



# Research Article

# Adult Children's Education and Mothers' Psychological Well-Being: Do Adult Children's Problems Mediate This Relationship?

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#### **Abstract**

Objectives: A growing body of literature documents a positive association between adult children's education and older parents' health, and existing studies have identified social support, social influence, and material transfers as factors linking adult children's education and various dimensions of older parents' health. The present study joins this literature by assessing adult children's problems as mechanisms that may underlie disparities in psychological well-being between mothers whose adult children have completed higher and lower levels of education.

**Methods:** Using 2 waves of longitudinal data collected in 2001–2003 and 2008–2011 from 400 mothers aged 73–85 years at the second wave as part of the Within-Family Differences Study, we examine the role of adult children's problems in mediating the association between adult children's education and mothers' depressive symptoms.

**Results:** Mothers with children who completed post-high school education reported fewer depressive symptoms than mothers whose children all completed high school or less. We found evidence that this relationship was mediated by the proportion of adult children who have experienced physical and emotional problems in the last 5 years.

**Discussion:** This study underscores the importance of considering how resources and risks that affect well-being accumulate both across the life course and across generations. Providing education opportunities to younger generations and enhancing programs that address challenges that low-attaining children may face have the potential to help minimize socioeconomic disparities in psychological well-being among older adults.

Keywords: Depression, Health disparities, Intergenerational relations

Education endows people with flexible resources, such as money, knowledge, and beneficial social ties (Becker, 1993; Link & Phelan, 2010), that can be used to prevent and recover from injury and illness. Resources are embedded within social networks (Lin, 1999), and, therefore, the educational attainment of an individual

may matter for the health and well-being of their family members. Whereas the long arm of childhood perspective has highlighted the impact of socioeconomic resources in individuals' social backgrounds (i.e., the resources of older generations) on health outcomes in adulthood (Hayward & Gorman, 2004), recent theoretical work

has emphasized the role of the *upward* flow of socioeconomic resources from younger to older generations in shaping older family members' health outcomes (Torssander, 2013).

A growing number of studies have observed positive associations between adult children's education and various measures of older parents' health across a range of social contexts. Findings from Africa (De Neve & Fink, 2018), Asia (C. Lee, 2018; Y. Lee, 2018), Europe (Sabater et al., 2020; Torssander, 2013), and North America (Friedman & Mare, 2014; Peng et al., 2019) have shown that adult children's educational attainment is associated with more favorable outcomes for parents' mortality (De Neve & Fink, 2018; Elo et al., 2018; Friedman & Mare, 2014; Sabater et al., 2020; Torssander, 2013; Zimmer et al., 2007), physical health (C. Lee, 2018; Ma, 2019; Peng et al., 2019; Yahirun et al., 2017), psychological well-being (Peng et al., 2019; Yahirun et al., 2020, 2022), and cognitive health (Y. Lee, 2018; Ma, 2019). Previous scholarship has theorized and tested various mechanisms that may account for the effects of adult children's education on parental well-being. The social foreground perspective highlights the salience of adult children's resources in shaping the well-being and mortality of older parents (Torssander, 2013). Drawing on this perspective, empirical work assessing mechanisms that link adult children's education and parental well-being and mortality has focused exclusively on mechanisms involving the transfer of resources and support to promote parental well-being. However, these mechanisms account for only part of the association between adult children's education and parental health.

Adult children's education may also shape parental well-being through a reduction of factors that adversely affect parents' well-being. In other words, adult children's education may protect parents from negative exposures. For instance, educational attainment is associated with more financial and marital stability (Becker, 1993; Boertien & Härkönen, 2018), less stress at work (Lunau et al., 2015), better health (Ross & Mirowsky, 2006; Ross & Wu, 1995), and fewer problems with the law and alcohol/drugs (Crum et al., 1993; Maynard et al., 2015). Thus, parents of more educated adult children may face fewer exposures to stressors from their offspring compared to parents of less educated adult children. Thus far, no studies have explored the capacity of adult children's education to shield older parents from factors that adversely affect well-being. Our study contributes to the literature on adult children's education and parental well-being by assessing adult children's problems as a mechanism accounting for disparities in psychological well-being between older mothers of more and less educated adult children. To do this, we draw on data from 400 mothers aged 73-85 years regarding 1,490 of their adult children, collected as part of the Within-Family Differences Study (WFDS). By investigating the mediational role of adult children's problems, this study adds to existing scholarship on the life course (Bengtson & Allen, 2009; Elder, 1994; Gilligan et al., 2018) and cumulative inequality (Ferraro & Shippee, 2009) by underscoring the importance of considering how resources and risks that affect well-being accumulate both across the life course and across generations.

## **Adult Children's Problems**

Researchers have proposed multiple pathways through which adult children's education may improve and protect parents' well-being. The pathways that have received the most attention in the literature are those that link adult children's education to resources that may, in turn, positively affect older parents' well-being. These potential pathways include (a) social support (including emotional, instrumental, and informational support), (b) social influence (i.e., highly educated children may model, or encourage parents to engage in, healthy behaviors), and (c) the upward transfer of material resources (Torssander, 2013). Past research has found some support for these mechanisms, demonstrating the roles of informal care (Cui et al., 2021), parental smoking (Friedman & Mare, 2014; C. Lee, 2018), parental physical activity (Friedman & Mare, 2014; Sabater et al., 2020), and material support (Y. Lee, 2018) as mechanisms that link adult children's education and parents' well-being.

