Original Research Article

Early-Life Parental Affection, Social Relationships in Adulthood, and Later-Life Cognitive Function

Journal of Aging and Health
2024, Vol. 0(0) 1–12

DOI: 10.1177/08982643241303589
journals.sagepub.com/home/jah
Sage

Patricia A. Thomas, PhD[1,2], Elizabeth Teas, PhD[2,3], Elliot Friedman, PhD[2,3], Lisa L. Barnes, PhD[4], Madison R. Sauerteig-Rolston, PhD[5], and Kenneth F. Ferraro, PhD[1,2]

Abstract

Objective: Although research has demonstrated the long-term health consequences of childhood adversities, less is known about the long-term impact of positive childhood experiences, such as parental affection. **Method:** Using longitudinal data (1995–2014) from the Midlife in the United States (MIDUS) study, we analyze structural equation models estimating direct and indirect pathways from early-life parental affection to changes in later-life cognitive function through relationship quality in adulthood among Black and White older adults (N = 1983). **Results:** Analyses revealed significant indirect effects of parental affection on better cognitive function through higher levels of social support (both average social support and family social support) in adulthood in the full sample and among Black respondents. Indirect pathways through relationship strain and through friend support were not significant. **Discussion:** This work elevates the importance of promoting positive parental relationships during childhood, with implications for better social relationships in adulthood and cognitive function in later life.

Keywords

cognition, childhood exposures, social support, relationship quality, life course

Introduction

Numerous studies reveal that adverse experiences in childhood are related to a range of health outcomes as individuals age (e.g., Felitti et al., 1998; Ferraro et al., 2016; Kemp et al., 2018; Ritchie et al., 2011; Roberts et al., 2022). These early-life experiences set into motion processes that can influence exposures to risks and resources throughout the life course and ultimately affect health in later life. However, fewer studies examine the impact of positive early-life experiences, such as parental affection in childhood, on later-life health. Research is also shifting to identifying pathways through which childhood experiences may *indirectly* influence later-life health through other social factors (Lee & Schafer, 2020; Thomas et al., 2022b). The importance of examining these pathways to cognitive function in later life is especially notable given the growing older adult population combined with typical declines in cognitive function at older ages. Moreover, past research has found racial disparities in cognitive function in later life, with evidence suggesting that Black adults experience lower levels of cognitive function and a higher risk of Alzheimer's disease and Alzheimer's disease-related dementias than White adults (Barnes & Bennett, 2014; Díaz-Venegas et al., 2016; Mayeda et al., 2016). Thus, it is important to systematically examine these direct and indirect pathways across racial groups.

There is a large and growing body of research showing the benefits of social relationships for cognitive function (James et al., 2011; Kuiper et al., 2016; Seeman et al., 2001). Despite considerable interest in the early origins of adult health, there is comparatively little research on the ways that relationship quality in childhood may contribute to risks and resources through adult relationship quality and ultimately influence later-life cognitive function. Although social relationships in childhood and adulthood may each affect cognitive function

[1]Department of Sociology, Purdue University, West Lafayette, IN, USA
[2]Center on Aging and the Life Course, Purdue University, West Lafayette, IN, USA
[3]Department of Human Development and Family Science, Purdue University, West Lafayette, IN, USA
[4]Rush Alzheimer's Disease Center, Rush University Medical Center, Chicago, IL, USA
[5]Indiana University School of Medicine, Indianapolis, IN, USA

Corresponding Author:
Patricia A. Thomas, Department of Sociology, Purdue University, 100 N University Street, Suite 1114, West Lafayette, IN 47907, USA.
Email: pthomas4@purdue.edu

in later life, the relationship between the two merits attention because childhood relationships with parents may affect the quality of social relationships in adulthood which, in turn, could affect later cognitive function. Those with greater relationship resources in childhood and adulthood may have increasingly better health trajectories as individuals progress through life, contributing to cumulative inequalities for those with fewer relationship resources. Moreover, we do not know whether the impact of these relationships is distinct for Black and White older adults.

The present study uses longitudinal data to examine pathways from parental affection in childhood to cognitive function in later life through the quality of social relationships (i.e., social support and social strain) with family and friends in adulthood among Black and White older adults. This study contributes to the literature on the impact of *positive* childhood experiences on health in later life.

Childhood Experiences and Cognitive Function

Researchers have highlighted the importance of exposures and accumulation of experiences across the life course influencing health and well-being in later life (Ferraro & Morton, 2018). Cumulative inequality theory emphasizes the importance of childhood exposures for human development, the influence of risks and resources on health and well-being across the life course, and processes associated with inequality (Ferraro & Shippee, 2009). Much of the research examining the impact of childhood exposures on health, including cognitive function, focuses on the impact of adversities and stressors in childhood (Brown, 2010; Felitti et al., 1998; Thomas et al., 2022b). Even among the studies focusing on childhood relationships with parents, specifically, the focus is often on adversity in the form of abuse from parents (Hawkins et al., 2021). Stressors can proliferate and accumulate across the life course, taking a long-term toll on subsequent health (Pearlin et al., 2005). However, relationship resources in childhood, such as affection from parents, may also have enduring and accumulating effects on health.

Although fewer studies have examined whether positive aspects of parental relationships in childhood influence later-life cognitive function, there is some evidence that parental affection in childhood is consequential for cognitive function in later life. A few studies have found that positive and secure early-life relationships influence childhood cognition, promoting growth and development of the brain (Ranson & Urichuk, 2008) as well as academic achievement (Estrada et al., 1987). Positive mother–child interactions have been associated with higher levels of adult episodic memory (Sharifian & Zahodne, 2019). Peng and colleagues (2021) found that higher quality relationships with parents during childhood were associated with better later-life cognitive function among adults in rural China. Others have examined more general aspects of social relationships in childhood and their influence on cognitive function. For example, Zahodne and colleagues (2019b) found that social support in childhood was related to better episodic memory functioning in mid- to later-life adults, but they did not isolate the impact of relationships with parents specifically. Similarly, Lee and Schafer (2020) found in a cross-sectional study that growing up in a happy family was related to better cognitive function among older adults. They argued that childhood family life happiness is an important social context for long-term health and called for future research examining other dimensions of childhood family life. We argue that parental affection in childhood may be an important dimension of early life experiences that could impact lifelong health. Thus, we hypothesize that:

Parental affection in childhood is associated with better cognitive function in later life (Hypothesis 1).

