



# HHS Public Access

Author manuscript

*J Aging Health*. Author manuscript; available in PMC 2023 February 16.

Published in final edited form as:

*J Aging Health*. 2022 October ; 34(6-8): 818–830. doi:10.1177/08982643211066184.

## The Long-Term Impact of Childhood Disability on Mental Health Trajectories in Mid- to Late-Life

Jessica S. West, PhD, MPH<sup>1</sup>, Christina Kamis, MA<sup>2</sup>

<sup>1</sup>Center for the Study of Aging and Human Development, Duke University, Durham, NC

<sup>2</sup>Department of Sociology, Duke University, Durham, NC

### Abstract

**Objectives:** We draw from the life course and stress process frameworks to examine how experiencing disability in early life influences mental health in adulthood.

**Methods:** Data come from the Health and Retirement Study Cross-Wave Childhood Health and Family Aggregated Data file (2008–2018,  $n = 15,289$ ). Childhood disability status is a retrospective self-report of whether respondents were disabled for six months or more because of a health problem before the age of 16 ( $n = 581$ ). We used age-based growth curve models to construct trajectories of depressive symptoms by childhood disability status.

**Results:** Respondents who experienced childhood disability exhibit more depressive symptoms at age 50 compared to those who did not experience this stressor. However, there is no difference in the growth of depressive symptoms with age between these groups, suggesting maintained inequality over the late adulthood life course.

**Discussion:** Findings suggest that childhood disability has long-term implications for life course mental health.

### Keywords

Disability; mental health; aging with disability; growth curve models

### Introduction

From 2008 to 2019, the percentage of U.S. children under the age of 18 with a disability increased from 3.9% to 4.3% (Young, 2021). Moreover, advances in medical treatments and care over the past several decades have resulted in more young people with chronic physical illnesses and disabilities aging into adulthood, highlighting an increasing need to examine the effects of these conditions on the long-term health and well-being of individuals (Secinti, Thompson, Richards, & Gaysina, 2017). Yet, nationally representative research on the experience of aging with a disability is currently limited, which has serious implications not only for our understanding of the lasting effect that childhood disability may have on

---

Address correspondence to: Jessica S. West, Duke Aging Center, Duke University Medical Center 3003, Durham, NC 27710, jessie.west@duke.edu, Cell: 508-221-2713.

health and well-being but also for our ability to identify interventions to improve outcomes (Coyle & Putnam, 2017).

The stress process model classifies physical illness as a chronic strain, or ongoing, long-term difficulty that negatively affects well-being (Pearlin, 1989). During childhood, there is evidence that children with disabilities experience higher levels of psychological distress (e.g., depression) compared to their peers without disabilities (Humphrey, Lendrum, Barlow, Wigelsworth, & Squires, 2013; Maxey & Beckert, 2017; Mueller & Prout, 2009). The life course perspective suggests that early life stressors may impact later life transitions and health outcomes (Ferraro & Shippee, 2009). Indeed, there is evidence that experiencing disability in childhood negatively impacts traditional markers of the transition to adulthood (e.g., education, employment, income, family status) (Janus, 2009; Mann & Honeycutt, 2014; Shandra, 2011) and is associated with higher levels of depressive symptoms in late midlife (Latham, 2015).

The current study extends previous research in several ways. First, we draw on the stress process model and life course perspective to conceptualize childhood disability as an early life stressor that may have ongoing, long-term consequences for health. Second, we add to a growing literature highlighting the long-term impact of early-life disadvantage for mental health outcomes (Aneshensel, 2015; Avison, 2010; George, 2013) rather than physical health outcomes. Third, because the life course and stress process frameworks both note that childhood stressors do not inevitably lead to worse adult mental health, and that the stress associated with early life disadvantage may wane with age (George, 2013), we examine how childhood disability may predict baseline adult mental health (Avison, 2010; Pearlin, 2010) and the growth of distress with age (Schafer & Ferraro, 2013). To this end, this study uses nationally representative data from six waves of the Health and Retirement Study to examine how exposure to disability before the age of 16 shapes an individual's baseline and growth of depressive symptoms over ten years of adulthood.

## Background

### Disability in Early Life

The stress process model and life course principle of timing both recognize that the impact that a stressor (e.g., poor health) has on the individual may vary depending on the stage of the life course in which it occurs (Elder, Johnson, & Crosnoe, 2003). Both frameworks recognize that stress experienced during early life, which is a sensitive period for physical, emotional, and mental development, may be particularly harmful for one's well-being across the life course (Aneshensel, 2015; Ferraro & Shippee, 2009; Pearlin, 2010).

Poor health in childhood can be considered a major life stressor in early life for several reasons. First, being in poor health can be psychologically stressful, as it can challenge a young person's identity and result in a loss of self-image (Charmaz, 1983). Second, poor health may create stress in a young person's personal relationships. Poor health may result in more absences from school or a limited ability to participate in extracurricular activities with peers, which can negatively impact a young person's social network (Haas, Schaefer, & Kornienko, 2010). Moreover, poor health early in the life course is unexpected and

rare (Brindis, Morreale, & English, 2003), rendering it stigmatizing (Dawson, McCormick, & Li, 2018). Such stigma may result in peers perceiving youth in poor health as less desirable friends compared to healthy peers (Graetz & Shute, 1995). Finally, young people in poor health may experience high levels of healthcare-related stress. Regularly seeking healthcare services in order to manage an illness or health condition can be a chronically stressful experience (Dalton, Hammen, Brennan, & Najman, 2016). The healthcare setting itself may also be a source of stress because people with disabilities experience physical, communication, and attitudinal barriers within the healthcare setting, such as gaps in patient-provider communication, physically inaccessible facilities, and a lack of adaptive equipment (Drainoni et al., 2006; Iezzoni, Kilbridge, & Park, 2010). As this literature suggests, experiencing poor health early in the life course may be stressful personally, in social relationships, and in the healthcare setting, to name a few.

Most studies that focus on poor physical health in childhood tend to rely on measures of self-rated health or the presence/absence of childhood conditions, with less research examining the influence of childhood disability (used here as an umbrella term for impairments, activity limitations, and participation restrictions) on later life outcomes. Childhood disability may be a more useful measure of childhood physical health status than self-rated childhood health because self-rated health is a global measure that may include subjective assessments of mental health (Latham, 2015). Additionally, in contrast to measures of childhood conditions, which mostly include acute conditions or infectious diseases, childhood disability may more accurately capture long-lasting conditions (Latham, 2015). While it is possible that some childhood disability categories include health conditions from which some individuals may recover, many will have lasting experiences with disability over the life course (Laditka, Laditka, & Hoyle, 2021). Therefore, we focus on childhood disability as a specific poor health status that may be stressful during a sensitive period of the life course.

### **Early Life Disability and Life Course Trajectories**

Conceptualizing poor health, and specifically childhood disability, as a major life stressor occurring during a sensitive period of the life course means that the stress associated with this experience may have far-reaching consequences for health and well-being that exceeds the window of early life. There is a growing body of literature examining how individuals who have a chronic impairment in early life fare in adulthood, and which suggests that those exposed to childhood disability are likely to have different trajectories and outcomes in later life compared to those without chronic impairments (Brucker & Houtenville, 2015; Coyle & Putnam, 2017). Disability in childhood also has implications for adult physical health, as it decreases the odds of recovering from functional impairment later in life (Latham-Mintus & Aman, 2017) and is associated with a significantly shorter life expectancy (Laditka et al., 2021).

Despite growing research focusing on the long-term impact of childhood disability, comparatively less research has focused on the long-term *mental* health consequences of this life course experience. Research on the link between childhood disability and mental health tends to focus on the negative impact of childhood disability for psychosocial problems and

psychological well-being during childhood and adolescence (Ferro, Boyle, & Avison, 2015; Pinquart & Shen, 2010) as opposed to adulthood. Such research finds that children with disabilities experience higher levels of psychological distress (e.g., depression) compared to their peers without disabilities (Humphrey et al., 2013; Maxey & Beckert, 2017; Mueller & Prout, 2009). As mentioned above, this may be due, in part, to the fact that poor health or physical health conditions in early life are rare, stressful, and stigmatized (Brindis et al., 2003; Dalton et al., 2016; Dawson et al., 2018).

