if "Yes." |
| State of birth | In what state were you born? | Coded "Northeast" if the respondent was born in the following states: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont; reference category<br>Coded "Midwest" if the respondent was born in the following states: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin<br>Coded "South" if the respondent was born in the following states: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Virginia, Tennessee, Texas, and West Virginia<br>Coded "West" if the respondent was born in the following states: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, Oregon, New Mexico, Utah, Washington, and Wyoming |
| Family life happy growing up | How much do you agree with the statement: "When I was growing up, my family life was always happy."<br>1 I disagree very much<br>2 I disagree pretty much<br>3 I disagree a little<br>4 I agree a little<br>5 I agree pretty much<br>6 I agree very much | The responses are dichotomized so that "5 = I agree pretty much" and "6 = I agree very much" are coded as 1 and 0 otherwise. |
| Father's education | What is the highest grade of school your father completed?<br>1 No formal education<br>2 1–11 Grades<br>3 12 High school graduate<br>4 13–15 Some college<br>5 16 College graduate<br>6 ≥17 Postcollege<br>7 Other<br>8 Don't know | The responses were recoded into three categories:<br>1 = father did not complete high school<br>2 = father completed high school<br>3 = father has some college or more |
| Mother's education | What is the highest grade of school your mother completed?<br>1 No formal education<br>2 1–11 Grades<br>3 12 High school graduate<br>4 13–15 Some college<br>5 16 College graduate<br>6 ≥17 Postcollege<br>7 Other<br>8 Don't know | The responses were recoded into three categories:<br>1 = mother did not complete high school<br>2 = mother completed high school<br>3 = mother has some college or more |

**Table 1.** Continued

| NSHAP constructed variable | Question and response options | Coding scheme |
|---|---|---|
| Family's financial situation from age 6 to 16 | During the time from about age 6 to 16, would you say your family was very well off financially, fairly well off, about average, not so well off, or not well off at all?<br>1 Not well off at all<br>2 Not so well off<br>3 About average<br>4 Fairly well off<br>5 Very well off | The responses are dichotomized so that "3 = About average," "4 = Fairly well off," and "5 = Very well off" are coded as 1 and 0 otherwise. |
| Lived with both parents from age 6 to 16 | During this time, did you live with both of your parents?<br>0 No<br>1 Yes | Coded 1 if "Yes." |
| Health status from age 6 to 16 | Consider your health while you were growing up, from around age 6 to 16. Would you say that your health during that time was excellent, very good, good, fair, or poor?<br>1 Poor<br>2 Fair<br>3 Good<br>4 Very good<br>5 Excellent | The responses are dichotomized so that "3 = Good," "4 = Very good," and "5 = Excellent" are coded as 1 and 0 otherwise. |
| Experienced violent event from age 6 to 16 | From about age 6 to 16, were you beaten, assaulted, shot, raped, or did you experience any other violent event?<br>0 No<br>1 Yes | Coded 1 if "Yes." |
| Witnessed violent event from age 6 to 16 | From about age 6 to 16, did you witness any violent events, such as a beating, assault, shooting, murder, or rape?<br>0 No<br>1 Yes | Coded 1 if "Yes." |

*Note*: NSHAP = National Social Life, Health, and Aging Project.

contrast, the share of women reporting a happy family life steadily increases from their 50s (60%) through ages 80 and older (69.8%).

We examine the childhood SES of older adults by focusing on father's education, mother's education, and family's financial situation. For both men and women, respondents in their 80s and older were more likely than those in their 50s to have parents with less than a high school degree. For instance, the share with a father with less than a high school degree shows a consistent rise with age, from about one-fifth of those in their 50s (23.2% for men, 21.9% for women) to about half of those aged 80 and older (52.1% for men, 51.7% for women). We see a similar pattern for mother's education. About a quarter of respondents in their 50s have a mother with less than a high school degree (22.5% for men, 25.6% for women), whereas a little over half of those 80 and older have a mother with less than a high school degree (53.9% for men, 51% for women). For both men and women, the percent of respondents reporting their childhood financial situation as average or above average falls with age, from about two thirds of men and women in their 50s falling to less than half for those aged 80 and older.