Indirect Pathways from Parental Affection to Cognitive Function through Relationship Quality in Adulthood

Parental affection in childhood may be indirectly associated with better later-life health through the development of meaningful relationships and support during adulthood, demonstrating the proliferation and accumulation of relationship resources across the life course with resultant consequences for cognitive function, as predicted by cumulative inequality theory. Social relationships across the life course may be resources or risks, depending on the quality of those relationships. Past theoretical and empirical research has shown the importance of social relationships for health (Berkman et al., 2000; House et al., 1988; Umberson & Montez, 2010), with social integration theory arguing that social relationships provide important attachments to the social structure that can influence health. Berkman and colleagues (2000) outlined psychological, behavioral, and physiological reasons why social attachments can benefit or deteriorate health, with implications for cognitive function in later life. For example, negative or positive relationship quality can produce or alleviate psychological distress (Sherman et al., 2011) which, in turn, can influence cognitive decline over time (Wilson et al., 2007). Positive relationship quality can help individuals develop a sense of meaning and belonging (Berkman et al., 2000), which can encourage engagement in health-promoting behaviors (Cho et al., 2014; Thomas, Richards, & Forster, 2022). In contrast, the stress of relationship strain may lead individuals to cope by engaging in unhealthy behaviors (Umberson et al., 2008). Moreover, negative relationship quality is associated with hypothalamic-pituitary-adrenal (HPA) axis reactivity, which is related to a variety of poor health conditions (Friedman et al., 2012). Conversely, positive relationship quality can reduce HPA reactivity (Carter, 1998), and this reduced physiological reactivity may be protective for cognitive function. Prior research has shown that high-quality social relationships, measured in a variety of ways, are positively related to cognitive function (James et al., 2011; Seeman et al., 2001).

In contrast, poorer quality relationships can be an important source of stress (Rook, 2014), which can lead to worse cognitive function (de Kloet et al., 1999; Lupien et al., 2007).

Childhood adversities can trigger processes and patterns of engaging in social interactions that can lead to lower relationship quality in adulthood, including patterns of mistrust, chronic threat vigilance, lower sense of mastery and control, and unhealthy behaviors used to cope with stress (Colman & Widom, 2004; Miller et al., 2011; Umberson et al., 2016). In contrast, we argue that early-life parental affection may contribute to the development of more meaningful and beneficial relationships in adulthood, with resultant benefits for health. Attachment theory emphasizes the importance of childhood relationships with parents, with secure attachment styles to parents in childhood linked to better relationship quality in adult relationships (Hazan & Shaver, 1987). Research on positive relationships in childhood suggests that positive early-life relationships may contribute to trajectories of better relationships across the life course. For example, Lee and colleagues (2015) found that those who were considered cherished children due to positive parental relationships in their early-life reported more supportive relationships in midlife as well as higher levels of well-being in later life.

Relatively little attention has been paid to potential indirect effects of parental affection in childhood on later-life cognitive health, specifically, through the quality of social relationships in adulthood. Experiencing high parental affection in childhood may set into motion processes that have indirect implications for later-life cognitive function. A limited number of studies have examined social relationships as a pathway through which childhood disadvantage more generally may influence mental or physical health (Lyu & Agrigoroaei, 2017; Umberson et al., 2014) or cognitive health (Thomas et al., 2022b). Although these studies did not examine parental affection specifically, they suggest the potential importance of social relationships as notable pathways from childhood experiences to health. Whereas childhood stressors often lead to stress proliferation across the life course (Pearlin et al., 2005), including more stressful social relationships in adulthood (Thomas et al., 2022b), better early-life relationship quality through greater parental affection may contribute to more meaningful, supportive, and less strained relationships in adulthood, which in turn may be protective for cognitive function. Thus, we hypothesize that:

*Greater parental affection in childhood is associated with higher-quality social relationships (*i.e.*, greater social support and less strain in social relationships) in adulthood* (Hypothesis 2).

Higher-quality social relationships in adulthood are associated with better cognitive function in later life (Hypothesis 3).

Greater parental affection in childhood is indirectly associated with better cognitive function in later life through higher levels of relationship quality in adulthood (Hypothesis 4).

Relationship Quality from Different Sources and Cognitive Function for Black and White Older Adults

Finally, it is important to examine whether the accumulation of relationship resources and risks across the life course and their impact are distinct across racial groups. We examine whether the associations between parental affection in childhood, adult relationship quality from multiple sources, and cognitive function in later life are distinct for Black and White older adults. Some studies have found differences in the size and stability of social networks and social engagement by race, with disadvantages for Black adults compared to their White counterparts (Barnes et al., 2004; Cornwell, 2015). Yet, other researchers have found higher levels of family support among Black adults than White adults, which may be salubrious for mental and cognitive health (Louie et al., 2022). Given potentially higher levels of family support for Black adults, perhaps family support/strain may have a different impact than friend support/strain among Black compared to White adults. Prior research has suggested nuanced differences in the influence of support and strain from different relationship types, such as family versus friends, on a variety of health-related outcomes, such as mental health (Thomas, 2016), physical activity (Larsen et al., 2014), and cognitive function (Windsor et al., 2014). Given the mixed evidence by race and nuanced differences in the impact of family and friend relationships on health, we examine pathways from parental affection to cognitive function through family and friend relationships by race as exploratory research questions rather than forming specific hypotheses.

Method

Data

Data for the current study come from three waves of the Midlife in the United States (MIDUS) study. MIDUS is a national longitudinal study of community-dwelling adults aged 25–74 at the first wave of data collection (1995–1996), with follow-up data collection in 2004–2006 (MIDUS 2) and 2013–2014 (MIDUS 3). To improve racial/ethnic diversity in the MIDUS sample, African American residents of Milwaukee County, WI, were sampled at MIDUS 2 (MKE subsample; n = 592). Telephone interviews and self-administered questionnaires were administered at each wave.

The full MIDUS sample included 7700 respondents with an age range of 25–74 at M1; however, given our research questions and focus on cognitive function in later life, we limited the sample to those aged 50 and older at M2 (N =

3466), reported their race as either Black or White (due to small sample sizes of other races) (N = 3400), and who had completed the cognitive function assessment at MIDUS 3 (final analytic sample N = 1983).

Measurement

Cognitive Function. Our dependent variable is cognitive function in MIDUS 3. MIDUS began the Cognitive Project at MIDUS 2, which included administration of the Brief Test of Adult Cognition by Telephone (BTACT) (Tun & Lachman, 2006). At MIDUS 3, a second BTACT assessment was administered. The BTACT composite includes the standardized mean of z-scores for six subtests: immediate word list recall, delayed word list recall, backward digit span, number series, counting backward speed task, and category fluency. We created a standardized composite score for each wave.

Parental Affection in Childhood. Maternal (α = .91) and paternal (α = .93) affection in childhood (Rossi, 2001) were measured retrospectively at MIDUS 1 (M2 for MKE subsample). Each affection scale contained seven items. The first item asked participants "How would you rate your relationship with your mother [father] during the years you were growing up?". Responses for this item ranged from 1 ("excellent") to 5 ("poor"). The other six items included: "How much did she [he] understand your problems and worries?"; "How much could you confide in her [him] about things that were bothering you?"; "How much love and affection did she [he] give you?"; "How much time and attention did she [he] give you when you needed it?"; "How much effort did she [he] put into watching over you and making sure you had a good upbringing?"; and "How much did she [he] teach you about life?". Response options ranged from 1 (not at all) to 4 (a lot) for these six items. Because the first item mentioned above ranged from 1 to 5, it was multiplied by a .75 factorial to maintain continuity with other items, consistent with MIDUS protocol. We coded the items so that higher scores reflect greater levels of affection. We then averaged the maternal and paternal affection scales to create an overall parental affection score (range .96–3.96) for participants who had responses for at least four of the seven items on at least one of the scales.