We propose that adult children's education may affect older parents' well-being through mechanisms other than increased access to support and resources. Torssander (2013) and Yahirun et al. (2020), for instance, suggest that parents of highly educated adult children may experience less parental worry because adult children with more education experience more favorable career outcomes. Building on this argument, we propose that adult children's problems may account for part of the association between adult children's education and parental well-being. Specifically, we propose that: (a) higher levels of adult children's education will be associated with fewer problems experienced by adult children and (b) problems experienced by adult children will adversely impact mothers' psychological well-being. Taken together, adult children's education may protect mothers' psychological well-being by limiting mothers' exposure to adult children's problems.

Past research consistently demonstrates a negative correlation between education and a variety of challenges in adulthood. Theories of human capital (Becker, 1993; Hout, 2012) posit that education endows people with financial, occupational, social, and psychological resources which we propose can be used to prevent, solve, and weather problems. Past studies find that education is negatively associated with alcohol abuse and dependence (Crum et al., 1993), criminal activity (Maynard et al., 2015), feelings of stress at work (Lunau et al., 2015), divorce (Boertien & Härkönen, 2018), and physical and mental health (Ross & Mirowsky, 2006; Ross & Wu, 1995), but is positively associated with income (Becker, 1993). Moreover, education is associated with increased access to social support. Social support is

an important resource that not only improves physical and mental health (Kim & Thomas, 2019), it can also buffer the effects of negative life events and stressors on mental health (Pearlin & Bierman, 2013). Finally, education is associated with increased use of problem-focused coping strategies (Christensen et al., 2006; Ross & Mirowsky, 1989) that can mitigate the negative effects of stressors on mental health (Mandemakers & Monden, 2013). In sum, education both reduces the number of problems people experience and equips people with strategies that can lessen the adverse effects of experiencing problems.

Problems experienced by adult children are associated with negative outcomes for parents and parent-adult child relationships. According to the "linked lives" theme of the life-course perspective, problems experienced by family members may adversely affect individuals (Elder, 1994). Previous research has shown that adult children's problems are associated with worse parental psychological well-being (Fingerman et al., 2012; Greenfield & Marks, 2006; Pillemer et al., 2017). Adult children's problems also strain the parent-adult child relationship. In particular, adult children's problems are associated with greater parental feelings of ambivalence (Birditt et al., 2010), anger, worry, disappointment (Cichy et al., 2013), and negativity (Hammersmith, 2019) toward their children. Moreover, parents may interpret their adult children's successes and failures as reflections of their parenting (Ryff et al., 1996) and feel guilt over their children's career and relationship setbacks (Cichy et al., 2013). Based on the established links between education and problems, and between adult children's problems and parents' well-being, we hypothesize that adult children's problems will account for part of the association between adult children's education and parental well-being. Specifically, we propose a model in which lower levels of adult children's education are associated with a greater occurrence of problems experienced by the sibship, and problems experienced by the sibship positively correlate with mothers' depressive symptoms.

## Method

# Data

The data for this study were collected as part of the WFDS, a mixed-methods longitudinal project focused on intergenerational relationships between parents and adult children, caregiving, and well-being. For a more detailed description of the study design, see Suitor et al. (2013). The original sample was drawn from Massachusetts city and town lists. With the assistance of the Center for Survey Research at the University of Massachusetts Boston, researchers drew a probability sample of women aged 65–75 years with two or more children from the greater Boston area. The Time 1 (T1) sample consisted of 566 mothers, which represented 61% of those who were eligible for participation, a rate comparable to that of similar surveys in the first decade

of the 21st century (Wright & Marsden, 2010). These 566 mothers were interviewed between 2001 and 2003. A comparison of the sample with Census data on women in the same cohort living in the Boston metropolitan area revealed few differences in standard demographic characteristics (e.g., education, marital status), with the exception that the study had a substantially higher proportion of Black women, due to a design decision to oversample by race.

For the second wave, the survey team attempted to contact each mother who participated in the original study. At Time 2 (T2), 420 mothers were interviewed between 2008 and 2011. Of the 146 mothers who participated at only T1, 78 had died between waves, 19 were too ill to be interviewed, 33 refused, and 16 could not be reached. Thus, the 420 represents 86% of mothers who were living at T2. A comparison of the T1 and T2 samples revealed that the respondents differed on subjective health, educational attainment, marital status, and race. Mothers who were not interviewed at T2 were somewhat less healthy, less educated, and less likely to have been married at T1; they were also more likely to be Black.

# Analytic Sample

The data for this project were drawn from mothers reporting on their own depressive symptoms and on the educational attainment of their adult children. Mothers served as the unit of analysis of this project. Adult children's education at T1 and adult children's problems within 5 years of T2 were aggregated (see details below). We restricted the sample to mothers who: (a) participated at both T1 and T2 and (b) whose families had been identified as Black or Non-Hispanic White. Intergenerational relations in Asian and Hispanic families differ from those of both non-Hispanic white and Black families, particularly in terms of exchange and solidarity (Suitor et al., 2015); thus, these families should not be combined with either of the larger subgroups, and there are too few cases to justify creating further ethnic subgroups (Spitze & Trent, 2006). Additionally, we omitted mothers with missing data on depressive symptoms at T2 (one mother), their adult children's education at T1 (seven mothers), and control variables (three mothers), which represented less than 3% of the sample. This resulted in a sample of 400 mothers with 1,490 adult children.