Both men and women in older age groups were also more likely to have lived with both parents during childhood compared to younger age groups. For instance,

**Table 2.** Summary Statistics of the Childhood Variables by Gender and Age Group, National Social Life, Health, and Aging Project, 2010 and 2015

| | Total | | | | | Men | | | | | Women | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Age in 2015[a] | 50–59 | 60–69 | 70–79 | 80–95 | Total | 50–59 | 60–69 | 70–79 | 80–95 | Total | 50–59 | 60–69 | 70–79 | 80–95 | Total |
| Born in the United States, % yes | 86 | 91.1 | 91.9 | 91.6 | 89.8 | 87 | 90.3 | 92.5 | 92.5 | 90 | 85.1 | 91.8 | 91.5 | 90.9 | 89.5 |
| *N* | 952 | 1,058 | 1,031 | 638 | 3,679 | 416 | 467 | 468 | 286 | 1,637 | 536 | 591 | 563 | 352 | 2,042 |
| State of birth[b] | | | | | | | | | | | | | | | |
| % Northeast | 25.2 | 19.4 | 22.4 | 20.7 | 22 | 26.3 | 19.9 | 22 | 21.6 | 22.6 | 24.2 | 19 | 22.7 | 20 | 21.6 |
| % Midwest | 33.9 | 37.6 | 31.5 | 34.7 | 34.7 | 33.3 | 36.6 | 30.9 | 35.7 | 34.2 | 34.3 | 38.5 | 32 | 33.8 | 35.1 |
| % South | 24.7 | 29.4 | 36.4 | 32 | 30 | 24.4 | 30.1 | 36.6 | 28.8 | 29.7 | 25 | 28.8 | 36.2 | 34.5 | 30.2 |
| % West | 16.2 | 13.6 | 9.7 | 12.6 | 13.3 | 15.9 | 13.4 | 10.5 | 13.8 | 13.5 | 16.5 | 13.7 | 9 | 11.6 | 13.1 |
| *N* | 773 | 914 | 886 | 545 | 3,118 | 343 | 404 | 403 | 244 | 1,394 | 430 | 510 | 483 | 301 | 1,724 |
| Growing up, fmily life was happy, % yes | 61.5 | 61.6 | 66.4 | 68.5 | 63.6 | 63.2 | 63 | 70.1 | 66.8 | 65.2 | 60 | 60.4 | 63.5 | 69.8 | 62.2 |
| *N* | 961 | 1,066 | 1,021 | 627 | 3,675 | 417 | 470 | 466 | 279 | 1,632 | 544 | 596 | 555 | 348 | 2,043 |
| Father's education | | | | | | | | | | | | | | | |
| % Less than high school | 22.5 | 28.5 | 43.5 | 51.9 | 32.5 | 23.2 | 28.6 | 42.7 | 52.1 | 32.7 | 21.9 | 28.4 | 44.2 | 51.7 | 32.3 |
| % High school | 32.3 | 39.5 | 31 | 25.2 | 33.6 | 33.7 | 40 | 32.5 | 21.9 | 34.1 | 31.2 | 39.4 | 29.6 | 28 | 33.2 |
| % More than high school | 45.2 | 32 | 25.6 | 22.9 | 34 | 43.1 | 31.9 | 24.8 | 26 | 33.2 | 46.9 | 32.2 | 26.2 | 20.3 | 34.6 |
| *N* | 835 | 897 | 822 | 448 | 3,002 | 365 | 402 | 393 | 208 | 1,368 | 470 | 495 | 429 | 240 | 1,634 |
| Mother's education | | | | | | | | | | | | | | | |
| % Less than high school | 24.2 | 29.3 | 44 | 52.3 | 33.6 | 22.5 | 25 | 40.4 | 53.9 | 31.1 | 25.6 | 33 | 47.1 | 51 | 35.8 |
| % High school | 48.6 | 49.7 | 37.6 | 34.5 | 44.8 | 49.3 | 52.1 | 41.3 | 30.7 | 46.3 | 48.1 | 47.7 | 34.4 | 37.6 | 43.6 |
| % More than high school | 27.2 | 21 | 18.4 | 13.2 | 21.5 | 28.2 | 22.9 | 18.2 | 15.4 | 22.7 | 26.3 | 19.3 | 18.5 | 11.4 | 20.6 |
| *N* | 836 | 905 | 841 | 460 | 3,042 | 356 | 397 | 392 | 210 | 1,355 | 480 | 508 | 449 | 250 | 1,687 |
| Family's financial situation was about average, fairly well off, or very well off, % yes | 65 | 57.2 | 55.1 | 49.1 | 58.2 | 65 | 56.9 | 56.7 | 49.2 | 58.4 | 65.1 | 57.5 | 53.8 | 49 | 57.9 |
| *N* | 965 | 1,064 | 1,026 | 630 | 3,685 | 419 | 469 | 465 | 283 | 1,636 | 546 | 595 | 561 | 347 | 2,049 |
| Lived with both parents, % yes | 81 | 85.5 | 85.5 | 87 | 84.3 | 80.3 | 86.3 | 87.9 | 88.9 | 85.1 | 81.5 | 84.8 | 83.6 | 85.6 | 83.6 |
| *N* | 960 | 1,065 | 1,023 | 626 | 3,674 | 416 | 469 | 466 | 281 | 1,632 | 544 | 596 | 557 | 345 | 2,042 |
| Health was good, very good, or excellent, % yes | 94.6 | 94.5 | 94 | 94.8 | 94.5 | 97 | 95.2 | 95.5 | 96.3 | 96 | 92.7 | 93.8 | 92.8 | 93.5 | 93.2 |
| *N* | 965 | 1,079 | 1,058 | 654 | 3,756 | 419 | 473 | 477 | 294 | 1,663 | 546 | 606 | 581 | 360 | 2,093 |
| Experienced violence, % yes | 19 | 14 | 10.2 | 6.3 | 13.7 | 17.4 | 13.4 | 8.4 | 5.9 | 12.5 | 20.3 | 14.5 | 11.7 | 6.6 | 14.6 |
| *N* | 965 | 1,077 | 1,053 | 653 | 3,748 | 420 | 473 | 477 | 294 | 1,664 | 545 | 604 | 576 | 359 | 2,084 |
| Witnessed violence, % yes | 20.8 | 14.1 | 11 | 9.9 | 14.9 | 23.1 | 15.4 | 10.1 | 10.7 | 16 | 19 | 12.9 | 11.7 | 9.3 | 14 |
| *N* | 963 | 1,078 | 1,056 | 651 | 3,748 | 418 | 473 | 477 | 291 | 1,659 | 545 | 605 | 579 | 360 | 2,089 |