Since mental health problems in childhood can be precursors to poor mental health in adulthood (Fergusson & Woodward, 2002; Woodward & Fergusson, 2001), the psychosocial problems that individuals with disabilities experience in childhood may extend into adulthood, leading to heightened distress throughout the life course. Research suggests that people aging with disability are more likely to experience secondary conditions, such as depression, compared to people with later onset of disability (Thompson, 2004). Furthermore, using ordinary least squares (OLS) regression models and an average score of adult depressive symptoms, Latham (2015) found that exposure to disability in early life is associated with higher levels of depressive symptoms in late midlife.

At the same time, individuals who experience childhood disability may have increasingly *worse* health outcomes with age. This may be related, in part, to the secondary stressors of disability that compound to cumulatively impact mental health and well-being (Schafer & Ferraro, 2013). For example, research has documented the difficulties that children with disabilities face in attaining traditionally conceptualized markers of adulthood, reporting that the early onset of disability is associated with lower levels of school completion and a lower likelihood of reaching financial independence, finding full-time employment, marrying, or having children (Janus, 2009; Mann & Honeycutt, 2014; Shandra, 2011), all of which may influence adult mental health.

While such literature suggests that mental health disparities that begin in childhood may persist into adulthood, it is also possible that these disparities by childhood disability status may decrease with age. The life course and stress process frameworks both emphasize that although stressors experienced during the sensitive period may have long-term consequences for wellbeing, childhood stressors do not *inevitably* lead to worse adult mental health, and that the relationship between early life disadvantage and adult mental health may change over age (George, 2013). Because the mental and physical demands of disability are not always constant and may fluctuate across the life course, the adoption of coping strategies can be beneficial for overall psychosocial adjustment (Reuman, Mitamura, & Tugade, 2013). Indeed, research shows that various coping strategies render individuals less susceptible to the negative consequences of disability and more prone to positive outcomes (Oaksford, Frude, & Cuddihy, 2005).

Thus, rather than only assessing the relationship between childhood disability and point-in-time measures of adulthood, it is useful to assess the relationship between early life disability and trajectories of distress over the adult life course (Schafer & Ferraro, 2013). Drawing on this literature, we hypothesize the following three explanations for how childhood disability may shape adult mental health trajectories. First, stressors experienced

in early life may have a prolonged and enduring impact on mental health that remains stable with increasing age (Schafer & Ferraro, 2013; Umberson, Williams, Thomas, Liu, & Thomeer, 2014). Thus, individuals who had a childhood disability may have consistently worse mental health throughout adulthood compared to their peers without a childhood disability. This leads to the first hypothesis:

**Hypothesis 1:** Individuals who experienced childhood disability will exhibit poorer mental health throughout adulthood compared to individuals who did not experience childhood disability.

Second, exposure to stressors in childhood may lead to increasingly worse mental health with age (Ferraro & Shippee, 2009; Umberson et al., 2014). As stated above, experiencing a childhood stressor may lead to the accumulation of related stressors that worsen adult mental health (Ferraro & Shippee, 2009; Ferraro & Wilkinson, 2013; George, 2013). Childhood disability may lead not only to worse mental health at baseline but also to increasingly worse mental health as individuals age. This suggests the second hypothesis:

**Hypothesis 2:** Compared to individuals with no exposure to childhood disability, individuals exposed to childhood disability will not only experience poorer baseline mental health, but also exhibit increasingly worse mental health with age.

Finally, stressors experienced in early life may be impactful for health early in the life course, but wane in importance with age (Oldehinkel, Ormel, Verhulst, & Nederhof, 2014; Schaan, 2014; Schafer & Ferraro, 2013). In the context of childhood disability, mental health disparities may decrease with age as individuals develop coping mechanisms over time (Reuman et al., 2013) or due to differential stigma, wherein the stigma associated with disability status diminishes with age as the experience becomes more common (Barclay-Goddard, King, Dubouloz, & Schwartz, 2012; Brindis et al., 2003). As such, exposure to childhood disability may initially lead to poorer health outcomes compared to non-exposed counterparts but will eventually converge to more similar levels, which suggests the third hypothesis:

**Hypothesis 3:** Individuals exposed to childhood disability will experience poorer baseline mental health compared to individuals with no exposure to childhood disability but will converge to more similar levels with age.

## Present Study

The life course and stress process frameworks highlight that early life stressors may have a lasting influence on health and well-being with age. Yet less is known about the long-term impact of childhood disability for mental health outcomes in adulthood. The current study aims to address this gap in the literature by conceptualizing childhood disability as a chronic stressor during a sensitive period of the life course that may have ongoing, long-term consequences for individuals' mental health as they age. Drawing on nationally representative data from six waves (2008–2018) of the Health and Retirement Study, we construct age-based mental health trajectories to examine how exposure to disability before the age of 16 shapes an individual's baseline and growth of depressive symptoms over ten years of adulthood.

## Data and Methods

The data for this study come from the Health and Retirement Study (HRS), a longitudinal, nationally representative survey of U.S. adults over the age of 50 and their spouses that has been conducted every two years since 1992. The original core sample was obtained via a multi-stage area probability sample of households. The HRS monitors changes in cognitive, physical, and functional health that are associated with aging. The HRS has created a Cross-Wave Childhood Health and Family Aggregated Data file using retrospective reports on childhood background (family and health) provided by HRS respondents or their proxies in different waves of the core HRS interviews (Zhang, Hassan, Larkina, Lee, & Smith, 2020). The items included in this data file were designed to be collected once from each participant, either when the respondent first enrolled in the HRS or in the core wave when the items were first asked. The data file includes 74 variables and 38,654 participants, and can be merged with all other components of the HRS.

While some background items were introduced into the HRS in 1998, childhood health questions were first added in 2008. As such, the current study is restricted to data from Waves 9–14 (2008–2018). The current analytic sample is restricted to respondents and spouses who were present in the 2008 wave ( $n = 16,804$ ), were aged 50 and older ( $n = 16,727$ ), were not proxy respondents ( $n = 15,900$ ), and belonged to an HRS cohort ( $n = 15,886$ ). Approximately 2.92% of the sample was missing on at least one measure. Missing data on single items ranged from 0.02% (adult depressive symptoms) to 1.28% (self-rated childhood SES). After listwise deletion, the final sample is comprised of 15,289 individuals.

## Measures

### Depressive Symptomology

Depressive symptoms were measured in the HRS using the eight-item Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). The CES-D is not a diagnostic instrument, but rather a screening test that is widely used to identify individuals at risk of depression and depressive disorder (Radloff, 1977). Items in the scale ask about feeling lonely, sad, depressed, or happy (reverse coded), having restless sleep, feeling that everything was an effort, not being able to get going, and enjoying life (reverse coded). Participants reported whether the statements were true much of the time during the past week (no/yes). A CES-D summary scores is derived by summing the eight dichotomous items (possible range from zero to eight), with higher scores indicating more depressive symptoms. CES-D scores of two to three may be indicative of “subthreshold” depressive symptoms while scores of four or more may indicate “elevated” depressive symptoms (Demakakos, Zaninotto, & Nouwen, 2014; Steffick, 2000). However, categorizing the CES-D using cut-points may result in a loss of information and depressive symptoms, themselves, can have clinical significance apart from the prediction of a disorder (Patten, Lavorato, & Metz, 2005). Therefore, depressive symptoms are treated as a continuous variable for the analysis.



## Childhood Disability

The independent variable of interest is a retrospective report of childhood disability. Beginning in Wave 9 (2008), respondents were asked, “Before you were 16 years old, were you ever disabled for six months or more because of a health problem? That is, were you unable to do the usual activities of classmates or other children your age?” A dichotomous variable was created (1 = yes).

Individuals who responded affirmatively could provide up to three causes of the disability. These causes represent a wide range of conditions with varying severity of disabling consequences that are categorized by the HRS into ten masked categories: cancers and tumors/skin conditions; musculoskeletal system and connective tissue; heart, circulatory, and blood conditions; respiratory system conditions; endocrine, metabolic, and nutritional conditions; digestive system (stomach, liver, gallbladder, kidney, bladder); neurological and sensory conditions; reproductive system and prostate conditions; emotional and psychological conditions; and other health conditions. Due to small sample sizes, these categories are not analyzed separately (see Appendix Table 1). Important to note is that some of these disability categories include conditions from which some children may recover (e.g., some cancers), indicating that not all individuals in the sample who reported having a disability in childhood will experience a long-term disability. However, the experience of impairment in childhood as well as any long-term biological consequences of the illness may have a lasting effect into adulthood (Laditka et al., 2021).