## **Measures**

## Mothers' Depressive Symptoms

Mothers' depressive symptoms were measured using the seven-item version of the Center for Epidemiological Studies Depression (CES-D) scale (Ross & Mirowsky, 1988). The CES-D asked respondents how often in the past week they have felt certain ways. The items composing the scale are as follows: (a) Everything you did was an effort; (b) You had trouble getting to sleep or staying asleep; (c) You felt lonely; (d) You felt sad; (e) You could not get going; (f)

You felt you could not shake off the blues; and (g) You had trouble keeping your mind on what you were doing. Each item was measured on a 4-point scale ranging from "less than 1 day in the past week" (1) to "5–7 days in the past week" (4). Thus, scores on this measure range from 7 to 28 with higher scores denoting more depressive symptoms (mean = 11.11; SD = 4.30; Cronbach's  $\alpha = 0.82$ ).

## Adult Children's Education

Previous studies that have investigated the relationship between adult children's education and parental well-being have operationalized adult children's education in multiple ways, including the proportion of adult children that have completed a college degree (Friedman & Mare, 2014; Peng et al., 2019) and the highest level of education completed by any child (Elo et al., 2018; Ma, 2019; Zimmer et al., 2007). At T1, mothers were asked to identify the highest level of education completed by each adult child. We utilized adult children's education at T1 because their education was not re-measured at T2. We created a dummy variable for whether each adult child completed any post-high school education (i.e., some college, vocational education, bachelor's degree, graduate degree). Next, we aggregated adult children's education into a dichotomous variable (0 = no adult children completed post-high school education, 1 = some or all adult children completed post-high school education). Most of the mothers (85%) reported that at least one of their adult children had completed post-high school education. Although the completion of a college degree is a significant threshold for health outcomes and access to material and social resources (Hout, 2012), completing some college or vocational education may endow people with significantly more resources that can be used to avoid and solve problems than only completing high school. We considered alternative operationalizations of education in sensitivity analyses discussed below.

#### Adult Children's Problems

To measure adult children's problems at T2, mothers were asked to identify whether each of their children had experienced a range of problems in the past 5 years. Broadly consistent with past studies (e.g., Birditt et al., 2010; Fingerman et al., 2012), we generated subscales based on the proportion of children experiencing problems in three different domains: physical and emotional, substance use and crime, and financial and personal. Physical and emotional problems include (a) a serious illness or injury, (b) frequent minor illnesses, and (c) serious emotional or psychological problems. Substance use and crime include (a) having a drinking or drug problem and (b) getting in trouble with the law or police. Financial and personal problems include (a) having serious financial problems, (b) not having a job when he/she wanted to work, (c) having problems

at work, (d) having marital or partner relationship problems, (e) having difficulty getting along with people, and (f) having other legal problems, such as lawsuits. On average, mothers reported that 44% of their children had experienced physical or emotional problems, 7% had problems with substance use or crime, and 43% had financial or personal problems (see Table 1; additional descriptive statistics presented in Supplementary Table A1).

#### Covariates

We included several domains of controls in our analyses. First, we control for sociodemographic factors related to adult children's education and mothers' depressive symptoms. These include mother's age at T2; education (0 = high school or less, 1 = post-high school education); race (0 = White, 1 = Black); marital status (0 = married or living with a partner as married, 1 = divorced, separated, or never married, 2 = widowed before T1, 3 = widowed between T1 and T2); number of living adult children at T2 (top coded at 10); the proportion of daughters; and the proportion of adult children who experienced any of the following problems before age 19: a serious illness or injury, serious trouble in school, serious trouble getting along with peers, serious emotional or psychological problems, drinking or drug problems, getting in trouble with the law or police, or being sent away from home because they did something wrong or were too much to handle.

Second, we control for characteristics of mothers that capture alternative stressors that may be tied to mothers' depressive symptoms other than the various forms of adult children's problems. These include mothers' self-rated health measured on a 5-point scale ranging from "poor"

**Table 1.** Descriptive Statistics for Selected Analysis Variables; N = 400 mothers

	Mn/Pr	SD
T2 mother depressive symptoms	11.11	4.30
Adult children's education (post-HS)	0.85	0.36
Adult children's problems:		
Proportion physical or emotional	0.44	0.34
Proportion substance use or crime	0.07	0.16
Proportion financial or personal	0.43	0.34
T2 mother age	77.85	3.15
Mother post-high school education	0.46	
Mother race: White	0.74	
Mother race: Black	0.26	
Mother married/living as married	0.40	
Mother divorced/separated/never married	0.15	
Mother widowed before T1	0.31	
Mother widowed T1 to T2	0.14	
T2 number of children	3.73	1.71
Proportion daughters	0.51	0.28
Proportion children problems in childhood	0.35	0.33

*Note:* See discussion in text for operationalization of variables. Mn/Pr refers to means or proportions as appropriate. HS = high school.