*Notes:* [a]Aged 50–59 years in 2015 = born 1956–1965; aged 60–69 years in 2015 = born 1946–1955; aged 70–79 years in 2015 = born 1936–1945; aged 80–95 years in 2015 = born 1920–1935.
[b]Regions are defined according to the U.S. Census Bureau: "Northeast"(Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont), "Midwest" (Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin), "South" (Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Virginia, Tennessee, Texas, and West Virginia), and "West" (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, Oregon, New Mexico, Utah, Washington, and Wyoming).

88.9% of men among 80 and older lived with both parents between ages 6 and 16, while 80.3% of those from their 50s lived with their parents. The increase with age is less steep for women—the share of older women who lived with both parents increases from 81.5% of those in their 50s to 85.6% of those among 80 and older. Health status between ages 6 and 16 shows a skewed distribution such that over 90% of respondents reported having good, very good, or excellent health during childhood, which could be due at least in part to selection of healthier people into old age. The share of those with good, very good, or excellent health is fairly stable across the age groups for both men and women. However, men tend to have slightly better childhood health than women at all ages.

Lastly, both men and women in younger age groups were more likely than those in older age groups to have experienced or witnessed a violent event as a child. About one fifth of those in their 50s experienced a violent event during childhood (17.4% for men, 20.3% for women) compared to approximately 6% of those aged 80 and older (5.9% for men, 6.6% for women). We see a similar pattern for those who witnessed a violent event, from approximately one fifth of older adults in their 50s having witnessed a violent event to about 10% of those 80 and older. The percent of women who experienced a violent event (14.6%) and who witnessed a violent event (14%) was about equal, whereas a higher share of men witnessed a violent event (16%) than experienced a violent event (12.5%), which may reflect gendered patterns of victimization.