Social Support and Social Strain in Adulthood. Participants' social support and social strain were assessed at MIDUS 2 across three domains: spouse/partner, family, and friends. Spouse/partner *support* was assessed with six items: "How much does your spouse or partner really care about you"; "How much does he or she understand the way you feel about things?"; "How much does he or she appreciate you?"; "How much do you rely on him or her for help if you have a serious problem?"; "How much can you open up to him or her if you need to talk about your worries?"; and "How much can you relax and be yourself around him or her?". Four items were used for family support: "Not including your spouse or partner, how much do members of your family really care about you?"; "How much do they understand the way you feel about things?"; "How much can you rely on them for help if you have a serious problem?"; and "How much can you open up to them if you need to talk about your worries?". Friend support was assessed using the same four items, with the first item modified as "How much do your friends really care about you?". All three support scales were coded from 1 ("not at all") to 4 ("a lot"), so that higher values represent higher levels of social support. Support in each domain was calculated as the mean of the respective items. Reliability coefficients for spouse/partner, family, and friend support were .90, .84, and .88, respectively.

Similar to social support, spouse/partner *strain* was measured with six items: "How often does your spouse or partner make too many demands on you?"; "How often does he or she argue with you?"; "How often does he or she make you feel tense?"; "How often does he or she criticize you?"; "How often does he or she let you down when you are counting on him or her?"; "How often does he or she get on your nerves?" Social strain for the family domain was measured with four items: "Not including your spouse or partner, how often do members of your family make too many demands on you?"; "How often do they criticize you?"; "How often do they let you down when you are counting on them?"; "How often do they get on your nerves?". Friend strain was assessed using the same four items, with the first item modified as "How often do your friends make too many demands on you?". All three strain scales were coded from 1 ("never") to 4 ("often"), so that higher scores reflected higher strain. Strain in each domain was calculated as the mean of the respective items. Reliability coefficients for spouse/partner, family, and friend strain were .87, .79, and .79, respectively.

For our first set of analyses, we averaged participants' responses related to support and strain across each domain (i.e., spouse, family, and friends) to create one average social support score and one average social strain score. In our second set of analyses, we examined support and strain separately by family (average of spouse/partner and other family members) and friend domains to examine whether the *source* of support/strain was an important driver of the impact of average support/strain on cognitive function (Walen & Lachman, 2000).

Race. At each wave, participants were asked about their race. At MIDUS 1, it was a single forced-choice question (i.e., "What race do you consider yourself to be?"). At MIDUS 2 and 3, participants were able to indicate multiple races in response to the question, "What are your main racial origins -- that is, what race or races are your parents, grandparents, and other ancestors?". We coded participants as Black if they reported "Black/African American" at any of the three waves. We coded participants as White if they reported their race as "White" but did not report their race also as

"Black/African American" at any wave. Participants of other races were not included due to small sample sizes.

Covariates. We adjusted for age, measured continuously in years, at MIDUS 2. Dichotomous variables were used for gender (0 = men; 1 = women) and marital status (0 = not married; 1 = married), both measured at MIDUS 1 (M2 for the MKE sample). At M1 (M2 for the MKE sample), respondents indicated their highest level of educational attainment using 12 categories ranging from "no school/some grade school" to "PhD, MD, JD, or other professional degree." We combined responses to create a dichotomous variable (0 = less than college; 1 = college degree or higher). In identifying covariates, we explored several possible indicators of childhood adversity, including parental divorce/separation, residential instability, abuse, and financial distress in childhood. Based on model parsimony and better fit, we opted to include only parental divorce/separation and residential instability during childhood in our final models. Similar to prior work (Bures, 2003; Teas et al., 2023), we created a dichotomous residential instability in childhood variable, where residential instability is characterized by moving to a new neighborhood or town ≥3 times during childhood. We also used a dichotomous measure of parental divorce/separation in childhood (1 = parents divorced/separated during childhood). Both of these variables were assessed at M1 (M2 for the MKE sample). We also controlled household size at M2, measured as the total number of individuals currently living in the respondent's household. Finally, we controlled for cognitive function at MIDUS 2 (described above).

Analytic Strategy

We analyzed a structural equation modeling (SEM) framework using Stata 18. The SEM included parental affection as a predictor, social support and social strain as mediators, and cognitive function at MIDUS 3 as the outcome. We used residualized change models within our SEM, controlling for cognitive function at the prior time point (i.e., MIDUS 2). By adjusting for cognitive function at MIDUS 2, this residualizes the outcome such that the predictor variables are explaining only the variability not explained by cognitive function at MIDUS 2, so it can be interpreted as the variability due to change (Castro-Schilo & Grimm, 2017; Yang, 2006). Thus, coefficients for predictor variables should be interpreted as predicting change in cognitive function from MIDUS 2 to MIDUS 3. Visual inspections of bivariate scatterplots confirmed linearity between predictors and outcomes. The first set of models included average social support and average social strain (average of spouse/partner, other family, and friend domains) as mediators. The second set of models used family support and family strain as mediators, controlling for friend support and strain; and the third set of models used friend support and friend strain as mediators, controlling for family support and strain. We performed estimations with full information maximum likelihood (FIML), using the Stata maximum likelihood with missing values option, to account for missingness on predictor variables.

We estimated our models on the full analytic sample as well as by race using a multiple group SEM analysis to fit the model across both racial groups. We used postestimation SEM tools (i.e., Wald tests) to test for invariance of parameters across groups. We also used delta method standard errors to examine invariance in indirect effects across groups.

Results

Table 1 displays the descriptive statistics for the full sample and by race. Significant differences by race were examined using t-tests; supplemental analyses using Mann–Whitney tests showed consistent results, except that friend support was no longer significantly different by race. Black respondents reported significantly higher levels of parental affection in childhood than their White counterparts (3.13 compared to 2.93, on a scale of .96–3.96). White adults reported higher-quality relationships in adulthood than Black adults, with average levels of social support of 3.5 for the full sample, 3.38 among Black respondents, and 3.52 among White respondents; and average scores of social strain of 1.96 for the full sample, 2.06 among Black respondents, and 1.95 among White respondents (on a scale of 1–4). There were similar patterns when separated by family and friend domains, with White respondents experiencing higher levels of family support and friend support and lower levels of family strain and friend strain than Black respondents. Black respondents had lower cognitive function scores at both M2 and M3 than White respondents. In terms of control variables, the White sample was older, had a higher proportion of married individuals and men, and higher education levels than Black respondents.