## Covariates

Adult demographic characteristics are included in the analyses as controls. These include sex (male = reference), age (continuous), and race/ethnicity (non-Hispanic White = reference versus non-Hispanic Black, non-Hispanic Other, and Hispanic). Childhood mental health and socioeconomic status are also included in the analyses to control for early-life disadvantages that might shape adult mental health trajectories. For childhood mental health, a measure for childhood depression is used: “Before you were 16 years old, did you have depression?” We note that this measure of childhood depression is significantly associated with depressive symptoms at Wave 9 (two-tailed t-test,  $p < .001$ ). Childhood socioeconomic status (SES) is assessed with two variables: self-rated childhood SES and moving due to financial hardship. Self-rated childhood SES was asked, “Now think about your family when you were growing up, from birth to age 16. Would you say your family during that time was pretty well off financially, about average, or poor?” An ordinal measure is created where 0 = well off financially, 1 = average, and 2 = poor. Financial hardship is a dichotomous item that asked, “While you were growing up, before age 16, did financial difficulties ever cause you or your family to move to a different place?” (1 = yes). Childhood SES measures have been asked once of each respondent since 1998 (Wave 4). The final control variable included is the HRS cohort variable, which identifies respondents based on birth year: Asset and Health Dynamics Among the Oldest Old (AHEAD) (born before 1924), Children of the Depression Era (CODA) (born 1924–1930), HRS cohort (born 1931–1941), War Babies (born 1942–1947), Early Baby Boomers (EBB) (born 1948–1953), Mid Baby Boomers (MBB) (born 1954–1959), and Late Baby Boomers (LBB) (born 1960–1965).

## Statistical Analysis

We first examined the association between childhood disability and adult depressive symptoms using descriptive methods ( $z$ -tests for difference in proportions and  $t$ -tests for differences in means). To estimate the trajectory of depressive symptoms in adulthood, we use age-based growth curve models, wherein observations of depressive symptoms are nested within individuals. Profiling health trajectories is a commonly used demographic technique to reveal divergent pathways between relatively advantaged versus disadvantaged groups, thus indicating a greater accumulation of health insults over time (DiPrete & Eirich, 2006; Hamil-Luker & O’Rand, 2007; Pais, 2014). In essence, growth models estimate an underlying average trajectory of a variable (e.g., depressive symptoms) over a time metric (e.g., age) as defined by (intercept and slope parameters, as well as individual variation around these parameters (Kamis, 2020; Muthén, 2004). Although the HRS is organized by assessment wave, age is a more meaningful time metric when analyzing trajectories of depression (Adkins, Wang, & Elder, 2009; Lynch & Taylor, 2016). Therefore, the data is restructured to provide an age-based analysis. We zero age at 50 years old (youngest age in the sample), so that baseline measures of depressive symptoms reflect depressive symptoms at age 50.

We first estimate an unconditional model of depressive symptoms as a function of age. Bayesian Information Criteria (BIC) suggest that a quadratic model with a random intercept and random linear slope (“Age”) provides the best model fit. The level 1 equation is as follows:

$$y_{it} = \pi_{0i} + \pi_{1i} * Age_{it} + \pi_{2i} * Age_{it}^2 + e_{it}$$

The outcome is depressive symptoms for each individual  $i$  at each time point  $t$ .  $\pi_{0i}$  represents the intercept or baseline levels of depressive symptoms for individual  $i$ ,  $\pi_{1i}$  represents the linear component and  $\pi_{2i}$  represents the quadratic component. The level 2 equation is as follows:

$$\pi_{0i} = \beta_{00} + r_{0i}$$

$$\pi_{1i} = \beta_{10} + r_{1i}$$

$$\pi_{2i} = \beta_{20}$$

where the intercept and linear components are the combination of an average intercept and slope ( $\beta_{00}, \beta_{10}$ ) and individual variation ( $r_{0i}, r_{1i}$ ). Because we do not specify a random quadratic slope,  $\pi_{2i}$  is simply the average (fixed) quadratic effect. We then include key covariates to estimate between-person differences in baseline levels of depressive symptoms and interact covariates with age to assess between-person differences in the growth of depressive symptoms. Comparison of model fit suggests that interacting covariates with the



linear component of age provides a better model fit (BIC) compared to models interacting covariates with the linear and quadratic components. After estimating the unconditional model of depressive symptoms as a function of age (Model 1), we then add childhood disability status (Model 2) followed by demographic controls including sex, race/ethnicity, and HRS cohort (Model 3). The final model (Model 4) includes measures of childhood mental health and socioeconomic status. As such, the growth models in this study capture 1) within-individual change in depressive symptoms with age and 2) between-person differences in both baseline depressive symptoms (intercept) and the growth of depressive symptoms (slope) with age.

Stata 16.1 was used to compute descriptive statistics and estimate growth curve models. Approximately 45.12% of respondents were present in all six waves ( $n = 4,901$  or 32.06% of the sample died during the observation period). Respondents who died were older (mean 76.66,  $SD = 9.51$ ) (two-tailed  $t$  test,  $p < .001$ ) than those who remained alive over the observation period (mean 66.51,  $SD = 8.40$ ). Additionally, among those who died, 53.95% were female and 77.43% were non-Hispanic White. Such patterns are to be expected because the HRS sample is predominantly female and non-Hispanic White. Per growth modeling recommendations (Curran, Obeidat, & Losardo, 2010), a sizable portion of cases (69.46%) had four or more waves of distress and ancillary analyses that examined only these individuals (shown in the Robustness and Sensitivity section) were substantively similar to results presented here.

## Results

### Descriptive Statistics

Table 1 presents the descriptive statistics for the total sample and for the sample stratified by childhood disability status. Roughly 4% of the sample ( $n = 581$ ) reported experiencing a disability before the age of 16. At the baseline wave (2008), respondents who experienced this stressor exhibited significantly more depressive symptoms in adulthood (1.75,  $SD = 2.14$ ) compared to those who did not (1.42,  $SD = 1.95$ ) ( $t$ -test,  $p < .001$ ). Compared to respondents without a childhood disability, a larger proportion of those with a childhood disability are non-Hispanic White. In terms of childhood circumstances, a larger proportion of those with a childhood disability reported being poor in childhood and moving in childhood due to financial difficulties. Additionally, a larger proportion of those with a childhood disability reported experiencing depression before the age of 16 (6.20%) compared to those without a childhood disability (2.21%) ( $z$ -test for proportions,  $p < .001$ ).

### Trajectories of Depressive Symptoms

Table 2 presents the results of growth models predicting trajectories of depressive symptoms from age 50 to 97. Figure 1 plots the results from Model 1, which is an unconditional growth model of depressive symptoms as a function of age. At baseline (age 50), respondents exhibit on average 1.70 (out of eight) depressive symptoms. Consistent with previous research documenting a U-shaped pattern of depressive symptoms across this period of the life course (Djernes, 2006; Sutin et al., 2013), the significant linear and quadratic slope parameters suggest that depressive symptoms decline after age 50, but that this decline slows

down with age and then becomes positive with older age. By age 97, the average depressive symptom level is 2.30 (out of eight).

In Table 2 Model 2, childhood disability status is added. As shown in the table, childhood disability is significantly associated with increased depressive symptoms at age 50 ( $\beta = .52, p = .001$ ). This means that at age 50, having experienced a disability before the age of 16 is associated with half a point more depressive symptoms (out of eight) compared to not having experienced a childhood disability. Specifically, individuals who experienced a childhood disability have an average CES-D score of 2.20 depressive symptoms (out of eight), while those who did not experience this stressor have an average CES-D score of 1.68 depressive symptoms (out of eight). Thus, those who experience childhood disability, on average, showcase subthreshold levels of depression (Demakakos et al., 2014) whereas those without childhood disability do not showcase significant symptoms of depression. However, childhood disability is not significantly associated with the slope of depressive symptoms with age ( $\beta = -.01, p = .16$ ), meaning that the baseline difference in depressive symptoms is maintained with age. Thus, results are seemingly consistent with Hypothesis 1, suggesting that individuals who experienced childhood disability will exhibit poorer mental health throughout adulthood compared to individuals who did not experience childhood disability.