### Multivariate Regression Models

Next, we validate the measure of life circumstances during childhood by showing that the associations between the NSHAP childhood measures and later-life health outcomes are consistent with previous findings in life course research (shown in Table 3). Model 1 in Table 3 presents the odds of "good" self-rated health. Respondents who had a happy family life during childhood have higher odds of reporting good, very good, or excellent health than those who did not. Those with fathers who have some college education or more have higher odds of reporting good health than those with fathers who did not complete high school. Similarly, those who have mothers with some college education or more and those who have mothers with a high school degree are more likely to report good health than those with mothers who did not complete high school. Reporting "good," "very good," or "excellent" childhood health was associated with better self-rated health at older ages compared to reporting "poor" or "fair" childhood health.

Model 2 of Table 3 presents the association between depressive symptoms and childhood measures. A happy family life during childhood is linked to fewer depressive symptoms. Having a mother or father with at least some college education is associated with fewer depressive symptoms. Respondents who reported having good health between ages 6 and 16 show fewer depressive symptoms, on average, than those who report having fair or poor health. On the other hand, respondents who experienced a violent event during childhood report more frequent depressive symptoms than older adults who did not experience a violence event.

Lastly, Model 3 assesses the link between childhood measures and social health, as assessed by social support. Having a happy family life growing up was the only statistically significant childhood measure, with happy family life associated with greater levels of social support in adulthood. Given that people who have no spouse do not answer social support items for spousal support, respondents without partners were omitted from Model 3. As a robustness check, we estimated a model that includes those without partners by assigning them a value of 0 to partner social support items, and the results were largely the same.

## Discussion

The purpose of this paper was to facilitate life course research using NSHAP. We described the childhood measures available in NSHAP and reported preliminary population estimates for each measure by age and gender. We also explored how older adult physical, mental, and social health are associated with childhood background characteristics.

Descriptive statistics show that childhood experiences vary by age groups. Older age groups were more likely to report poorer financial situations during childhood and lower parental education than younger age groups. These patterns reflect increases in the educational attainment of successive cohorts over the twentieth century. It is also possible that those in their 70s and 80s lived some parts of their childhoods during the Great Depression (1929–1939), which would affect reports of family financial status for those individuals. In addition, younger age groups were more likely to grow up in nonintact families (i.e., single-parent households) and more likely to experience or witness a violent event during childhood compared to older age groups. These differences may be attributable to demographic changes in marriage and cultural and societal upheaval in the 1960s. Some of the younger age groups are members of the Baby Boom cohort, who approached marriage differently and went through divorce or separation more than their parents and siblings. These demographic experiences of Baby Boomers affected their family life and living arrangement in adulthood. It is also possible that those in their 50s and 60s spent their early life during civil rights movements, the Vietnam War, and antiwar protests, which would increase their exposure to and witness of violent events during childhood. However, self-rated health in childhood did not differ across age.

Consistent with previous findings from the literature (Chopik & Edelstein, 2019; Ferraro et al., 2016; H. Lee et al., 2021; Springer et al., 2007), our exploratory analyses point to the social environment of one's family during

**Table 3.** Regression Predicting Physical, Mental, and Social Health by Childhood Background Variables, National Social Life, Health, and Aging Project, 2015

| | Self-rated health (1 = good) | Depressive symptoms (range: 0–22) | Social support[a] (range: 0–3) |
|---|---|---|---|
| | Logit (odds ratio) | OLS | OLS |
| Childhood happiness | | | |
| Happy family life | 1.35 (0.16)* | −1.00 (0.22)*** | 0.10 (0.03)*** |
| Father's education | | | |
| Less than HS (ref.) | | | |
| HS | 1.02 (0.14) | −0.00 (0.25) | 0.01 (0.03) |
| More than HS | 1.39 (0.21)* | −0.75 (0.27)** | 0.03 (0.03) |
| Mother's education | | | |
| Less than HS (ref.) | | | |
| HS | 1.37 (0.19)* | −0.16 (0.28) | 0.03 (0.03) |
| More than HS | 1.73 (0.30)** | −0.66 (0.28)* | 0.04 (0.04) |
| Family's financial situation | | | |
| Family was well off | 1.02 (0.11) | 0.21 (0.19) | 0.01 (0.03) |
| Intact family | | | |
| Lived with parents | 1.11 (0.17) | 0.34 (0.24) | −0.04 (0.03) |
| Childhood health | | | |
| Good/very good/excellent | 2.45 (0.46)*** | −1.23 (0.50)* | 0.04 (0.05) |
| Childhood trauma | | | |
| Witness of violence | 0.79 (0.13) | 0.32 (0.37) | −0.04 (0.04) |
| Experience of violence | 0.89 (0.17) | 1.04 (0.32)** | 0.00 (0.04) |
| U.S. born | 0.86 (0.16) | −0.03 (0.34) | −0.02 (0.05) |
| Constant | 6.03 (4.89)* | 4.39 (1.30)* | 2.74 (0.04)*** |
| Number of observations[b] | 2,703 | 2,682 | 1,929 |