Table 2 shows the structural equation models examining pathways from parental affection, social support (average across all domains), and cognitive function at M3 (controlling for cognitive function at M2, so coefficients should be interpreted as change in cognitive function from M2 to M3). Note that strain was not related to cognitive function in any models (not shown). We tested indirect pathways through both social support and social strain, but we present social support and cognitive function outcomes only because pathways through social strain were not significant in any of the models. In the full sample, Black sample, and White sample, greater parental affection in childhood is associated with greater average social support in adulthood. Average social support is also associated with better cognitive function in later life among the full sample and among Black respondents. There is a significant indirect effect from parental affection to better cognitive function through average support in the full sample ($b = 0.017$, $p < .05$) and among Black respondents ($b = 0.047$, $p < .05$), but the indirect effect was not significant among White respondents. Despite this, the

Table 1. Descriptive Statistics for the Analysis of the MIDUS Sample and by Race.

	Full Sample		Black Adults		White Adults	
	N = 1983		*N* = 222		*N* = 1761	
	Mean	SD	Mean	SD	Mean	SD
Age (50–83)	60.97	7.78	59.09***	7.08	61.21	7.83
Black	.11					
Women	.56		.68***		.54	
Married	.71		.37***		.76	
College degree or higher	.37		.21***		.39	
Childhood residential instability	.25		.23		.26	
Parents divorced or separated	.07		.07		.07	
Household size (M2) (1–9)	2.16	.98	1.87***	1.02	2.19	.97
Parental affection (M1) (.96–3.96)	2.95	.64	3.13***	.68	2.93	.63
Average social support (M2) (1.5–4)	3.50	.44	3.38***	.53	3.52	.42
Average social strain (M2) (1–4)	1.96	.43	2.06***	.54	1.95	.42
Family support (M2) (1–4)	3.60	.47	3.47***	.61	3.61	.45
Friend support (M2) (1–4)	3.33	.64	3.23*	.77	3.34	.62
Family strain (M2) (1–4)	2.05	.52	2.17***	.69	2.04	.49
Friend strain (M2) (1–4)	1.80	.50	1.91**	.67	1.79	.47
Cognitive function (M2) (–2.73–3.16)	.20	.95	−.51***	.94	.27	.93
Cognitive function (M3) (–2.91–3.45)	.00	1.00	−.58***	.94	.07	.98

Note. Ranges provided in parentheses. M1 = MIDUS wave 1; M2 = MIDUS 2; M3 = MIDUS 3. Variables measured at M1 for the full sample were measured at M2 for the Milwaukee sample due to timing of data collection.
*$p < .05$, **$p < .01$, and ***$p < .001$ significant *t* test between Black and White respondents.

Table 2. Structural Equation Models Predicting Average Social Support and Cognitive Function.

	Full Sample		Black		White	
	Average support	Cognitive function	Average support	Cognitive function	Average support	Cognitive function
Parental affection	.167*** (.015)	.019 (.024)	.177** (.053)	.015 (.074)	.164*** (.016)	.018 (.026)
Average support	--	.101** (.038)	--	.264** (.098)	--	.073 (.041)
	RMSEA = .018, TLI = .993		RMSEA = .009, TLI = .998			
	N = 1983		*N* = 222		*N* = 1761	

Note. RMSEA = root mean square error of approximation; TLI = Tucker–Lewis index. All models controlled for age, gender, race (full sample), marital status, household size, and average relationship strain. The first step of the mediation model (predicting support) additionally controlled for residential instability and parental divorce/separation; the second step of the mediation model (predicting cognition) also controlled for college education and prior cognitive function. Direct effects noted in table, indirect effects are summarized below:
Full sample: Parental affection to cognitive function through average support (b = .017, $p < .05$).
Black sample: Parental affection to cognitive function through average support (b = .047, $p < .05$).
White sample: Indirect effect not significant.
*$p < .05$, **$p < .01$, and ***$p < .001$.

invariance tests by race did not show significant differences in these indirect pathways by race. Figure 1 illustrates significant relationships among key variables among each group.

Table 3 displays structural equation models similar to Table 2 but separating family (Panel A) and friend (Panel B) domains (while controlling for support and strain from the other domain as well as all other covariates, including cognitive function at M2). Again, for ease of presentation we do not present social strain in the table because none of the pathways through social strain were significant. Similar to the findings related to average social support, parental affection in childhood predicts higher levels of family support in adulthood in the full sample and for both racial groups. Higher levels of family support predict better cognitive function in later life in the full sample and among Black respondents but not White respondents. The indirect effects of parental affection in childhood on changes in cognitive function in later life through family social support were significant in the full sample (b = 0.012, $p < .05$) and among Black respondents (b = 0.085, $p < .01$) but not White respondents, and invariance tests in these pathways indicated significant differences in these pathways by race (b = .086,

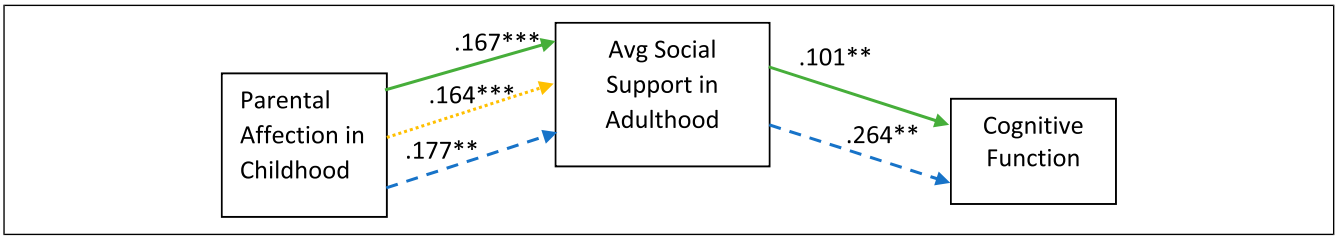

Figure 1. Significant pathways from parental affection in childhood, *average* social support, and cognitive function in later life. Note. Only significant pathways shown. Full sample = solid green arrow; White sample = dotted yellow arrow; Black sample = dashed blue arrow.

Table 3. Structural Equation Models Predicting Family Support (Panel A), Friend Support (Panel B), and Cognitive Function (Both Panels).

	Full Sample		Black		White	
PANEL A	Family support	Cognitive function	Family support	Cognitive function	Family support	Cognitive function
Parental affection	.131*** (.015)	.017 (.024)	.301*** (.053)	−.029 (.078)	.103*** (.016)	.017 (.026)
Family support	–	.093* (.039)	–	.301** (.097)	–	.045 (.043)
	RMSEA = .016, TLI = .994		RMSEA = .018, TLI = .994			
PANEL B	Friend support	Cognitive function	Friend support	Cognitive function	Friend support	Cognitive function
Parental affection	.095*** (.023)	.017 (.024)	−.085 (.086)	−.021 (.078)	.118*** (.024)	.017 (.026)
Friend support	–	.015 (.026)	–	.030 (.065)	–	.019 (.028)
	RMSEA = .047, TLI = .944		RMSEA = .043, TLI = .955			
	N = 1983		*N* = 222		*N* = 1761	

Note. RMSEA = root mean square error of approximation; TLI = Tucker–Lewis index. All models included age, gender, race (full sample), marital status, household size, family strain, and friend strain. The first step of the mediation model (predicting family or friend support) additionally controlled for residential instability and parental divorce/separation; the second step of the mediation model (predicting cognition) also controlled for college education and prior cognitive function. Note that the family models (Panel A) controlled for friend support and friend strain, and the friend models (Panel B) controlled for family support and family strain.
Direct effects noted in table, indirect effects are summarized below:
Full sample: Parental affection to cognitive function through family support (b = 0.012, $p < .05$).
Black sample: Parental affection to cognitive function through family support (b = 0.091, $p < .01$).
No significant indirect effect for White sample for family support.
No significant indirect effects through friend support for any group.
*$p < .05$, **$p < .01$, and ***$p < .001$.