(1) to "excellent" (5); mothers' difficulties with activities of daily living and instrumental activities of daily living; the death of an adult child in the family in the decade prior to T2; and average relational tension with adult children (see Supplementary Appendix 1 for details of measurement and descriptive statistics).

Third, we control for mechanisms found or proposed in past studies to link adult children's education and mothers' depressive symptoms. These include the proportion of adult children who provided any emotional support or any of several dimensions of instrumental support in the previous year; the proportion of adult children who gave or loaned money to the mother in the last year; and the average emotional closeness with adult children (see Supplementary Appendix 1 for details of measurement and descriptive statistics).

#### Analytic Plan

We conducted all statistical analyses, which included ordinary least squares (OLS) regressions and mediation analyses, with IBM SPSS Version 28 software. We conducted OLS regressions to estimate the effects of adult children's education on maternal depressive symptoms and mediation analyses to estimate indirect effects through adult children's problems. We used the PROCESS macro's (Hayes, 2018) fourth model to conduct our mediation model. To test indirect effects, PROCESS generated bootstrap 95% confidence intervals for the indirect effects using 5,000 bootstrap samples. Indirect effects were deemed statistically significant (p < .05) if the confidence interval did not include zero, and statistically significant indirect effects provide evidence that adult children's problems mediate the effect of adult children's education on mothers' depressive symptoms. We present unstandardized coefficients throughout the results section.

## Results

Table 2 displays selected estimates from linear regression models estimating the effects of adult children's education on mothers' depressive symptoms (full models presented in Supplementary Table A2). Model 1 provides estimates of the relationship between adult children's education and mothers' depressive symptoms. Compared to mothers whose children have completed high school or less, mothers with some or all adult children who completed post-high school education reported fewer depressive symptoms (b = -1.55).

Model 2 adds the three domains of adult children's problems as mediators of the association between adult children's education and mothers' depressive symptoms. In this model, the direct effect of having some or all adult children with post-high school education (b = -1.29) was attenuated. The proportion of adult children experiencing physical and emotional problems was related to mothers' depressive symptoms (b = 1.87), but there was no evidence for a relationship with the other domains of adult children's problems.

**Table 2.** Selected Estimates from Regression Models for Depressive Symptoms; N = 400 mothers

	Model 1	Model 2
Adult children's education (post-HS)	-1.55*	-1.29*
	[-2.74, -0.37]	[-2.50, -0.07]
Adult children's problems		
Physical or emotional		1.87**
		[0.50, 3.23]
Substance use or crime		0.43
		[-2.30, 3.17]
Financial or personal		0.12
		[-1.27, 1.52]

*Note:* Unstandardized estimates with 95% confidence intervals in brackets. Models 1 and 2 include all control variables discussed in text. \*p < .05, \*\*p < .01.

**Table 3.** Estimates of Indirect Effects of Adult Children's Education Via Adult Children's Problems from Linear Regression Models for Depressive Symptoms; N = 400 mothers

Estimate
-0.21*
[-0.50, -0.02]
-0.04
[-0.42, 0.31]
-0.02
[-0.25, 0.18]

*Note:* Unstandardized estimates with bootstrapped 95% confidence intervals in brackets. \*p < .05.

Table 3 reports estimates of the relative indirect effects of adult children's education on mothers' depressive symptoms via the three domains of adult children's problems. We found evidence of an indirect effect of adult children's education on mothers' depressive symptoms through adult children's physical and emotional problems (b = -0.21), but no evidence of indirect effects through the other two domains. Overall, physical and emotional problems accounted for about 13.5% of the association between adult children's education and mothers' depressive symptoms.

## Sensitivity Analyses

Previous studies investigating adult children's education and parents' well-being have aggregated adult children's education in varying ways. As a sensitivity analysis, we aggregated adult children's education using the attainment of a college degree as the threshold (0 = no adult children completed a college degree). These findings are reported in Supplementary Tables A3 and A4. With this operationalization, we found the same pattern of effects at

an attenuated level at which the coefficients do not reach the standard threshold of significance. A proportional measure of children with post-high school education yielded similarly attenuated effects (results not shown). Thus, our results suggest that having at least one adult child with post-high school education is the most meaningful cutoff in the association between adult children's education, their problems, and mothers' depressive symptoms.

Previous research has found that adults who complete high school experience fewer problems than those who do not (Crum et al., 1993; Maynard et al., 2015). As a further sensitivity analysis, we constructed a measure of the lowest educational attainment among adult children (0 = all adult children completed high school or more; 1 = at least one adult child completed less than high school). In this model, the effects of adult children's education were not significant (b = 0.26; confidence interval [CI] = -1.01 to 1.54), and the indirect effect of adult children's education via physical and emotional problems almost met the threshold of significance (b = 0.19, CI = -0.01 to 0.46; full results not shown).

Finally, we conducted analyses that excluded six mothers with only one living adult child at T2 because the recent death of an adult child, particularly in formerly two-child families, could alter patterns of intergenerational interaction and support, as well as mothers' depressive symptoms, for reasons unrelated to educational attainment or children's problems. These analyses yielded the same pattern of results as our main findings (results not shown).