*Notes*: HS = high school; ref. = reference. Regressions control for age, gender, race/ethnicity, and survey round.
[a]This measure is only relevant to those who answered all six social support items (e.g., social support from partner, family, and friends).
[b]Our analytic sample varies across the three models due to missing cases in each health outcome.
*$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed tests).

childhood being a fundamental context that influences adult health over the life course. We found that growing up in a happy family is a particularly important predictor of the amount of social support older adults receive from spouse, family, and friends. Interestingly, we found that other childhood measures, especially parent's education, are only relevant for physical and mental health. One possibility is that parental education as proxies for childhood SES may have direct associations with the physical and mental health outcomes through its impact on offspring's education. Education correlates with socioeconomic position, and individuals with high SES tend to have better physical and mental health. The well educated are also likely to have good health benefits and insurance coverage through their occupations, which allow regular health check-ups and screening. On the other hand, the family environment may reflect emotional and psychosocial resources of caregivers and the quality of one's rearing environment, which may foster the development of strong social attachments and emotional competencies over the life course. This result may be surprising but there is evidence in support of our finding in the literature of life course research. Using the NSHAP childhood measures, recent evidence finds that childhood family happiness is associated with greater social connectedness and self-mastery in later life net of childhood SES and health, the common childhood variables that have been considered key early-life determinants in the life course literature (Goldman, 2020; H. Lee & Schafer, 2021). This is yet another reminder that family is one of the most important social contexts affecting lifelong health and social well-being.

Although there has been theoretical interest in exploring the impact of early family life over the life course, most prior studies in life course research have focused on parental SES to assess early-life circumstances, and limited empirical work has examined the long-term impact of childhood family social environment on adult health. A major reason for this is that existing surveys of older adults often lack information on childhood family life, and studies with measures of childhood family life have primarily focused on outcomes for young adults. By leveraging the unique measure of childhood family life happiness in NSHAP, researchers may be able to explore the pathways through which family emotional functioning, family SES, place of birth, and exposure to violence affect physical, psychological, cognitive, and social health in later life. This is a critical yet largely underexplored area in life course research.

There are several issues that merit attention for future research. First, retrospective measures of childhood background may be subject to recall bias, but Smith (2009) found that older adults in a population-based survey seem to recall childhood circumstances quite well and early-life autobiographical memories may not be susceptible to declines in recall (Leyhe et al., 2009). Yet, the possibility of recall bias and loss of precision in retrospective reports of childhood measures due to missing cases suggests caution in interpreting results. In addition, the generalizability of our findings may be limited to those healthy populations who still live independently in their communities. NSHAP did not assess health outcomes for those who are institutionalized at the time of survey and for whom short interviews were completed by a knowledgeable proxy. This selection bias might have resulted in a relative underrepresentation of respondents who developed poor health outcomes, and careful interpretation of results is warranted.

Second, childhood happiness measured in NSHAP focuses primarily on whether respondents had a happy family life and may not identify all key characteristics of a happy childhood. Positive childhood memories can occur across multiple contexts in which individuals are reared including home, extended family, school, and community. Future studies measuring relationships with grandparents, peers, teachers, and community members may improve our understanding of early-life positive memories on later outcomes. In addition, the 1940 Census has been recently linked to several major studies of older adults in the United States including NSHAP. By leveraging recent linkages between the NSHAP and the 1940 Census (more information available in the special issue on this linkage), future work could investigate how later-life outcomes are influenced by early-life environmental conditions above and beyond childhood SES, health, and family conditions to expand our understanding of the Critical Period Model. Future research could also benefit from investigating racial/ethnic differences in the effect of childhood conditions on health outcomes as Black older adults are thought to have experienced different trajectories of social, economic, and residential experiences than others.