$p < .05$). Figure 2 Panel A illustrates the significant pathways among parental affection, family support, and cognitive function for each group. In Panel B of Table 3 (and Panel B of Figure 2), we see that parental affection in childhood is related to higher levels of support from friends in adulthood in the full sample and among White respondents. However, friend support and friend strain in adulthood were not significantly related to changes in later-life cognitive function. There were no significant indirect effects from parental affection in early life to cognitive function in later life through friend support or strain.

Discussion

Although scores of studies have identified the long-term health consequences of childhood adversities (Felitti et al., 1998; Ferraro et al., 2016; Thomas et al., 2022b), the present study shifts the focus to a positive early-life childhood condition as well as potential pathways through which it may influence health. Guided by cumulative inequality theory, social integration theory, and attachment theory, and using a national, longitudinal sample, we examine parental affection in childhood and whether social relationship quality in adulthood is a pathway through which parental affection may have long-term effects on cognitive function in later life. Cognitive function is an important outcome to examine due to the growing older adult population and prevalence of Alzheimer's disease and related dementias (Brookmeyer et al., 2018). Additionally, given racial disparities in cognitive function and Alzheimer's disease risk among older adults (Barnes & Bennett, 2014; Díaz-Venegas et al., 2016; Mayeda et al., 2016), we examined these direct and indirect pathways across racial groups.

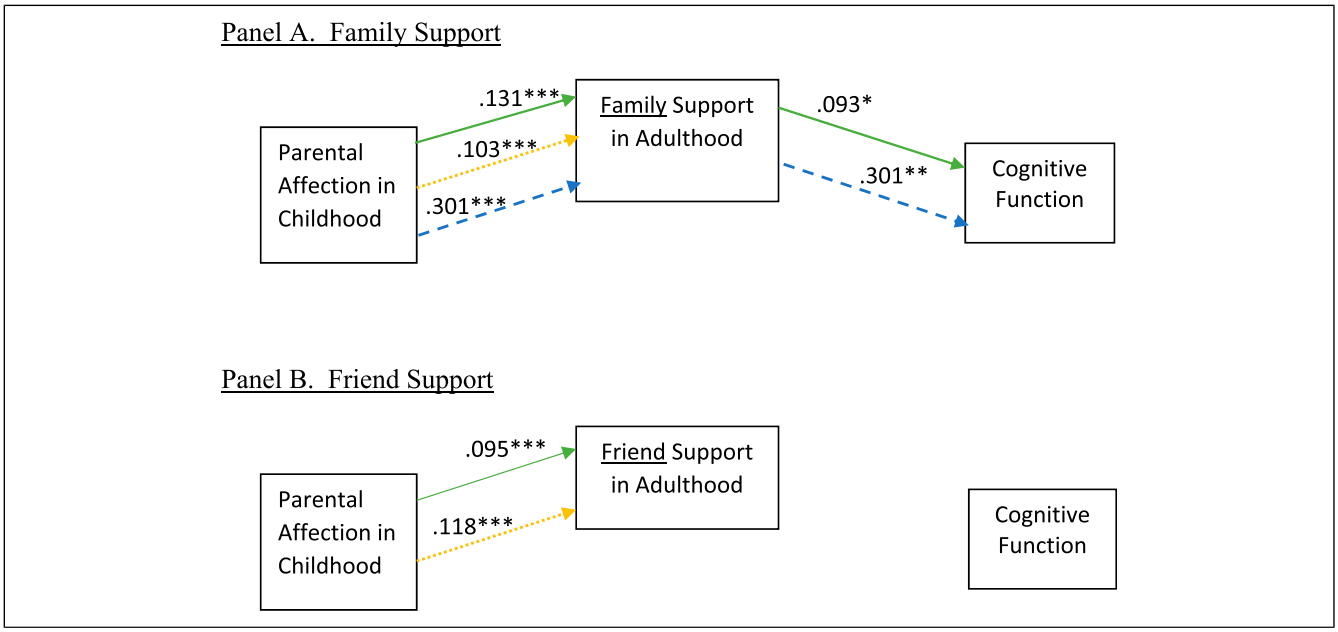

Figure 2. Significant pathways from parental affection in childhood, social support from *Family* (Panel A) and *Friend* (Panel B) domains, and cognitive function in later life. Note. Only significant pathways shown. Full sample = solid green arrow; White sample = dotted yellow arrow; Black sample = dashed blue arrow.

The analyses provide compelling evidence that parental affection in early life influences cognitive function in later life through greater social support in adulthood.

Our first hypothesis predicted that parental affection in childhood would be associated with better cognitive function in later life. This hypothesis was not supported directly, as there were no significant direct effects of early-life parental affection on changes in later-life cognitive function. Negative social exchanges often have stronger effects on health than positive exchanges (Rook, 2014), so it may be that negative childhood exposures, such as major childhood stressors and traumas, are more potent in directly influencing later-life health (Ferraro et al., 2016; Greenfield et al., 2021; Thomas et al., 2022b). Perhaps positive childhood exposures are not potent enough to have such a long-term, direct impact on later-life cognitive function but instead are more likely to affect it indirectly through its influence on more proximal factors. Indeed, our findings are consistent with Lee and Schafer (2020), who found stronger evidence of indirect effects than direct effects of childhood family-life happiness on later-life cognitive function.

Our next hypothesis predicted that greater parental affection in childhood would be associated with better quality social relationships (i.e., greater social support and less relationship strain) in adulthood (Hypothesis 2). We found evidence to support Hypothesis 2 in terms of social support in adulthood. Greater parental affection was associated with greater average social support and greater family support in all groups as well as greater friend support among the full sample and the White sample. Past research has found that negative childhood exposures can lead to negative relationship quality in adulthood (Colman & Widom, 2004; Miller et al., 2011; Umberson et al., 2016), so perhaps positive childhood exposures have a greater impact on positive, rather than negative, relationship quality in adulthood. Experiencing greater levels of affection from parents in childhood could prompt more positive, meaningful relationships and more secure attachments to parents that may provide positive role models for relationships across the life course. Indeed, Lee and colleagues (2015) found that positive parental relationships in early-life have been linked to more supportive relationships in midlife. Parental affection was not significantly related to relationship strain in adulthood, however. The parental affection measure has some close conceptual overlaps with the social support measures, such as understanding, care, and being able to rely upon one's relationships; but there were not such conceptual similarities to the strain measures, so perhaps the lack of significance between parental affection and strain was due to greater conceptual differences in these domains. It is also of note that strain levels were relatively low on average in this sample. Perhaps even if one has secure attachments and positive role models for relationships, some level of relationship strain may still happen—with people in your social circle sometimes getting on your nerves or criticizing you. Perhaps parental affection in childhood could help adults develop skills to avoid relationships that are more severely negative than the typical occasional

relationship strains, so future research with different measures of intensity of relationship strain may yield fruitful insights.