#### Discussion

Scholarly research consistently reports positive associations between adult children's educational attainment and their parents' well-being (Friedman & Mare, 2014). This study joins and extends lines of work that investigate (a) the effect of adult children's educational attainment on older parents' depressive symptoms (Peng et al., 2019; Yahirun et al., 2020, 2022) and (b) the effect of adult children's problems on older parents' psychological health (Fingerman et al., 2012; Greenfield & Marks, 2006; Pillemer et al., 2017). Drawing on data collected as part of the WFDS, we found evidence for the mediating role of adult children's physical and emotional problems in the relationship between adult children's educational attainment and mothers' depressive symptoms. Specifically, our study shows that older mothers with at least one adult child who had completed post-high school education reported fewer depressive symptoms than mothers whose children had all completed high school or less. This relationship is in part a result of a lower proportion of physical and emotional problems among sibships in families in which some or all adult children competed post-high school education relative to families in which all adult children competed for high school or less.

Previous work has posited that education may improve parental health by endowing adult children with resources like health knowledge and money which can be transferred upwards to parents (Torssander, 2013). Past studies have investigated various resources attained through education that may link adult children's education and parental well-being, including social support (Cui et al., 2021), social influence (Friedman & Mare, 2014; C. Lee, 2018; Y. Lee, 2018; Sabater et al., 2020), and material resources (Cui et al., 2021; Elo et al., 2018; Y. Lee, 2018; Yahirun et al., 2017, 2020). Past theoretical work has also suggested that parents may feel less worried about adult children with more education (Torssander, 2013). Moreover, adult children's problems may create challenges for mothers. Parents tend to give more emotional support, practical help, and financial support to adult children who experience problems (Fingerman et al., 2009; Suitor et al., 2006). Older mothers may also provide primary care for their grandchildren when adult children's problems prevent them from providing care (Goodman & Silverstein, 2006). This additional help mothers provide in response to their adult children's problems may be accompanied by emotional and financial strain. Our study is the first to investigate the mediational role of adult children's problems; a factor which is inversely associated with adult children's education. Our results suggest that education does not merely endow adult children with resources that can improve their mothers' psychological well-being. Adult children's education may also protect mothers' mental health by decreasing both the frequency of problems experienced by adult children and the help adult children need from their older mothers.

Our findings raise the question of why physical and emotional problems are a mechanism that link adult children's education and mothers' psychological well-being, but financial and personal problems and substance use and crime are not. The first stage of our mediation model (not reported here) assesses the association between adult children's education and the three domains of problems. Mothers with some or all adult children with post-high school education report lower proportions of adult children experiencing problems in each of the three domains. However, the second stage of our mediation model reveals that only physical and emotional problems are associated with mothers' depressive symptoms. One explanation may be the low proportions of adult children reported as experiencing issues of substance use and crime or financial and personal problems. Eighty-one percent of the sample reported that none of their adult children had problems related to substance use or crime, and less than 2% reported that at least half of their adult children had experienced these problems. Similarly, only 32% of mothers reported that at least half of their children had financial or personal problems. When mothers do have children with these issues, the potential adverse effects on psychological well-being may be attenuated by the larger proportion of adult children without these issues. A review of the WFDS' qualitative data reveals that personal and substance use issues in one child's life may be less impactful if mothers have positive relationships with their

other adult children. Physical and emotional problems may differ from the other domains of problems because mothers may feel distressed by their children's health problems regardless of the health status of their other offspring.

This study augments existing scholarship on the life course (Elder, 1994; Bengtson & Allen, 2009) and cumulative inequality (Ferraro & Shippee, 2009) by underscoring the importance of considering how resources and risks that affect health accumulate both across the life course and across generations. The life-course perspective's theme of linked lives emphasizes that problems in individuals' lives can negatively impact the well-being of their family members (Elder, 1994; Greenfield & Marks, 2006). The concept of cumulative inequality asks researchers to consider how advantages and disadvantages accumulate with age (Ferraro & Shippee, 2009; Gilligan et al., 2018). Gilligan and colleagues (2018) note that the theme of linked lives and cumulative inequality emphasize different dimensions of time. The theme of linked lives highlights the importance of connections between individuals across generations, whereas cumulative inequality highlights the importance of early life experiences on outcomes across the life course. They advise that family scholars would benefit from integrating linked lives' focus on the time dimension of generation and cumulative inequality's focus on the time dimension of age. Taken together, these two dimensions suggest that (a) advantages and disadvantages accumulate both across individuals' lives and across generations and (b) individuals age both chronologically across the life course and through processual time during the intergenerational accumulation of advantages and disadvantages. During this intergenerational process of (dis)advantage accumulation, individuals transition to later stages of life in which adult children provide them with more financial, emotional, and instrumental support (Kalmijn, 2019). Individuals' health in later life is not only impacted by the (dis)advantages they accumulated across their individual life course but also by (dis)advantages accumulated by subsequent generations.

Despite these contributions to existing research, our study is not without limitations. First, because the WFDS began collecting data on families when offspring were already well into adulthood, we are unable to take into consideration unmeasured factors from adult children's adolescence that could affect (a) educational attainment, (b) problems in midlife, and (c) mothers' psychological well-being at the time of the interview. Although we control for adult children's problems in childhood, this single measure does not capture the host of early life psychosocial factors that may influence educational attainment and problems. Moreover, because we utilize measures of education and psychological well-being from single time points, our analyses do not account for changes in these factors over time. Therefore, we do not interpret our findings as causal estimates due to potential issues of confounding, and our analyses do not leverage the longitudinal structure of the data in a meaningful way. Future work in this area should seek to utilize data that can address additional psychosocial factors from earlier in the life course that may play a role in the association between adult children's education and older mothers' psychological well-being as well as changes in adult children's education and parental well-being over time.