The pattern remains the same when covariates are included in the model. When demographic variables are added (Model 3), childhood disability is significantly associated with .59 ( $p < .001$ ) more depressive symptoms but not with the growth of depressive symptoms with age ( $\beta = -.01, p = .12$ ). Once childhood circumstance variables are added (Model 4), the relationship between childhood disability and adult depressive symptoms is slightly attenuated but remains significant ( $\beta = .41, p = .006$ ) and the slope remains insignificant ( $\beta = -.01, p = .36$ ).

Results from Table 2 Model 4 are graphed in Figure 2 holding all other covariates at their mean values by childhood disability status. At age 50, individuals who experienced a childhood disability have an average CES-D score of 2.04 (within subthreshold levels of depression), whereas their counterparts have an average CES-D score of 1.64. Across adulthood, those who experienced a childhood disability have more depressive symptoms than their peers who did not experience a childhood disability. Although this figure represents average depressive symptom trajectories, it is important to note that because the gap in depressive symptoms is maintained across adulthood, those with childhood disability experience more years within the range of subthreshold levels of depression.

Despite the non-significant slope effect of childhood disability status, average marginal effects estimated across age suggest that the impact of childhood disability wanes, particularly once respondents reach age 88. Thus, although results from Table 2 Models 2–4 provide support for Hypothesis 1, there is tentative support for Hypothesis 3 that suggests individuals exposed to childhood disability will converge to the depressive symptoms of those without childhood disability with age.

## Robustness and Sensitivity

Study results are robust to other model and variable specifications. First, we examined whether there were differences in deaths over the study period by childhood disability status. A significantly larger proportion of respondents with a childhood disability died over the study period (36.14%) compared to those without a childhood disability (31.89%) (z-test for proportion,  $p = .03$ ). In Appendix Table 2, we included a dummy variable for those who were alive throughout the study period (reference) versus those who died. The pattern of results remains the same (disability  $\beta = .35$ ,  $p = .018$ ; age\*disability  $\beta = -.00$ ,  $p = .47$ ).

Second, we examined differences in the number of waves (range of one to six) respondents' mental health was observed by childhood disability status. We found no statistical difference in the mean number of waves observed, with respondents with a childhood disability observed in 4.41 (1.80) waves compared to 4.40 (1.82) waves among those without a childhood disability (two-tailed  $t$  test,  $p = .19$ ). As shown in Appendix Table 3, including number of waves observed in the growth models resulted in a similar pattern of results (disability  $\beta = .39$ ,  $p = .008$ ; age\*disability  $\beta = -.01$ ,  $p = .39$ ). Moreover, the pattern was consistent when examining the 10,620 respondents who were observed in four or more study waves (disability  $\beta = .30$ ,  $p = .061$ ; age\*disability  $\beta = -.00$ ,  $p = .77$ ) (Appendix Table 4).

Third, although the current study does not focus on the mechanisms connecting childhood disability to adult mental health, in Appendix Table 5, we add four socioeconomic and social variables that were measured in adulthood. Again, results follow a similar pattern, with childhood disability significantly associated with increased depressive symptoms at age 50 ( $\beta = .36$ ,  $p = .012$ ) but not with the slope of depressive symptoms with age ( $\beta = -.00$ ,  $p = .40$ ), suggesting that adult statuses do not fully attenuate patterns observed here.

Finally, to address potential cohort differences in the experience of growing up with a disability, we follow previous research (Laditka et al., 2021) and exclude respondents who were born before 1950. This cut point was selected because education for children with disabilities (e.g., special education) became more available and consistent around 1950, which might result in different experiences between cohorts who had access to special education and cohorts that did not (Landes, 2017; Spaulding & Pratt, 2015). As shown in Appendix Table 6, eliminating respondents born prior to 1950 results in a much-reduced sample size of 2,575 ( $n = 95$  report a childhood disability). The pattern of results remains the same: childhood disability is still marginally associated with increased depressive symptoms at age 50 ( $\beta = .48$ ,  $p = .06$ ) and the slope remains insignificant ( $\beta = -.00$ ,  $p = .95$ ).

## Discussion

In light of population aging, scholars have increasingly sought to understand the lifelong process of aging from birth through death (Elder et al., 2003). However, the fields of aging and disability have been slow to overlap. On the one hand, most research on aging examines impairments and disabilities that are associated with the aging process, rather than the experience of aging (and perhaps developing new impairments and disabilities) with a disability (Jeppsson Grassman, Holme, Taghizadeh Larsson, & Whitaker, 2012; Putnam, Coyle, Ogden, & Bigby, 2021). On the other hand, research on early life disability focuses

on childhood and adolescence, with less examination from a life course perspective (Ferro et al., 2015; Kemp & Mosqueda, 2004; Pinquart & Shen, 2010; Putnam et al., 2021). This bifurcated knowledge base between the fields of *aging* and *disability* has resulted in little being known about the experience of living with a disability for many years, or about growing older with a disability (van Heuman, 2021).

Childhood disability is an important and growing experience, with 4.3% of U.S. children reporting some form of disability (Young, 2021). With more and more individuals with early life disabilities living into old age, it is increasingly important to understand the effects of these conditions on the long-term health and well-being of individuals (Secinti et al., 2017). Drawing on the stress process and life course frameworks (Aneshensel, 2015; Ferraro & Shippee, 2009; Pearlin, 2010), we conceptualize childhood disability as a major life stressor that occurs during a sensitive period of the life course, and argue that the stress associated with this experience may have long-term consequences for mental health. Specifically, the purpose of this study was to examine how exposure to disability before the age of 16 shapes an individual's baseline and growth of depressive symptoms over multiple years of adulthood.

Results indicate that having experienced a disability before the age of 16 contributes to negative mental health across later adulthood compared to those who did not experience this stressor. This provides support for our first hypothesis, which posited that an early life stressor, such as childhood disability, would have a prolonged and enduring impact on mental health as individuals age (Schafer & Ferraro, 2013; Umberson et al., 2014). These findings are consistent with previous research which suggests that early life disability is associated with depression and depressive symptoms in later life (Latham, 2015; Thompson, 2004). However, our analytic strategy allows us to extend this prior research, which focuses on point-in-time measures of mental health in adulthood, to examine *trajectories* of distress in adulthood (Schafer & Ferraro, 2013). Our results reveal that individuals who experienced a childhood disability report more depressive symptoms across adulthood compared to their peers who did not experience this stressor.

Importantly, results did not provide support for our second hypothesis, that childhood disability would result in not only poorer baseline mental health, but also increasingly worse mental health with age. Prior research has shown that childhood disability is associated with a lower likelihood of reaching financial independence, finding full-time employment, marrying, or having children (Janus, 2009; Mann & Honeycutt, 2014; Shandra, 2011) and that the accumulation of these types of additional stressors over the life course may have a negative impact on adult mental health (Ferraro & Shippee, 2009; Ferraro & Wilkinson, 2013; George, 2013). While this evidence suggests that the lifelong accumulation of stressors associated with childhood disability may worsen individuals' mental health over time, our results do not support this hypothesis. However, it is possible that such effects may be more visible during earlier periods of the life course, that are not captured within the age ranges of the current study (50 years of age and older). Future research should examine earlier stages of the life course to see if childhood disability is associated with worsening mental health in established adulthood (ages 30–45) (Mehta, Arnett, Palmer, & Nelson, 2020).

In fact, we find tentative support that the impact of childhood disability on depressive symptoms may wane as adults enter very old age. This result is consistent with Hypothesis 3 which posited that stressors experienced in early life may be impactful for health early in the life course, but wane in importance with age (Oldehinkel et al., 2014; Schaan, 2014; Schafer & Ferraro, 2013). In the context of childhood disability, poor health or physical health conditions in early life are rare, stressful, and stigmatized (Brindis et al., 2003; Dalton et al., 2016; Dawson et al., 2018), which may contribute to research finding that children with disabilities experience higher levels of psychological distress compared to their peers without disabilities (Humphrey et al., 2013; Maxey & Beckert, 2017; Mueller & Prout, 2009). As such, mental health disparities between individuals with and without childhood disabilities may decrease as disability becomes more common at older ages and, subsequently, less stigmatizing (Barclay-Goddard et al., 2012; Brindis et al., 2003). These converging mental health trajectories may also be a result of older adults who are aging with disabilities drawing on coping strategies developed in early life to adapt to age-related changes in function (Reuman et al., 2013). At the same time, results shown here may also be the product of selective mortality. Our ancillary analyses suggest that those with a childhood disability are more likely to die over the study period and die at younger ages than those without a childhood disability and that those who died over the study period had, on average, greater depressive symptoms at Wave 9. Thus, it may be that those who experienced a childhood disability and survive to later ages are also those with fewer depressive symptoms, leading to an apparent decrease in mental health disparities.