Lastly, early-life experiences and exposures can indirectly impact older adult health through adult resource and opportunity pathways (Ferraro et al., 2016). Ferraro and colleagues (2016) argue that "early disadvantage increases the likelihood of exposure to later risks—but *resources* help individuals respond to those negative exposures" (p. 110). While much of the research on this topic examines adult SES (i.e., education, income, occupation, wealth), only a few studies have examined psychosocial resources as a mediating pathway through which early-life experiences shape later-life outcomes (Ferraro et al., 2016; H. Lee & Schafer, 2021; Morton et al., 2014). Growing up with adverse childhood experiences may be a source of chronic stress, which may lead to physiological deterioration and poor health in later life. One could test this *accumulation model* using the NSHAP biomarker data to see if adverse childhood experiences impact later-life outcomes through the biological risk pathway. Combined with the exploratory analyses presented in the current study, future research investigating potential life course pathways through which childhood background contributes to later-life health could investigate the role of adult achievements in compensating for early-life risk to test the *social mobility model*.

This study highlights the importance of accounting for childhood family life and social environment in examination of later-life physical, mental, and social health. This study describes childhood background measures in the NSHAP and provides preliminary evidence that growing up in a happy and well-educated family environment is associated with better physical, mental, and social health even decades later. Examination of not only childhood socioeconomic context but also family life experiences in survey data may inform our understanding of the early origins of healthy aging.

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## Conflict of Interest

None declared.

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## Author Contributions

H. Lee planned the study, led the conceptualization of the study, and wrote the manuscript. K. W. Choi prepared the data set, performed the primary statistical analyses, and wrote the results section. L. Waite contributed to the conceptualization of the study, interpretation of results, and editing of the manuscript.

## References


Barker, D. J. P. (1995). Fetal origins of coronary heart disease. *British Medical Journal*, **311**(*6998*), 171–174. doi:10.1136/bmj.311.6998.171

Batcho, K. I., Nave, A. M., & DaRin, M. L. (2011). A retrospective survey of childhood experiences. *Journal of Happiness Studies*, **12**(4), 531–545. doi:10.1007/s10902-010-9213-y

Ben-Shlomo, Y., & Kuh, D. (2002). A life course approach to chronic disease epidemiology: Conceptual models, empirical challenges and interdisciplinary perspectives. *International Journal of Epidemiology*, **31**(2), 285–293. doi:10.1093/ije/31.2.285

Blau, P. M., & Duncan, O. D. (1967). *The American occupational structure*. John Wiley & Sons, Inc. http://eric.ed.gov/?id=ED066526

Carlson, M. J., & Corcoran, M. E. (2001). Family structure and children's behavioral and cognitive outcomes. *Journal of Marriage and Family*, **63**(3), 779–792. doi:10.1111/j.1741-3737.2001.00779.x

Carr, D., & Springer, K. W. (2010). Advances in families and health research in the 21st century. *Journal of Marriage and Family*, **72**(3), 743–761. doi:10.1111/j.1741-3737.2010.00728.x

Case, A., Fertig, A., & Paxson, C. (2005). The lasting impact of childhood health and circumstance. *Journal of Health Economics*, **24**(2), 365–389. doi:10.1016/j.jhealeco.2004.09.008

Chen, P., & Harris, K. M. (2019). Association of positive family relationships with mental health trajectories from adolescence to midlife. *Jama Pediatrics*, **173**(12), e193336. doi:10.1001/jamapediatrics.2019.3336

Chopik, W. J., & Edelstein, R. S. (2019). Retrospective memories of parental care and health from mid- to late life. *Health Psychology*, **38**(1), 84–93. doi:10.1037/hea0000694

Cornwell, E. Y., & Waite, L. J. (2009). Social disconnectedness, perceived isolation, and health among older adults. *Journal of Health and Social Behavior*, **50**(1), 31–48. doi:10.1177/002214650905000103

Dannefer, D. (2003). Cumulative advantage/disadvantage and the life course: Cross-fertilizing age and social science theory. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, **58**(6), S327–S337. doi:10.1093/geronb/58.6.s327

DeVellis, R. F. (2012). *Scale development: Theory and applications*. SAGE Publications.

Elder, G. H. (1974). *Children of the Great Depression*. Routledge.