Second, as the WFDS did not interview fathers at T2, our sample includes only mothers, and, therefore, we cannot explore whether adult children's education affects fathers' depressive symptoms through problems experienced by the sibship. We recommend that future studies build on our findings by replicating our analysis with a sample that includes mothers and fathers. Exploring differences between mothers and fathers in the documented associations between adult children's education, adult children's problems, and parents' depressive symptoms is a ripe area for future work.

Finally, although Boston has been the site of prominent studies of intergenerational relations (Pillemer & Finkelhor, 1988; Rossi & Rossi, 1990), we recognize that such regionality might introduce limits to generalizability. For example, adult children and older parents in the Northeast are more likely to live in close proximity to one another than are adult children and older parents in other regions of the country (Choi et al., 2020). Our concern regarding this issue is reduced by an investigation that used data from the National Survey of Families and Households that found that the only significant regional differences in intergenerational contact and emotional closeness were between Southern families and all other families (Sechrist et al., 2007). These findings suggest that region plays a relatively small role in family processes in the middle and later years.

Individuals' well-being is inextricably tied to events in the lives of people in their social networks. Adult children's challenges and successes, including education, play crucial roles in shaping older parents' physical and psychological health. Our findings suggest that one way in which adult children's education may protect mother's mental health is through reducing the frequency with which adult children experience physical and emotional problems. If this finding is replicated in future studies, it has an important implication for policy designed to increase access to education. Namely, education can potentially improve the well-being of both people who attain education and adjacent generations. Past research suggests that depression is more prevalent among low-socioeconomic status older adults (Koster et al., 2006), and initiatives to increase education may serve as one intervention to counteract socioeconomic disparities in psychological well-being among older adults. Other interventions could target services that address challenges faced by low attaining adult children and mental health services that help mothers cope with their children's problems.

# **Supplementary Material**

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

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## **Conflict of Interest**

None declared.

#### **Author Contributions**

R. T. Frase conceptualized the paper, wrote the initial drafts of the manuscript, and conducted statistical analyses. S. Bauldry and J. J. Suitor supervised the statistical analysis. D. Ogle analyzed the qualitative data. S. Bauldry, J. J. Suitor, M. Gilligan, and D. Ogle contributed to the writing and theoretical framing of the article. All authors edited and reviewed the final version of the paper.

#### References

- Becker, G. S. (1993). Human capital: A theoretical and empirical analysis, with special reference to education (3rd ed.). University of Chicago Press. doi:10.7208/chicago/9780226041223.001.0001
- Bengtson, V. L., & Allen, K. R. (2009). The life course perspective applied to families over time. In P. G. Boss, W. J. Doherty, R. LaRossa, W. R. Schumm, & S. K. Steinmetz (Eds.), Sourcebook of family theories and methods: A contextual approach (pp. 469–504). Plenum Press. doi:10.1007/978-0-387-85764-0\_19
- Birditt, K., Fingerman, K., & Zarit, S. (2010). Adult children's problems and successes: Implications for intergenerational ambivalence. The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 65(2), 145–153. doi:10.1093/geronb/gbp125
- Boertien, D., & Härkönen, J. (2018). Why does women's education stabilize marriages? The role of marital attraction and barriers to divorce. *Demographic Research*, 38, 1241–1276. doi:10.4054/ demres.2018.38.41
- Choi, H., Schoeni, R. F., Wiemers, E. E., Hotz, V. J., & Seltzer, J. A. (2020). Spatial distance between parents and adult children in the United States. *Journal of Family and Marriage*, 82, 822–840. doi:10.1111/jomf.12606
- Christensen, U., Schmidt, L., Kriegbaum, M., Hougaard, C. O., & Holstein, B. (2006). Coping with unemployment: Does educational attainment make any difference? *Scandinavian Journal of Public Health*, 34(4), 363–370. doi:10.1080/14034940500489339
- Cichy, K. E., Lefkowitz, E. S., Davis, E. M., & Fingerman, K. L. (2013). "You are such a disappointment!": Negative emotions and parents' perceptions of adult children's lack of success. The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 68(6), 893–901. doi:10.1093/geronb/gbt053
- Crum, R. M., Helzer, J. E., & Anthony, J. C. (1993). Level of education and alcohol abuse and dependence in adulthood: A further