Next, we hypothesized that better quality social relationships would be associated with better cognitive function in later life (Hypothesis 3). We found support for Hypothesis 3 in some cases. Higher levels of average social support and family support in adulthood were related to better cognitive function in the full sample and the Black sample. None of the strain measures were associated with changes in cognitive function for any of the groups. Past research has linked social support to better cognitive function (Moorman & Pai, 2024; Zhu et al., 2012); however, evidence in the literature has been mixed regarding the impact of social strain and social support on later-life cognitive function (Thomas & Umberson, 2018; Zahodne et al., 2019a). Further data and analysis on the contexts surrounding types of support and strain, whether support was wanted, and so forth, merit further research attention.

Our last hypothesis predicted that greater parental affection in childhood would be indirectly associated with better cognitive function in later life through higher levels of relationship quality in adulthood (Hypothesis 4). We found some support for this hypothesis, with significant indirect effects in the structural equation models through average social support and through family social support in the full sample and among Black respondents. Parental affection was not related to relationship strain, and relationship strain was not associated with cognitive function, which means relationship strain is not a pathway from which parental affection influences cognitive function. Our findings fit with studies finding social support to be generally beneficial for cognitive function (Moorman & Pai, 2024; Zhu et al., 2012), which may extend to support from parents through affection in childhood as well as support from relationships as an adult. As cumulative inequality theory would predict, relationship resources in childhood in the form of parental affection may have a cascading effect on relationship resources in adulthood through greater social support, that in turn benefit cognitive function over time in later life.

Although we did not make specific hypotheses about racial differences in these pathways, we conducted a multiple group analysis to examine whether these pathways were distinct among Black and White older adults. Findings suggest that pathways from early-life parental affection to later-life cognitive function through average social support and family support in adulthood were significant among Black respondents but not among White respondents. Our findings regarding family support are consistent with prior research suggesting a greater impact of family support on health for Black adults than for White adults (Louie et al., 2022). It is also notable that descriptive statistics in our study suggest that Black respondents experienced greater parental affection in childhood than their White counterparts, which could provide an important resource for Black older adults' cognitive function or health more generally. These findings suggest that policies providing greater resources to Black families across the life course may be especially beneficial for the cognitive health of Black older adults, and it is worth investigating other social resources that could potentially directly or indirectly benefit Black families and health across the life course.

The findings of this study should be interpreted with the following limitations in mind. First, parental affection was measured retrospectively, which is subject to recall bias. However, research suggests that autobiographical experiences can be recalled accurately (Conway, 2009), and supplemental analyses excluding those with low baseline cognitive function scores to reduce potential bias yielded the same pattern of results. Second, MIDUS only has two waves of measurement for cognitive function, which limits the types of analysis we could conduct. Future research with more waves of data could enable the modeling of baseline cognitive function and change over time in growth curve models. Third, the sample of Black respondents is not large. Typically, small samples are underpowered, with larger standard errors and lower likelihood of significant results, so finding significant coefficients among Black respondents that were consistent with findings in the full sample provides important information. However, future work with larger, nationally representative samples of Black respondents as well as inclusion of more races and ethnicities would be beneficial. Fourth, we are limited by the types of relationship measures in these data. Although the parental affection in childhood scale is a unique and useful measure, other types of childhood relationships, such as with grandparents, siblings, and peer friendships, would be useful to examine as well. Moreover, examining more nuanced measures of relationship quality in adulthood in multiple types of social relationships could provide greater leverage in understanding the complexity of the cognitive impact of social relationship quality in adulthood.

Despite these limitations, this study provides important evidence of cumulative inequality patterns starting with relationship resources early in the life course that may help individuals develop more meaningful and beneficial relationships in adulthood resulting in greater relationship resources throughout the life course and benefitting later-life cognitive function compared to those with fewer relationship resources accumulating across the life course. Children who experience greater affection from their parents during their early life may see benefits as they age into adulthood and later life. The impact of positive early-life exposures—not just negative exposures, such as childhood adversities—may accumulate across the life course, setting in motion processes providing greater positive social exposures and benefits as individuals progress through life, culminating in better later-life health, including cognitive function.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the National Institute on Aging (AG043544 and AG068388 awarded to K.F.F).

ORCID iDs

Patricia A. Thomas https://orcid.org/0000-0002-5699-9779
Elizabeth Teas https://orcid.org/0000-0002-1070-1404
Elliot Friedman https://orcid.org/0000-0002-3587-2138
Lisa L. Barnes https://orcid.org/0000-0002-0072-9817
Madison R. Sauerteig-Rolston https://orcid.org/0000-0002-3768-3744
Kenneth F. Ferraro https://orcid.org/0000-0003-3692-5235

References

Barnes, L. L., & Bennett, D. A. (2014). Alzheimer's disease in African Americans: Risk factors and challenges for the future. *Health Affairs*, *33*(4), 580–586. https://doi.org/10.1377/hlthaff.2013.1353

Barnes, L. L., Mendes de Leon, C. F., Bienias, J. L., & Evans, D. A. (2004). A longitudinal study of Black–White differences in social resources. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *59*(3), S146–S153. https://doi.org/10.1093/geronb/59.3.S146

Berkman, L. F., Glass, T., Brissette, I., & Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science & Medicine*, *51*(6), 843–857. https://doi.org/10.1016/S0277-9536(00)00065-4

Brookmeyer, R., Abdalla, N., Kawas, C. H., & Corrada, M. M. (2018). Forecasting the prevalence of preclinical and clinical Alzheimer's disease in the United States. *Alzheimer's and Dementia*, *14*(2), 121–129. https://doi.org/10.1016/j.jalz.2017.10.009

Brown, M. T. (2010). Early-life characteristics, psychiatric history, and cognition trajectories in later life. *The Gerontologist*, *50*(5), 646–656. https://doi.org/10.1093/geront/gnq049

Bures, R. M. (2003). Childhood residential stability and health at midlife. *American Journal of Public Health*, *93*(7), 1144–1148. https://doi.org/10.2105/ajph.93.7.1144

Carter, C. S. (1998). Neuroendocrine perspectives on social attachment and love. *Psychoneuroendocrinology*, *23*(8), 779–818. https://doi.org/10.1016/S0306-4530(98)00055-9

Castro-Schilo, L., & Grimm, K. J. (2017). Using residualized change versus difference scores for longitudinal research. *Journal of Social and Personal Relationships*, *35*(1), 32–58. https://doi.org/10.1177/0265407517718387