It is also important to note that having experienced depression before the age of 16 is significantly associated with more depressive symptoms at age 50 and with a faster decline in depressive symptoms with age. Further investigation suggests that attenuation of the relationship between childhood disability and baseline depressive symptoms is driven by the inclusion of childhood depression. Having experienced depression before the age of 16 is itself significantly associated with both an increased number of depressive symptoms at baseline ( $\beta = 2.21, p < .001$ ) and a faster decline in depressive symptoms with age ( $\beta = -.03, p = .001$ ). Although it is not possible to determine the temporal order between childhood depression and childhood disability, experiencing disability in early life may lead to negative mental health outcomes in early life (Humphrey et al., 2013; Maxey & Beckert, 2017; Mueller & Prout, 2009), which could persist into adulthood.

No matter the exact pathway driving this relationship, results from our study suggest that the effect of childhood disability on depressive symptoms is evident at ages 50 and older, which is 30 years or more after the onset of the disability. These results build on extant literature that explores the long-term effects of childhood disadvantage on adult mental health (Aneshensel, 2015; Avison, 2010; George, 2013; Kamis, 2020; Latham, 2015) and supports past research finding that childhood disability is associated with higher levels of depressive symptoms in late midlife (Latham, 2015). We extend this literature by drawing on the stress process and life course frameworks (Aneshensel, 2015; Ferraro & Shippee, 2009; Pearlin, 2010) to conceptualize childhood disability as a major life stressor with long-term consequences for mental health. Furthermore, by assessing mental health trajectories as opposed to point-in-time measures of depressive symptoms, we provide a dynamic understanding of how early life disability influences both the baseline and growth of mental

health across adulthood. Results from this study highlight the persistent, long-term nature of the stress associated with early life disability.

### Limitations

First, our measure of childhood disability is based on self-reports, which may be subject to recall bias. Research suggests that individuals are more likely to under-report rather than over-report negative childhood experiences, resulting in conservative estimates (Hardt & Rutter, 2004) and that retrospective childhood health reports are fairly reliable over time (Haas, 2007). Second, childhood disability is a broad category that includes a variety of underlying conditions. As noted previously, small sample sizes precluded our ability to analyze results separately for each type of childhood disability.

Finally, as mentioned above, we could not account for selective mortality. As such, results may be subject to healthy survivor bias, as individuals who experience poor health in childhood may be at greater risk of premature mortality, resulting in an underestimation of childhood disability in a mid- to late-life sample (Latham, 2015). While we cannot fully account for selective mortality, we attempt to address potential selection bias by limiting our sample with an upper age limit and conducting additional analyses (as detailed in the Robustness section).

### Implications

Overall, results here underscore the enduring influence of childhood health on health in later life. These findings may have important insights for future research and policy. Specifically, this study found that individuals who experience a disability in childhood exhibit worse mental health across the majority of adulthood compared to individuals who did not experience this childhood stressor. Based on this finding, healthcare providers should consider how childhood health and well-being may influence the mental health of their young patients even as they age into new life course stages, with unique contexts and responsibilities. Similarly, healthcare providers of older patients should consider assessing a history of stressors and disadvantages in childhood to better understand the factors impacting patients' health in older ages (Anda, Butchart, Felitti, & Brown, 2010).

Additionally, it is important to ensure that individuals have access to high-quality mental health care to address any potential negative mental health outcomes associated with experiencing a disability in childhood. One of the broad objectives of Healthy People 2030 is to improve the health and well-being of people with disabilities, which includes a specific aim to reduce the proportion of adults with disabilities who experience serious psychological distress (Office of Disease Prevention and Health Promotion, 2021). While improving access to quality interventions including depression screening, psychotherapy, social support, and community-based activities is important in reducing psychological distress among people with disabilities (Office of Disease Prevention and Health Promotion, 2021), in general, results from this study suggest that interventions may be particularly impactful for people aging with disabilities.



Future work should continue to explore the many pathways that likely link early life disability to mental health across the life course. Childhood depression may be one such mechanism, as well as adult statuses. Future work should also consider how psychosocial resiliency (e.g., mastery, optimism, religiosity) buffers the impact of early life stressors (Latham-Mintus & Aman, 2017). Examining these pathways and potential stress-buffering resources will further clarify how physical health status during sensitive periods of the life course can impact healthy aging.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