- inquiry. American Journal of Public Health, 83(6), 830-837. doi:10.2105/ajph.83.6.830
- Cui, Y., Liu, H., & Zhao, L. (2021). Protective effect of adult children's education on parental survival in China: Gender differences and underlying mechanisms. Social Science & Medicine, 277, 113908. doi:10.1016/j.socscimed.2021.113908
- De Neve, J. W., & Fink, G. (2018). Children's education and parental old age survival—Quasi-experimental evidence on the intergenerational effects of human capital investment. *Journal of Health Economics*, 58, 76–89. doi:10.1016/j.jhealeco.2018.01.008
- Elder, G. (1994). Time, human agency, and social change: Perspectives on the life course. *Social Psychology Quarterly*, 57(1), 4–15. doi:10.2307/2786971
- Elo, I. T., Martikainen, P., & Aaltonen, M. (2018). Children's educational attainment, occupation, and income and their parents' mortality. *Population Studies*, 72(1), 53–73. doi:10.1080/00324 728.2017.1367413
- Ferraro, K. F., & Shippee, T. S. (2009). Aging and cumulative inequality: How does inequality get under the skin? *The Gerontologist*, 49(3), 333–343. doi:10.1093/geront/gnp034
- Fingerman, K. L., Cheng, Y.-P., Birditt, K., & Zarit, S. (2012). Only as happy as the least happy child: Multiple grown children's problems and successes and middle-aged parents' well-being. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 67(2), 184–193. doi:10.1093/geronb/gbr086
- Fingerman, K. L., Miller, L., Birditt, K., & Zarit, S. (2009). Giving to the good and the needy: Parental support of grown children. *Journal of Marriage and Family*, 71(5), 1220–1233. doi:10.1111/j.1741-3737.2009.00665.x
- Friedman, E., & Mare, R. (2014). The schooling of offspring and the survival of parents. *Demography*, 51(4), 1271–1293. doi:10.1007/s13524-014-0303-z
- Gilligan, M., Karraker, A., & Jasper, A. (2018). Linked lives and cumulative inequality: A multigenerational family life course framework. *Journal of Family Theory & Review*, 10(1), 111–125. doi:10.1111/jftr.12244
- Goodman, C. C., & Silverstein, M. (2006). Grandmothers raising grandchildren: Ethnic and racial differences in well-being among custodial and coparenting families. *Journal of Family Issues*, 27(11), 1605–1626. doi:10.1177/0192513X06291435
- Greenfield, E. A., & Marks, N. F. (2006). Linked lives: Adult children's problems and their parents' psychological and relational well-being. *Journal of Marriage and Family*, 68(2), 442–454. doi:10.1111/j.1741-3737.2006.00263.x
- Hammersmith, A. M. (2019). Life interrupted: Parents' positivity and negativity toward children following children's and parents' transitions later in life. *The Gerontologist*, 59(3), 519–527. doi:10.1093/geront/gny013
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). The Guilford Press.
- Hayward, M., & Gorman, B. (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
- Hout, M. (2012). Social and economic returns to college education in the United States. *Annual Review of Sociology*, **38**(1), 379–400. doi:10.1146/annurev.soc.012809.102503
- Kalmijn, M. (2019). The effects of ageing on intergenerational support exchange: A new look at the hypothesis of flow reversal.

- European Journal of Population Health, 35(2), 263–284. doi:10.1007/s10680-018-9472-6
- Kim, S., & Thomas, P. A. (2019). Direct and indirect pathways from social support to health? The Journals of Gerontology, Series B: Psychological Sciences & Social Sciences, 74(6), 1072–1080. doi:10.1093/geronb/gbx084
- Koster, A., Bosma, H., Kempen, G. I., Penninx, B. W., Beekman, A. T., Deeg, D. J., & van Eijk, J. T. (2006). Socioeconomic differences in incident depression in older adults: The role of psychosocial factors, physical health status, and behavioral factors. *Journal of Psychosomatic Research*, **61**(5), 619–627. doi:10.1016/j. jpsychores.2006.05.009
- Lee, C. (2018). Adult children's education and physiological dysregulation among older Parents. *The Journals of Gerontology, Series B: Psychological Sciences & Social Sciences*, 73(6), 1143–1154. doi:10.1093/geronb/gbx044
- Lee, Y. (2018). Adult children's educational attainment and the cognitive trajectories of older parents in South Korea. *Social Science & Medicine*, 209, 76–85. doi:10.1016/j.socscimed.2018.05.026
- Lin, N. (1999). Social networks and status attainment. Annual Review of Sociology, 25(1), 467–487. doi:10.1146/annurev. soc.25.1.467
- Link, B., & Phelan, J. (2010). Social conditions as fundamental causes of health inequalities. In C. E. Bird, P. Conrad, A. M. Fremont, & S. Timmermans (Eds.), *Handbook of medical sociology* (6th ed., pp. 3–17). Vanderbilt University Press. doi:10.2307/j. ctv16h2n9s
- Lunau, T., Siegrist, J., Dragano, N., & Wahrendorf, M. (2015). The association between education and work stress: Does the policy context matter? *PLoS One*, 10(3), e0121573. doi:10.1371/journal.pone.0121573
- Ma, M. (2019). Does children's education matter for parents' health and cognition? Evidence from China. *Journal of Health Economics*, 66, 222–240. doi:10.1016/j.jhealeco.2019.06.004
- Mandemakers, J. J., & Monden, C. W. S. (2013). Does the effect of job loss on psychological distress differ by educational level? Work, Employment and Society, 27(1), 73–93. doi:10.1177/0950017012460312
- Maynard, B. R., Salas-Wright, C. P., & Vaughn, M. G. (2015). High school dropouts in emerging adulthood: Substance use, mental health problems, and crime. *Community Mental Health Journal*, 51(3), 289–299. doi:10.1007/s10597-014-9760-5
- Pearlin, L. I., & Bierman, A. (2013). Current issues and future directions in research into the stress process. In C. S. Aneshensel, J. C. Phelan, & A. Bierman (Eds.), *Handbook of the sociology of mental health* (pp. 325–340). Springer Science. doi:10.1007/978-94-007-4276-5\_16
- Peng, S., Bauldry, S., Gilligan, M., & Suitor, J. J. (2019). Older mother's health and adult children's education: Conceptualization of adult children's education and mother-child relationships. SSM—Population Health, 7, 100390. doi:10.1016/j. ssmph.2019.100390
- Pillemer, K., & Finkelhor, D. (1988). The prevalence of elder abuse: A random sample survey. The Gerontologist, 28(1), 51–57. doi:10.1093/geront/28.1.51
- Pillemer, K., Suitor, J. J., Riffin, C., & Gilligan, M. (2017). Adult children's problems and mothers' well-being: Does parental favoritism matter? *Research on Aging*, 39(3), 375–395. doi:10.1177/0164027515611464