Cho, J. H., Jae, S. Y., Choo, I. L. H., & Choo, J. (2014). Health-promoting behaviour among women with abdominal obesity: A conceptual link to social support and perceived stress. *Journal of Advanced Nursing*, *70*(6), 1381–1390. https://doi.org/10.1111/jan.12300

Colman, R. A., & Widom, C. S. (2004). Childhood abuse and neglect and adult intimate relationships: A prospective study. *Child Abuse & Neglect*, *28*(11), 1133–1151. https://doi.org/10.1016/j.chiabu.2004.02.005

Conway, M. A. (2009). Episodic memories. *Neuropsychologia*, *47*(11), 2305–2313. https://doi.org/10.1016/j.neuropsychologia.2009.02.003

Cornwell, B. (2015). Social disadvantage and network turnover. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *70*(1), 132–142. https://doi.org/10.1093/geronb/gbu078

de Kloet, E. R., Oitzl, M. S., & Joëls, M. (1999). Stress and cognition: Are corticosteroids good or bad guys? *Trends in Neurosciences*, *22*(10), 422–426. https://doi.org/10.1016/s0166-2236(99)01438-1

Díaz-Venegas, C., Downer, B., Langa, K. M., & Wong, R. (2016). Racial and ethnic differences in cognitive function among older adults in the USA. *International Journal of Geriatric Psychiatry*, *31*(9), 1004–1012. https://doi.org/10.1002/gps.4410

Estrada, P., Arsenio, W. F., Hess, R. D., & Holloway, S. D. (1987). Affective quality of the mother–child relationship: Longitudinal consequences for children's school-relevant cognitive functioning. *Developmental Psychology*, *23*(2), 210–215. https://doi.org/10.1037//0012-1649.23.2.210

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

Ferraro, K. F., & Morton, P. M. (2018). What do we mean by accumulation? Advancing conceptual precision for a core idea in gerontology. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *73*(2), 269–278. https://doi.org/10.1093/geronb/gbv094

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

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

Friedman, E. M., Karlamangla, A. S., Almeida, D. M., & Seeman, T. E. (2012). Social strain and cortisol regulation in midlife in the US. *Social Science & Medicine*, *74*(4), 607–615. https://doi.org/10.1016/j.socscimed.2011.11.003

Greenfield, E. A., Moorman, S., & Rieger, A. (2021). Life course pathways from childhood socioeconomic status to later-life cognition: Evidence from the Wisconsin Longitudinal Study. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *76*(6), 1206–1217. https://doi.org/10.1093/geronb/gbaa062

Hawkins, M. A. W., Layman, H. M., Ganson, K. T., Tabler, J., Ciciolla, L., Tsotsoros, C. E., & Nagata, J. M. (2021). Adverse childhood events and cognitive function among young adults: Prospective results from the national longitudinal study of adolescent to adult health. *Child Abuse & Neglect*, *115*, 105008. https://doi.org/10.1016/j.chiabu.2021.105008

Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology*, *52*(3), 511–524. https://doi.org/10.1037/0022-3514.52.3.511

House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science*, *241*(4865), 540–545. https://doi.org/10.1126/science.3399889

James, B. D., Wilson, R. S., Barnes, L. L., & Bennett, D. A. (2011). Late-life social activity and cognitive decline in old age. *Journal of International Neorpsychology Society*, *17*(6), 998–1005. https://doi.org/10.1017/S1355617711000531

Kemp, B. R., Ferraro, K. F., Morton, P. M., & Mustillo, S. A. (2018). Early origins of adult cancer risk among men and women: Influence of childhood misfortune? *Journal of Aging and Health*, *30*(1), 140–163. https://doi.org/10.1177/0898264316670049

Kuiper, J. S., Zuidersma, M., Zuidema, S. U., Burgerhof, J. G. M., Stolk, R. P., Oude Voshaar, R. C., & Smidt, N. (2016). Social relationships and cognitive decline: A systematic review and meta-analysis of longitudinal cohort studies. *International Journal of Epidemiology*, *45*(4), 1169–1206. https://doi.org/10.1093/ije/dyw089

Larsen, B. A., Strong, D., & Linke, S. E. (2014). The association between family and friend integration and physical activity: Results from the NHIS. *International Journal of Behavioral Medicine*, *21*(3), 529–536. https://doi.org/10.1007/s12529-013-9318-x

Lee, H., & Schafer, M. (2020). Are positive childhood experiences linked to better cognitive functioning in later life? Examining the role of life course pathways. *Journal of Aging and Health*, *33*(3-4), 217–226. https://doi.org/10.1177/0898264320972547

Lee, L. O., Aldwin, C. M., Kubzansky, L. D., Chen, E., Mroczek, D. K., Wang, J. M., & Spiro, A. (2015). Do cherished children age successfully? Longitudinal findings from the veterans affairs normative aging study. *Psychology and Aging*, *30*(4), 894–910. https://doi.org/10.1037/pag0000050

Louie, P., Upenieks, L., Erving, C. L., & Thomas Tobin, C. S. (2022). Do racial differences in coping resources explain the black–white paradox in mental health? A test of multiple mechanisms. *Journal of Health and Social Behavior*, *63*(1), 55–70. https://doi.org/10.1177/00221465211041031

Lupien, S. J., Maheu, F., Tu, M., Fiocco, A., & Schramek, T. E. (2007). The effects of stress and stress hormones on human cognition: Implications for the field of brain and cognition. *Brain and Cognition*, *65*(3), 209–237. https://doi.org/10.1016/j.bandc.2007.02.007

Lyu, J., & Agrigoroaei, S. (2017). Childhood misfortune and adult health in a national study: The mediational role of the quality of social relations. *International Journal of Aging and Human Development*, *84*(3), 213–230. https://doi.org/10.1177/0091415016669147

Mayeda, E. R., Glymour, M. M., Quesenberry, C. P., & Whitmer, R. A. (2016). Inequalities in dementia incidence between six racial and ethnic groups over 14 years. *Alzheimer's and Dementia*, *12*(3), 216–224. https://doi.org/10.1016/j.jalz.2015.12.007

Miller, G. E., Chen, E., & Parker, K. J. (2011). Psychological stress in childhood and susceptibility to the chronic diseases of aging: Moving toward a model of behavioral and biological mechanisms. *Psychological Bulletin*, *137*(6), 959–997. https://doi.org/10.1037/a0024768

Moorman, S. M., & Pai, M. (2024). Social support from family and friends, educational attainment, and cognitive function. *Journal of Applied Gerontology*, *43*(4), 396–401. https://doi.org/10.1177/07334648231203840

Pearlin, L. I., Schieman, S., Fazio, E. M., & Meersman, S. C. (2005). Stress, health, and the life course: Some conceptual perspectives. *Journal of Health and Social Behavior*, *46*(2), 205–219. https://doi.org/10.1177/002214650504600206