Elo, I. T., & Preston, S. H. (1992). Effects of early-life conditions on adult mortality: A review. *Population Index*, **58**(2), 186–212. doi:10.2307/3644718

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, **14**(4), 245–258. doi:10.1016/s0749-3797(98)00017-8

Ferraro, K. F., Schafer, M. H., & Wilkinson, L. R. (2016). Childhood disadvantage and health problems in middle and later life: Early imprints on physical health? *American Sociological Review*, **81**(1), 107–133. doi:10.1177/0003122415619617

Ferraro, K. F., & Shippee, T. P. (2009). Aging and cumulative inequality: How does inequality get under the skin? *The Gerontologist*, **49**(3), 333–343. doi:10.1093/geront/gnp034

Gilman, S. E., Kawachi, I., Fitzmaurice, G. M., & Buka, L. (2003). Socio-economic status, family disruption and residential stability in childhood: Relation to onset, recurrence and remission of major depression. *Psychological Medicine*, **33**(8), 1341–1355. doi:10.1017/s0033291703008377

Gilsanz, P., Mayeda, E. R., Glymour, M. M., Quesenberry, C. P., & Whitmer, R. A. (2017). Association between birth in a high stroke mortality state, race, and risk of dementia. *Jama Neurology*, **74**(9), 1056–1062. doi:10.1001/jamaneurol.2017.1553

Glymour, M. M., Kosheleva, A., Wadley, V. G., Weiss, C., & Manly, J. J. (2011). Geographic distribution of dementia mortality: Elevated mortality rates for black and white Americans by place of birth. *Alzheimer Disease and Associated Disorders*, **25**(3), 196–202. doi:10.1097/WAD.0b013e31820905e7

Glymour, M. M., & Manly, J. J. (2008). Lifecourse social conditions and racial and ethnic patterns of cognitive aging. *Neuropsychology Review*, **18**(3), 223–254. doi:10.1007/s11065-008-9064-z

Goldman, A. W. (2020). The early-life origins of later-life networks. *Social Problems*. doi:10.1093/socpro/spaa047

Goodman, A., Joyce, R., & Smith, J. P. (2011). The long shadow cast by childhood physical and mental problems on adult life. *Proceedings of the National Academy of Sciences of the United States of America*, **108**(15), 6032–6037. doi:10.1073/pnas.1016970108

Haas, S. (2008). Trajectories of functional health: The "long arm" of childhood health and socioeconomic factors. *Social Science & Medicine*, **66**(4), 849–861. doi:10.1016/j.socscimed.2007.11.004

Hayward, M. D., & Gorman, B. K. (2004). The long arm of childhood: The influence of early-life social conditions on men's mortality. *Demography*, **41**(1), 87–107. doi:10.1353/dem.2004.0005

Hertzman, C. (1999). The biological embedding of early experience and its effects on health in adulthood. *Annals of the New York Academy of Sciences*, **896**, 85–95. doi:10.1111/j.1749-6632.1999.tb08107.x

Kaufman, M. (2019). *Redefining success in America: A new theory of happiness and human development*. University of Chicago Press.

Lee, C., Coe, C. L., & Ryff, C. D. (2017). Social disadvantage, severe child abuse, and biological profiles in adulthood. *Journal of Health and Social Behavior*, **58**(3), 371–386. doi:10.1177/0022146516685370

Lee, H. (2019). A life course approach to total tooth loss: Testing the sensitive period, accumulation, and social mobility models in the Health and Retirement Study. *Community Dentistry and Oral Epidemiology*, **47**(4), 333–339. doi:10.1111/cdoe.12463

Lee, H., Ryan, L. H., Ofstedal, M. B., & Smith, J. (2021). Multigenerational households during childhood and trajectories of cognitive functioning among U.S. Older adults. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, **76**(6), 1161–1172. doi:10.1093/geronb/gbaa165

Lee, H., & Schafer, M. (2021). Are positive childhood experiences linked to better cognitive functioning in later life?: Examining the role of life course pathways. *Journal of Aging and Health*, **33**(3–4), 217–226. doi:10.1177/0898264320972547

Leyhe, T., Müller, S., Milian, M., Eschweiler, G. W., & Saur, R. (2009). Impairment of episodic and semantic autobiographical memory in patients with mild cognitive impairment and early Alzheimer's disease. *Neuropsychologia*, **47**(12), 2464–2469. doi:10.1016/j.neuropsychologia.2009.04.018

Luo, Y., & Waite, L. J. (2005). The impact of childhood and adult SES on physical, mental, and cognitive well-being in later life. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, **60**(2), S93–S101. doi:10.1093/geronb/60.2.s93