- Ross, C. E., & Mirowsky, J. (1988). Child care and emotional adjustment to wives' employment. *Journal of Health and Social Behavior*, **29**(2), 127–138. doi:10.2307/2137053
- Ross, C. E., & Mirowsky, J. (1989). Explaining the social patterns of depression: Control and problem solving—Or support and talking? *Journal of Health and Social Behavior*, 30(2), 206–219. doi:10.2307/2137014
- Ross, C. E., & Mirowsky, J. (2006). Sex differences in the effect of education on depression: Resource multiplication or resource substitution? *Social Science & Medicine*, 63(5), 1400–1413. doi:10.1016/j.socscimed.2006.03.013
- Ross, C. E., & Wu, C.-L. (1995). The links between education and health. *American Sociological Review*, 60(5), 719–745. doi:10.2307/2096319
- Rossi, A. S., & Rossi, P. H. (1990). Of human bonding: Parent-child relations across the life course. Aldine de Gruyter. doi:10.4324/9781351328920
- Ryff, C. D., Schmutte, P. S., & Lee, Y. H. (1996). How children turn out: Implications for parental self-evaluation. In C. D. Ryff & M. M. Seltzer (Eds.), *The parental experience in midlife* (pp. 383–422). The University of Chicago Press.
- Sabater, A., Graham, E., & Marshall, A. (2020). Does having highly educated adult children reduce mortality risks for parents with low educational attainment in Europe? *Ageing and Society*, 40(12), 2635–2670. doi:10.1017/S0144686X19000795
- Sechrist, J., Suitor, J. J., Henderson, A. C., Cline, K. M. C., & Steinhour, M. (2007). Regional differences in mother-adult child relations: A brief report. The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 62(6), S388388-S391. doi:10.1093/geronb/62.6.s388
- Spitze, G., & Trent, K. (2006). Gender differences in adult sibling relations in two-child families. *Journal of Marriage and Family*, 68(4), 977–992. doi:10.1111/j.1741-3737.2006.00308.x
- Suitor, J. J., Gilligan, M., & Pillemer, K. (2013). Continuity and change in mothers' favoritism toward offspring in adulthood. *Journal of Marriage and Family*, 75(5), 1229–1247. doi:10.1111/jomf.12067
- Suitor, J. J., Gilligan, M., and Pillemer, K. (2015). Stability, change, and complexity in later life families. In L. K. George & K. F. Ferraro (Eds.), *Handbook of Aging and the Social Sciences* (8th ed., pp. 205–226). Elsevier/Academic. doi:10.1016/B978-0-12-417235-7.00010-X
- Suitor, J. J., Pillemer, K., & Sechrist, J. (2006). Within-family differences in mothers' support to adult children. *The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences*, 61(1), S10–S17. doi:10.1093/geronb/61.1.s10
- Torssander, J. (2013). From child to parent? The significance of children's education for their parents' longevity. *Demography*, 50(2), 637–659. doi:10.1007/s13524-012-0155-3
- Wright, J. D., & Marsden, P. V. (2010). Survey research and social science: History, current practice, and future prospects. In P. V. Marsden & J. D. Wright (Eds.), *Handbook of survey research* (pp. 3–26). Emerald Group.
- Yahirun, J. J., Sheehan, C. M., & Hayward, M. D. (2017). Adult children's education and changes to parents' physical health in Mexico. *Social Science & Medicine*, 181, 93–101. doi:10.1016/j. socscimed.2017.03.034
- Yahirun, J. J., Sheehan, C. M., & Mossakowski, K. N. (2020). Depression in later life: The role of adult children's college

education for older parents' mental health in the United States. The Journals of Gerontology, Series B: Psychological Sciences and Social Sciences, 75(2), 389–402. doi:10.1093/geronb/gby135

Yahirun, J., Sheehan, C., & Mossakowski, K. (2022). Black-white differences in the link between offspring college attainment and

parents' depressive symptom trajectories. Research on Aging, 44(2), 123–135. doi:10.1177/0164027521997999

Zimmer, Z., Martin, L., Ofstedal, M., & Chuang, Y.-L. (2007). Education of adult children and mortality of their elderly parents in Taiwan. *Demography*, 44(2), 289–305. doi:10.1353/dem.2007.0020