Peng, C., Burr, J. A., Yang, D., & Lu, N. (2021). Early child–parent relationship quality and cognitive function in older rural Chinese adults: The mediating role of educational attainment. *Journal of Aging and Health*, *33*(7–8), 493–503. https://doi.org/10.1177/0898264321996562

Ranson, K. E., & Urichuk, L. J. (2008). The effect of parent-child attachment relationships on child biopsychosocial outcomes: A review. *Early Child Development and Care*, *178*(2), 129–152. https://doi.org/10.1080/03004430600685282

Ritchie, K., Jaussent, I., Stewart, R., Dupuy, A. M., Courtet, P., Malafosse, A., & Ancelin, M. L. (2011). Adverse childhood environment and late-life cognitive functioning. *International Journal of Geriatric Psychiatry*, *26*(5), 503–510. https://doi.org/10.1002/gps.2553

Roberts, A. L., Sumner, J. A., Koenen, K. C., Kubzansky, L. D., Grodstein, F., Rich-Edwards, J., & Weisskopf, M. G. (2022). Childhood abuse and cognitive function in a large cohort of middle-aged women. *Child Maltreatment*, *27*(1), 100–113. https://doi.org/10.1177/1077559520970647

Rook, K. S. (2014). The health effects of negative social exchanges in later life. *Generations*, *38*(1), 15–23.

Rossi, A. S. (2001). Developmental roots of adult social responsibility. In A. S. Rossi (Ed.), *Caring and doing for others: Social responsibility in the domains of family, work, and community* (pp. 227–320). University of Chicago Press.

Seeman, T. E., Lusignolo, T. M., Albert, M., & Berkman, L. F. (2001). Social relationships, social support, and patterns of cognitive aging in healthy, high-functioning older adults: MacArthur studies of successful aging. *Health Psychology*, *20*(4), 243–255. https://doi.org/10.1037/0278-6133.20.4.243

Sharifian, N., & Zahodne, L. B. (2019). The enduring effects of mother–child interactions on episodic memory in adulthood. *Journal of Marriage and Family*, *81*(4), 936–952. https://doi.org/10.1111/jomf.12569

Sherman, A. M., Skrzypek, A., Bell, R., Tatum, C., & Paskett, E. D. (2011). The contribution of social support and social strain to depressive symptoms in African American, Native American, and European American women. *Journal of Social and Personal Relationships*, *28*(8), 1104–1129. https://doi.org/10.1177/0265407511406895

Teas, E., Marceau, K., & Friedman, E. (2023). Life-course social connectedness: Comparing data-driven and theoretical classifications as predictors of functional limitations in adulthood. *Advances in Life Course Research*, *55*, 100529. https://doi.org/10.1016/j.alcr.2023.100529

Thomas, P. A. (2016). The impact of relationship-specific support and strain on depressive symptoms across the life course. *Journal of Aging and Health*, *28*(2), 363–382. https://doi.org/10.1177/0898264315591004

Thomas, P. A., Richards, E. A., & Forster, A. K. (2022a). Is marital quality related to physical activity across the life course for men and women? *Journal of Aging and Health*, *34*(6–8), 973–983. https://doi.org/10.1177/08982643221083083

Thomas, P. A., & Umberson, D. (2018). Do older parents' relationships with their adult children affect cognitive limitations, and does this differ for mothers and fathers? *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *73*(6), 1133–1142. https://doi.org/10.1093/geronb/gbx009

Thomas, P. A., Williams-Farrelly, M. M., Sauerteig, M. R., & Ferraro, K. F. (2022b). Childhood stressors, relationship quality, and cognitive health in later life. *Journal of Gerontology: Social Sciences*, *77*(7), 1361–1371. https://doi.org/10.1093/geronb/gbac007

Tun, P. A., & Lachman, M. E. (2006). Telephone assessment of cognitive function in adulthood: The Brief test of adult cognition by telephone. *Age and Ageing*, *35*(6), 629–632. https://doi.org/10.1093/ageing/afl095

Umberson, D., Liu, H., & Reczek, C. (2008). Stress and health behaviour over the life course. In H. Turner & S. Schieman (Eds.), *Advances in Life Course Research: Stress Processes across the Life Course* (pp. 19–44). Elsevier. Available at: https://doi.org/10.1016/S1040-2608(08)00002-6

Umberson, D., & Montez, J. K. (2010). Social relationships and health: A flashpoint for health policy. *Journal of Health and Social Behavior*, *51*(Suppl), S54–S66. https://doi.org/10.1177/0022146510383501

Umberson, D., Thomeer, M. B., Williams, K., Thomas, P. A., & Liu, H. (2016). Childhood adversity and men's relationships in adulthood: Life course processes and racial disadvantage. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *71*(5), 902–913. https://doi.org/10.1093/geronb/gbv091

Umberson, D., Williams, K., Thomas, P. A., Liu, H., & Thomeer, M. B. (2014). Race, gender, and chains of disadvantage: Childhood adversity, social relationships, and health. *Journal of Health and Social Behavior*, *55*(1), 20–38. https://doi.org/10.1177/0022146514521426

Walen, H. R., & Lachman, M. E. (2000). Social support and strain from partner, family, and friends: Costs and benefits for men and women in adulthood. *Journal of Social and Personal Relationships*, *17*(1), 5–30. https://doi.org/10.1177/0265407500171001

Wilson, R. S., Schneider, J. A., Boyle, P. A., Arnold, S. E., Tang, Y., & Bennett, D. A. (2007). Chronic distress and incidence of mild cognitive impairment. *Neurology*, *68*(24), 2085–2092. https://doi.org/10.1212/01.wnl.0000264930.97061.82

Windsor, T. D., Gerstorf, D., Pearson, E., Ryan, L. H., & Anstey, K. J. (2014). Positive and negative social exchanges and cognitive aging in young-old adults: Differential associations across family, friend, and spouse domains. *Psychology and Aging*, *29*(1), 28–43. https://doi.org/10.1037/a0035256

Yang, Y. (2006). How does functional disability affect depressive symptoms in late life? The role of perceived social support and psychological resources. *Journal of Health and Social Behavior*, *47*(4), 355–372. https://doi.org/10.1177/002214650604700404

Zahodne, L. B., Ajrouch, K. J., Sharifian, N., & Antonucci, T. C. (2019a). Social relations and age-related change in memory. *Psychology and Aging*, *34*(6), 751–765. https://doi.org/10.1037/pag0000369

Zahodne, L. B., Sharifian, N., Manly, J. J., Sumner, J. A., Crowe, M., Wadley, V. G., Howard, V. J., Murchland, A. R., Brenowitz, W. D., & Weuve, J. (2019b). Life course biopsychosocial effects of retrospective childhood social support and later-life cognition. *Psychology and Aging*, *34*(7), 867–883. https://doi.org/10.1037/pag0000395

Zhu, S., Hu, J., & Efird, J. T. (2012). Role of social support in cognitive function among elders. *Journal of Clinical Nursing*, *21*(15–16), 2118–2125. https://doi.org/10.1111/j.1365-2702.2012.04178.x