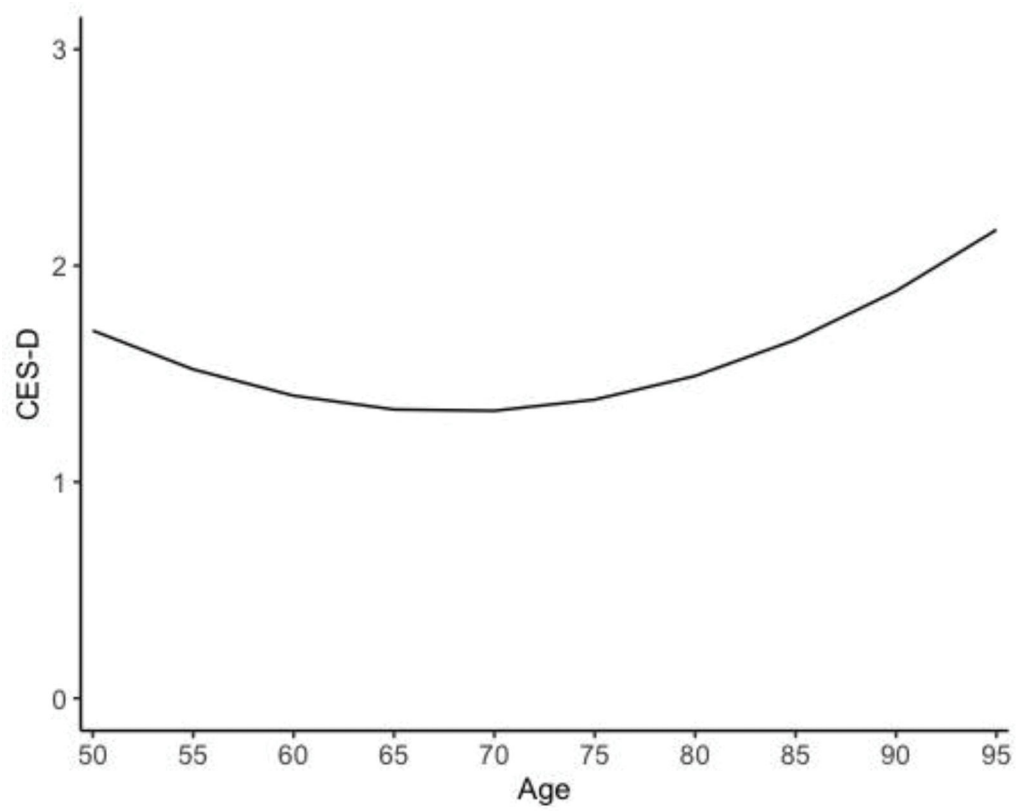
## References

- Adkins DE, Wang V, & Elder GH Jr. (2009). Structure and Stress: Trajectories of Depressive Symptoms across Adolescence and Young Adulthood. *Social Forces*, 88(1), 31–31. doi:10.1353/sof.0.0238
- Anda RF, Butchart A, Felitti VJ, & Brown DW (2010). Building a Framework for Global Surveillance of the Public Health Implications of Adverse Childhood Experiences. *American Journal of Preventive Medicine*, 39(1), 93–98. doi:10.1016/j.amepre.2010.03.015 [PubMed: 20547282]
- Aneshensel CS (2015). Sociological Inquiry into Mental Health: The Legacy of Leonard I. Pearlin. *Journal of Health & Social Behavior*, 56(2), 166–178. doi:10.1177/0022146515583992 [PubMed: 25947345]
- Avison WR (2010). Incorporating Children's Lives into a Life Course Perspective on Stress and Mental Health. *Journal of Health & Social Behavior*, 51(4), 361–375. doi:10.1177/0022146510386797 [PubMed: 21131615]
- Barclay-Goddard R, King J, Dubouloz C-J, & Schwartz CE (2012). Building on Transformative Learning and Response Shift Theory to Investigate Health-Related Quality of Life Changes Over Time in Individuals With Chronic Health Conditions and Disability. *Arch Phys Med Rehabil*, 93(2), 214–220. doi:10.1016/j.apmr.2011.09.010 [PubMed: 22289229]
- Brindis CD, Morreale MC, & English A (2003, 2003 Spring). The Unique Health Care Needs of Adolescents. *The Future of Children*, 13(1), 117–135. [PubMed: 14503457]
- Brucker DL, & Houtenville AJ (2015). People with Disabilities in the United States. *Arch Phys Med Rehabil*, 96(5), 771–774. doi:10.1016/j.apmr.2015.02.024 [PubMed: 25757791]
- Charmaz K (1983). Loss of self: a fundamental form of suffering in the chronically ill. *Sociology of Health & Illness*, 5(2), 168–195. doi:10.1111/1467-9566.ep10491512 [PubMed: 10261981]
- Coyle CE, & Putnam M (2017). Identifying Adults Aging with Disability Using Existing Data: The Case of the Health and Retirement Study. *Disability and Health Journal*, 10(4), 611–615. doi:10.1016/j.dhjo.2016.12.016 [PubMed: 28082002]
- Curran PJ, Obeidat K, & Losardo D (2010). Twelve Frequently Asked Questions About Growth Curve Modeling. *J Cogn Dev*, 11(2), 121–136. doi:10.1080/15248371003699969 [PubMed: 21743795]
- Dalton ED, Hammen CL, Brennan PA, & Najman JM (2016). Pathways Maintaining Physical Health Problems from Childhood to Young Adulthood: The Role of Stress and Mood. *Psychology & Health*, 31(11), 1255–1271. doi:10.1080/08870446.2016.1204448 [PubMed: 27329508]
- Dawson S, McCormick B, & Li J (2018). A Network Analysis of Youth with Physical Disabilities Attending a Therapeutic Camp. *Therapeutic Recreation Journal*, 52(2), 154–169. doi:10.18666/TRJ-2018-V52-I2-8344
- Demakakos P, Zaninotto P, & Nouwen A (2014). Is the association between depressive symptoms and glucose metabolism bidirectional? Evidence from the English Longitudinal Study of Ageing. *Psychosom Med*, 76(7), 555–561. doi:10.1097/psy.0000000000000082 [PubMed: 25077428]

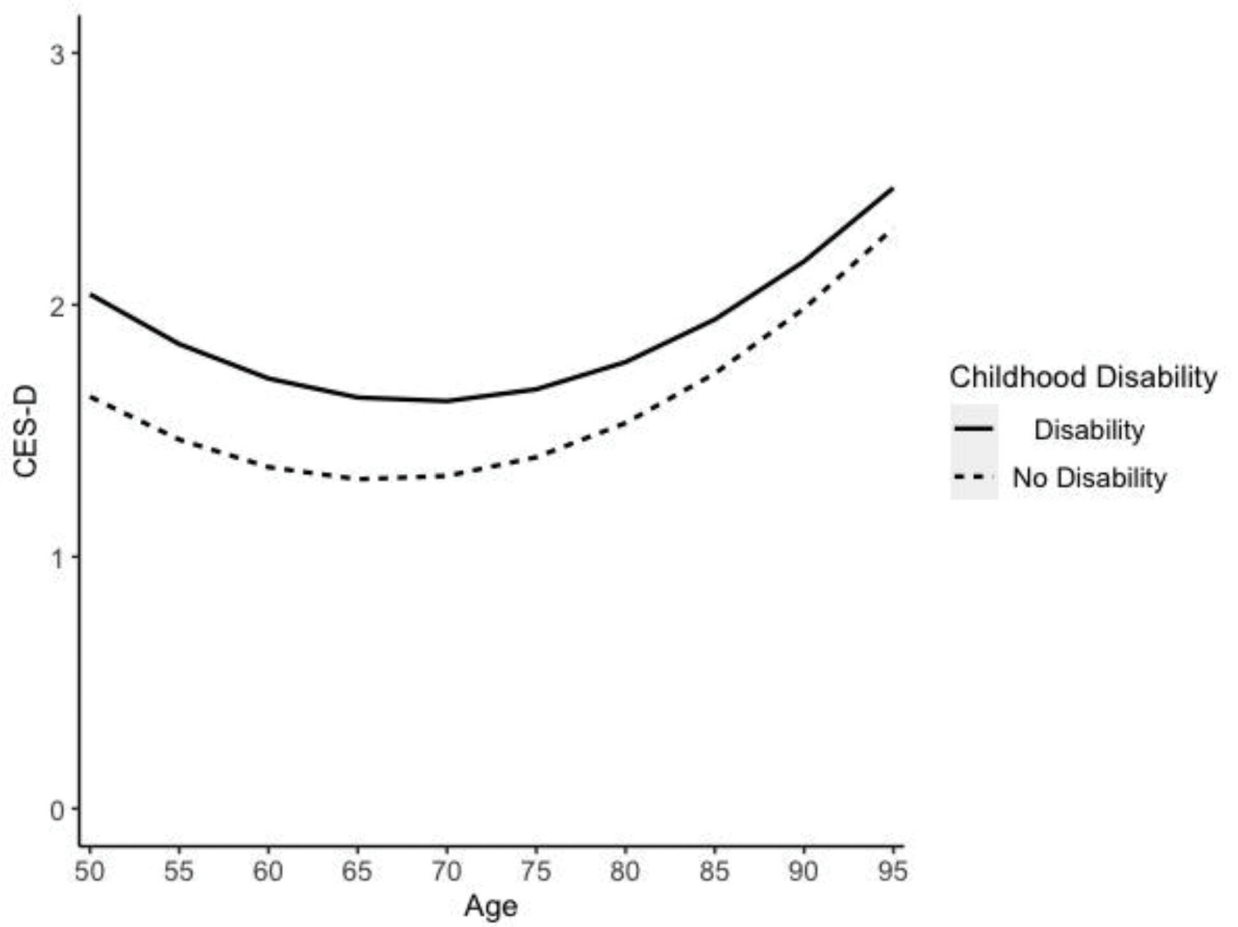
- DiPrete TA, & Eirich GM (2006). Cumulative Advantage as a Mechanism for Inequality: A Review of Theoretical and Empirical Developments. *Annual Review of Sociology*, 32(1), 271–297. doi:10.1146/annurev.soc.32.061604.123127
- Djernes JK (2006). Prevalence and Predictors of Depression in Populations of Elderly: A Review. *Acta Psychiatr Scand*, 113(5), 372–387. doi:10.1111/j.1600-0447.2006.00770.x [PubMed: 16603029]
- Drainoni M-L, Lee-Hood E, Tobias C, Bachman SS, Andrew J, & Maisels L (2006). Cross-Disability Experiences of Barriers to Health-Care Access: Consumer Perspectives. *Journal of Disability Policy Studies*, 17(2), 101–115. doi:10.1177/10442073060170020101
- Elder GH, Johnson MK, & Crosnoe R (2003). The Emergence and Development of Life Course Theory. In Mortimer JT & Shanahan MJ (Eds.), *Handbook of the Life Course* (pp. 3–19). Boston, MA: Springer US.
- Fergusson DM, & Woodward LJ (2002). Mental Health, Educational, and Social Role Outcomes of Adolescents with Depression. *Archives of General Psychiatry*, 59(3), 225–231. doi:10.1001/archpsyc.59.3.225 [PubMed: 11879160]
- Ferraro KF, & Shippee TP (2009). Aging and Cumulative Inequality: How Does Inequality Get Under the Skin? *The Gerontologist*, 49(3), 333–343. doi:10.1093/geront/gnp034 [PubMed: 19377044]
- Ferraro KF, & Wilkinson LR (2013). Age, Aging, and Mental Health. In Aneshensel CS, Phelan JC, & Bierman A (Eds.), *Handbook of the Sociology of Mental Health* (pp. 183–203). Springer Netherlands: Dordrecht.
- Ferro MA, Boyle MH, & Avison WR (2015). Association between Trajectories of Maternal Depression and Subsequent Psychological Functioning in Youth with and without Chronic Physical Illness. *Health Psychology*, 34(8), 820–828. doi:10.1037/hea0000226 [PubMed: 25844906]
- George LK (2013). Life-Course Perspectives on Mental Health. In Aneshensel CS, Phelan JC, & Bierman A (Eds.), *Handbook of the Sociology of Mental Health* (pp. 585–602). Dordrecht: Springer Netherlands.
- Graetz B, & Shute R (1995). Assessment of peer relationships in children with asthma. *J Pediatr Psychol*, 20(2), 205–216. doi:10.1093/jpepsy/20.2.205 [PubMed: 7760220]
- Haas SA (2007). The Long-Term Effects of Poor Childhood Health: An Assessment and Application of Retrospective Reports. *Demography*, 44(1), 113–135. doi:10.1353/dem.2007.0003 [PubMed: 17461339]
- Haas SA, Schaefer DR, & Kornienko O (2010). Health and the Structure of Adolescent Social Networks. *Journal of Health and Social Behavior*, 51(4), 424–439. doi:10.1177/0022146510386791 [PubMed: 21131619]
- Hamil-Luker J, & O’Rand AM (2007). Gender Differences in the Link between Childhood Socioeconomic Conditions and Heart attack Risk in Adulthood. *Demography*, 44(1), 137–158. doi:10.1353/dem.2007.0004 [PubMed: 17461340]
- Hardt J, & Rutter M (2004). Validity of Adult Retrospective Reports of Adverse Childhood Experiences: Review of the Evidence. *The Journal of Child Psychology and Psychiatry*, 45(2), 260–273. doi:10.1111/j.1469-7610.2004.00218.x [PubMed: 14982240]
- Humphrey N, Lendrum A, Barlow A, Wigelsworth M, & Squires G (2013). Achievement for All: Improving Psychosocial Outcomes for Students with Special Educational Needs and Disabilities. *Research in Developmental Disabilities*, 34(4), 1210–1225. doi:10.1016/j.ridd.2012.12.008 [PubMed: 23380579]
- Iezzoni LI, Kilbridge K, & Park ER (2010). Physical access barriers to care for diagnosis and treatment of breast cancer among women with mobility impairments. *Oncol Nurs Forum*, 37(6), 711–717. doi:10.1188/10.Onf.711-717 [PubMed: 21059583]
- Janus AL (2009). Disability and the Transition to Adulthood. *Social Forces*, 88(1), 99–120. doi:10.1353/sof.0.0248
- Jeppsson Grassman E, Holme L, Taghizadeh Larsson A, & Whitaker A (2012). A long life with a particular signature: life course and aging for people with disabilities. *J Gerontol Soc Work*, 55(2), 95–111. doi:10.1080/01634372.2011.633975 [PubMed: 22324328]