Lyu, J., & Burr, J. A. (2016). Socioeconomic status across the life course and cognitive function among older adults: An examination of the latency, pathways, and accumulation hypotheses. *Journal of Aging and Health*, **28**(1), 40–67. doi:10.1177/0898264315585504

Marden, J. R., Tchetgen Tchetgen, E. J., Kawachi, I., & Glymour, M. M. (2017). Contribution of socioeconomic status at 3 life-course periods to late-life memory function and decline: Early and late predictors of dementia risk. *American Journal of Epidemiology*, **186**(7), 805–814. doi:10.1093/aje/kwx155

McEwen, C. A., & McEwen, B. S. (2017). Social structure, adversity, toxic stress, and intergenerational poverty: An early childhood model. *Annual Review of Sociology*, **43**(1), 445–472. doi:10.1146/annurev-soc-060116-053252

Meadows, S. O., Brown, J. S., & Elder, G. H. (2006). Depressive symptoms, stress, and support: Gendered trajectories from adolescence to young adulthood. *Journal of Youth and Adolescence*, **35**(1), 89–99. doi:10.1007/s10964-005-9021-6

Melby, J. N., Conger, R. D., Fang, S. A., Wickrama, K. A., & Conger, K. J. (2008). Adolescent family experiences and educational attainment during early adulthood. *Developmental Psychology*, **44**(6), 1519–1536. doi:10.1037/a0013352

Montez, J. K., & Hayward, M. D. (2014). Cumulative childhood adversity, educational attainment, and active life expectancy among U.S. adults. *Demography*, **51**(2), 413–435. doi:10.1007/s13524-013-0261-x

Morton, P. M., Mustillo, S. A., & Ferraro, K. F. (2014). Does childhood misfortune raise the risk of acute myocardial infarction in adulthood? *Social Science & Medicine (1982)*, **104**, 133–141. doi:10.1016/j.socscimed.2013.11.026

O'Rand, A. M. (1996). The precious and the precocious: Understanding cumulative disadvantage and cumulative advantage over the life course. *The Gerontologist*, **36**(2), 230–238. doi:10.1093/geront/36.2.230

Payne, C., Hedberg, E. C., Kozloski, M., Dale, W., & McClintock, M. K. (2014). Using and interpreting mental health measures in the National Social Life, Health, and Aging Project. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, **69**(**suppl. 2**), S99–116. doi:10.1093/geronb/gbu100

Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: Family social environments and the mental and physical health of offspring. *Psychological Bulletin*, **128**(2), 330–366. doi:10.1037/0033-2909.128.2.330

Robertson, D. L., & Reynolds, A. J. (2010). Family profiles and educational attainment. *Children and Youth Services Review*, **32**(8), 1077–1085. doi:10.1016/j.childyouth.2009.10.021

Smith, J. P. (2009). Reconstructing childhood health histories. *Demography,* **46**(2), 387–403. doi:10.1353/dem.0.0058

Smith, J., Hu, M., & Lee, H. (2021). Measuring life course events and life histories. In K. F. Ferraro & D. Carr (Eds.), *Handbook of aging and the social sciences* (pp. 33–47). Academic Press.

Springer, K. W., Sheridan, J., Kuo, D., & Carnes, M. (2007). Long-term physical and mental health consequences of childhood physical abuse: Results from a large population-based sample of men and women. *Child Abuse & Neglect*, **31**(5), 517–530. doi:10.1016/j.chiabu.2007.01.003

Topping, M., Kim, J., & Fletcher, J. (2021). Association and pathways of birth in the stroke belt on old age dementia and stroke Mortality. *SSM—Population Health*, **15**, 100841. doi:10.1016/j.ssmph.2021.100841

U.S. Census Bureau. (2010). *Census regions and divisions of the United States*. https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf

Vable, A. M., Gilsanz, P., Nguyen, T. T., Kawachi, I., & Glymour, M. M. (2017). Validation of a theoretically motivated approach to measuring childhood socioeconomic circumstances in the Health and Retirement Study. *PLoS One*, **12**(10), e0185898. doi:10.1371/journal.pone.0185898

Zhang, Z., Hayward, M. D., & Yu, Y. L. (2016). Life course pathways to racial disparities in cognitive impairment among older Americans. *Journal of Health and Social Behavior*, **57**(2), 184–199. doi:10.1177/0022146516645925