- Kamis C (2020). The Long-Term Impact of Parental Mental Health on Children's Distress Trajectories in Adulthood. *Society and Mental Health*, 11(1), 54–68. doi:10.1177/2156869320912520 [PubMed: 34094696]
- Kemp BJ, & Mosqueda L (2004). Introduction. In Kemp BJ & Mosqueda LA (Eds.), *Ageing with a Disability: What the Clinician Needs to know*: Johns Hopkins University Press.
- Laditka SB, Laditka JN, & Hoyle JN (2021). Disability in Childhood, Special Education Histories, and Lifetime Health Outcomes in the United States. *Journal of Aging and Health*, 0(0). doi:10.1177/08982643211018918
- Landes SD (2017). The Association between Education and Mortality for Adults with Intellectual Disability. *Journal of Health and Social Behavior*, 58(1), 70–85. doi:10.1177/0022146516683227 [PubMed: 28661768]
- Latham K (2015). The “Long Arm” of Childhood Health: Linking Childhood Disability to Late Midlife Mental Health. *Research on Aging*, 37(1), 82–102. doi:10.1177/0164027514522276 [PubMed: 25651552]
- Latham-Mintus K, & Aman KM (2017). Childhood Disadvantage, Psychosocial Resiliency, and Later Life Functioning: Linking Early-Life Circumstances to Recovery From Mobility Limitation. *Journal of Aging and Health*(3), 463–483. doi:10.1177/0898264317733861 [PubMed: 29254410]
- Lynch SM, & Taylor MG (2016). Chapter 2 - Trajectory Models for Aging Research. In George LK & Ferraro KF (Eds.), *Handbook of Aging and the Social Sciences (Eighth Edition)* (pp. 23–51). San Diego: Academic Press.
- Mann DR, & Honeycutt TC (2014). Is Timing Everything? Disability Onset of Youth and Their Outcomes As Young Adults. *Journal of Disability Policy Studies*, 25(2), 117–129. doi:10.1177/1044207313484176
- Maxey M, & Beckert TE (2017). Adolescents with Disabilities. *Adolescent Research Review*, 2(2), 59–75. doi:10.1007/s40894-016-0043-y
- Mehta CM, Arnett JJ, Palmer CG, & Nelson LJ (2020). Established adulthood: A new conception of ages 30 to 45. *American Psychologist*, 75(4), 431–444. doi:10.1037/amp0000600 [PubMed: 32378940]
- Mueller CE, & Prout HT (2009). Psychosocial Adjustment of Adolescents and Young Adults With Intellectual Disabilities. *Journal of Mental Health Research in Intellectual Disabilities*, 2(4), 294–311. doi:10.1080/19315860903308572
- Muthén B (2004). Latent Variable Analysis: Growth Mixture Modeling and Related Techniques for Longitudinal Data. In Kaplan D (Ed.), *The SAGE Handbook of Quantitative Methodology for the Social Sciences* (pp. 346369). doi:10.4135/9781412986311
- Oaksford K, Frude N, & Cuddihy R (2005). Positive Coping and Stress-Related Psychological Growth Following Lower Limb Amputation. *Rehabilitation Psychology*, 50(3), 266–277. doi:10.1037/0090-5550.50.3.266
- Office of Disease Prevention and Health Promotion. (2021). *Healthy People 2030*. Retrieved from <https://health.gov/healthypeople/objectives-and-data/browse-objectives/people-disabilities>
- Oldehinkel AJ, Ormel J, Verhulst FC, & Nederhof E (2014). Childhood Adversities and Adolescent Depression: A Matter of Both Risk and Resilience. *Development and Psychopathology*, 26(4 Pt 1), 1067–1075. doi:10.1017/s0954579414000534 [PubMed: 24933401]
- Pais J (2014). Cumulative Structural Disadvantage and Racial Health Disparities: The Pathways of Childhood Socioeconomic Influence. *Demography*, 51(5), 1729–1753. doi:10.1007/s13524-014-0330-9 [PubMed: 25212107]
- Patten SB, Lavorato DH, & Metz LM (2005). Clinical correlates of CES-D depressive symptom ratings in an MS population. *General Hospital Psychiatry*, 27(6), 439–445. doi:10.1016/j.genhosppsych.2005.06.010 [PubMed: 16271659]
- Pearlin LI (1989). The Sociological Study of Stress. *Journal of Health and Social Behavior*, 30(3), 241–256. doi:10.2307/2136956 [PubMed: 2674272]
- Pearlin LI (2010). The Life Course and the Stress Process: Some Conceptual Comparisons. *Journals of Gerontology Series B: Psychological Sciences & Social Sciences*, 65b(2), 207–215. doi:10.1093/geronb/gbp106 [PubMed: 20022925]

- Pinquart M, & Shen Y (2010). Depressive Symptoms in Children and Adolescents with Chronic Physical Illness: An Updated Meta-Analysis. *Journal of Pediatric Psychology*, 36(4), 375–384. doi:10.1093/jpepsy/jsq104 [PubMed: 21088072]
- Putnam M, Coyle CE, Ogden LP, & Bigby C (2021). Understanding Ageing with Disability. In Putnam M & Bigby C (Eds.), *Handbook on Ageing with Disability* (pp. 3–13). New York: Routledge.
- Radloff LS (1977). The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Applied Psychological Measurement*, 1(3), 385–401. doi:10.1177/014662167700100306
- Reuman LR, Mitamura C, & Tugade MM (2013). Coping and Disability. In Wehmeyer ML (Ed.), *The Oxford Handbook of Positive Psychology and Disability*: Oxford Handbooks Online.
- Schaan B (2014). The Interaction of Family Background and Personal Education on Depressive Symptoms in Later Life. *Social Science & Medicine*, 102, 94–102. doi:10.1016/j.socscimed.2013.11.049 [PubMed: 24565146]
- Schafer MH, & Ferraro KF (2013). Childhood Misfortune and Adult Health: Enduring and Cascadic Effects on Somatic and Psychological Symptoms? *Journal of Aging & Health*, 25(1), 3–28. doi:10.1177/0898264312464884 [PubMed: 23160525]
- Secinti E, Thompson EJ, Richards M, & Gaysina D (2017). Research Review: Childhood Chronic Physical Illness and Adult Emotional Health - A Systematic Review and Meta-Analysis. *Journal of Child Psychology and Psychiatry*, 58(7), 753–769. doi:10.1111/jcpp.12727 [PubMed: 28449285]
- Shandra CL (2011). Life-Course Transitions Among Adolescents With and Without Disabilities: A Longitudinal Examination of Expectations and Outcomes. *Int J Sociol*, 41(1), 67–86. doi:10.2753/ijso020-7659410104 [PubMed: 25926707]
- Spaulding LS, & Pratt SM (2015). A Review and Analysis of the History of Special Education and Disability Advocacy in the United States. *American Educational History Journal*, 42(1), 91–109.
- Steffick DE (2000). Documentation of affective functioning measures in the Health and Retirement Study (HRS/AHEAD Documentation Report). University of Michigan: Survey Research Center.
- Sutin AR, Terracciano A, Milaneschi Y, An Y, Ferrucci L, & Zonderman AB (2013). The Trajectory of Depressive Symptoms across the Adult Life Span. *JAMA Psychiatry*, 70(8), 803–811. doi:10.1001/jamapsychiatry.2013.193 [PubMed: 23760442]
- Thompson L (2004). Functional Changes Affecting People Aging with Disabilities. In Kemp B & Mosqueda LA (Eds.), *Aging with a Disability: What the Clinician Needs to Know* (pp. 102–128). Baltimore, MD: Johns Hopkins University Press.
- Umberson D, Williams K, Thomas PA, Liu H, & Thomeer MB (2014). Race, Gender, and Chains of Disadvantage: Childhood Adversity, Social Relationships, and Health. *Journal of Health and Social Behavior*, 55(1), 20–38. doi:10.1177/0022146514521426 [PubMed: 24578394]
- van Heuman L (2021). Ageing with Lifelong Disability. In Putnam M & Bigby C (Eds.), *Handbook on Ageing with Disability* (pp. 23–31). New York: Routledge.
- Woodward LJ, & Fergusson DM (2001). Life Course Outcomes of Young People with Anxiety Disorders in Adolescence. *Journal of the American Academy of Child & Adolescent Psychiatry*, 40(9), 1086–1093. doi:10.1097/00004583-200109000-00018 [PubMed: 11556633]
- Young AEN (2021). Childhood Disability in the United States: 2019. Retrieved from American Community Survey Briefs: <https://www.census.gov/content/dam/Census/library/publications/2021/acs/acsbr-006.pdf>
- Zhang X, Hassan H, Larkina M, Lee H, & Smith J (2020). Childhood Family and Childhood Health Aggregated Data. University of Michigan: Institute for Social Research.



**Figure 1.** Unconditional Growth Model Predicting Depressive Symptoms Across Age: Health and Retirement Study (n = 15,289).  
*Note.* This figure is made based on the results from Table 2 Model 1.



**Figure 2.** Childhood Disability Predicting Depressive Symptoms Across Age. Health and Retirement Study (n=15,289).  
*Note.* This figure is made based on the results from Table 2 Model 4 holding all covariates at their mean values.



**Table 1.**

Characteristics of the Sample by Childhood Disability Status.<sup>a</sup>

	Total sample		No childhood disability		Had a childhood disability		Difference
	n=15,289	% / Mean (SD)	n=14,708	% / Mean (SD)	n=581	% / Mean (SD)	
Childhood disability	3.80						
CES-D (Wave 9)	1.43 (1.96)		1.42 (1.95)		1.75 (2.14)		***
Age (Wave 9)	69.35 (9.98)		69.36 (10.00)		69.05 (9.70)		
Male	39.98		39.90		42.00		
Race/ethnicity							
Non-Hispanic White	74.42		74.13		81.76		***
Non-Hispanic Black	13.98		14.15		9.81		**
Non-Hispanic Other	2.25		2.24		2.58		
Hispanic	9.35		9.48		5.85		**
Childhood SES							
Well off	6.70		6.66		7.57		
Average	62.57		62.80		56.63		**
Poor	30.73		30.53		35.80		**
Moved in childhood	17.97		17.69		25.13		***
Childhood depression	2.36		2.21		6.20		***
Cohort							
AHEAD	8.77		8.82		7.57		
CODA	13.63		13.58		14.80		
HRS	38.94		38.96		38.55		
War Babies	15.78		15.75		16.52		
Early Baby Boomers	18.01		18.02		17.73		
Mid Baby Boomers	3.88		3.86		4.48		
Late Baby Boomers	.98		1.01		.34		

<sup>a</sup>Data: Health and Retirement Study (HRS) (2008–2018).

Note. SD = standard deviation, CES-D = Center for Epidemiologic Studies Depression Scale. SES = socioeconomic status. Difference column indicates significant differences between respondents without versus without childhood disability ( $\chi^2$  test for differences in categories or two-tailed *t* test for differences in means).

.100' < p  
\*\*\*  
.10' < p  
\*\*  
.50' < p  
\*

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

**Table 2.**

Latent Growth Curve Models Predicting Depressive Symptom Trajectories by Age and Childhood Disability Status (n=15,289).<sup>a</sup>

	Model 1	Model 2	Model 3	Model 4
Age	-.04 (.00)***	-.04 (.00)***	-.05 (.02)*	-.05 (.02)*
Age <sup>2</sup>	.00 (.00)***	.00 (.00)***	.00 (.00)***	.00 (.00)***
Childhood disability		.52 (.15)**	.59 (.15)***	.41 (.12)**
Age * Childhood disability		-.01 (.01)	-.01 (.01)	-.01 (.01)
Male			-.33 (.06)***	-.29 (.06)***
Age * Male			-.00 (.00)	-.00 (.00)
Race/ethnicity (ref: NH White)				
NH Black			.46 (.08)***	.41 (.08)***
NH Other			.59 (.18)**	.49 (.17)**
Hispanic			.79 (.09)***	.68 (.09)***
Age * Race/ethnicity (ref: NH White)				
NH Black			-.00 (.00)	-.00 (.00)
NH Other			-.01 (.01)	-.00 (.01)
Hispanic			.00 (.00)	.00 (.00)
Childhood SES (ref: Well off)				
Average				-.10 (.11)
Poor				.26 (.12)*
Age * Childhood SES (ref: Well off)				
Average				.01 (.00)
Poor				.00 (.00)
Moved in childhood				.24 (.08)**
Age * Moved in childhood				-.00 (.00)
Childhood depression				2.21 (.17)***
Age * Childhood depression				-.03 (.01)**
Cohort (ref: AHEAD)				

	Model 1	Model 2	Model 3	Model 4
CODA			-.19 (.42)	-.17 (.42)
HRS			-.41 (.46)	-.37 (.46)
War Babies			-.32 (.52)	-.28 (.52)
Early Baby Boomers			-.13 (.56)	-.12 (.56)
Mid Baby Boomers			-.42 (.58)	-.42 (.58)
Late Baby Boomers			-.42 (.61)	-.37 (.61)
Age* Cohort (ref: AHEAD)				
CODA			.01 (.01)	.01 (.01)
HRS			.02 (.01)	.02 (.01)
War Babies			.01 (.02)	.01 (.02)
Early Baby Boomers			.01 (.02)	.01 (.02)
Mid Baby Boomers			.03 (.02)	.03 (.02)
Late Baby Boomers			.05 (.04)	.05 (.04)
Constant	1.70 (.04)***	1.68 (.04)***	1.89 (.59)**	1.77 (.59)**
<hr/>				
Variance (age)	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
Variance (intercept)	3.65 (.13)	3.63 (.13)	3.49 (.12)	3.17 (.12)
Covariance (age, intercept)	-.07 (.01)	-.07 (.01)	-.07 (.01)	-.06 (.01)
Residual variance	1.60 (.01)	1.60 (.01)	1.60 (.01)	1.60 (.01)
<hr/>				
BIC	252248.7	252246.2	251857	251346.1
ICC	.70	.69	.69	.66

<sup>a</sup>Data: Health and Retirement Study (HRS) (2008–2018).

Note. Age is zeroed at 50 years of age. NH = non-Hispanic, SES = socioeconomic status, ICC = intraclass correlation.

\* p < .05.

\*\* p < .01.

\*\*\* p < .001.