

Childhood Adversity, Midlife Generativity, and Later Life Well-Being

Scott D. Landes,¹ Monika Ardel,² George E. Vaillant,³ and Robert J. Waldinger³

¹Department of Sociology, Anthropology, and Social Work, University of North Florida, Jacksonville.

²Department of Sociology and Criminology & Law, University of Florida, Gainesville.

³Department of Psychiatry, Massachusetts General Hospital and Harvard Medical School, Boston.

Objectives. Prior studies confirm that after experiencing childhood adversity, resilient adults can recover and engage in generative growth. This study explored the long-term effects of childhood adversity (assessed as harsh parenting and/or childhood poverty) on successful aging for individuals who either achieved or failed to achieve Erikson's psychosocial developmental stage of generativity in midlife.

Method. The study utilized a sample of 636 men from the Harvard Sample and Inner City Cohort of the 73-year longitudinal Study of Adult Development. Nested ordinary least squares regression models were used to test the mediating and moderating effects of midlife generativity on later life health and adjustment to aging.

Results. Men who experienced childhood adversity were less likely than men with no childhood adversity to achieve generativity in midlife. Although achievement of generativity was associated with better later life health and adjustment to aging, it neither mediated nor moderated the negative relation between childhood poverty and later life health outcomes. However, for men who experienced an adversarial childhood, achievement of generativity mediated and moderated adjustment to aging.

Discussion. Results suggest that psychosocial growth in adulthood can compensate for the long-term negative effects of an adversarial childhood on adjustment to aging, but not for later life health.

Key Words: Adjustment to aging—Adversarial childhood—Generativity—Later life health—Longitudinal study.

DOES the experience of childhood adversity necessarily result in poor physical and psychological later life health and well-being? Or is it possible that after experiencing adversity during childhood, a resilient individual can adjust and continue to engage in positive growth? At one time assumed to be an extraordinary response to trauma or adversity, resilience has more recently been conceptualized as a common response to stressful life events (Bonanno, 2004; Masten, 2001). The move away from a primary focus on the deficits accumulated through childhood adversity toward a focus on resilience mirrors a trend in social psychology emphasizing the possible coexistence of posttraumatic stress and growth (Park & Fenster, 2004; Tedeschi & Calhoun, 2004). Though later life outcomes often depend on the presence or absence of protective factors in a child's early life (Fraser, Kirby, & Smokowski, 2004), coping styles of those who have lived through stressful events, including childhood adversity, also influence whether their experience leads to positive or negative outcomes (Aldwin & Levenson, 2004).

A life course perspective emphasizes the need to account for both early life social context and adult choices when investigating the manner in which early life experiences influence later life outcomes (Dannefer & Settersten, 2010; Elder, 1994). Framed within a life course perspective, this

study used data on the Harvard Sample and Inner City Cohort from the 73-year longitudinal Study of Adult Development (Vaillant, 1977, 2002) to explore whether midlife psychosocial growth mediated or moderated the effects of childhood adversity on later life health and adjustment to aging.

CHILDHOOD ADVERSITY, RESILIENCE, AND THE LIFE COURSE

Research on childhood adversity often delineates risks and protective factors present within a child's life, risks being experiences associated with negative psychosocial outcomes and protective factors associated with positive outcomes (Nash & Randolph, 2004). Recognizing the frequent interconnections between risk factors, research into childhood adversity typically focuses on either single or combined risk factors in early life in the areas of familial dynamics, socioeconomic status, and biomedical challenges. Familial dynamics that frequently lead to childhood adversity include child maltreatment, interparental conflict, harsh parenting, parental psychopathology, and disruptions to the family unit (Fraser et al., 2004; Werner, 1993). Research investigating the effects of socioeconomic status on childhood primarily focuses on poverty, which effectively places limitations on a child's access to basic necessities, educational opportunities, proper health care, and

social supports that can lead to experiences of discrimination and marginalization (Fraser et al., 2004; Luo & Waite, 2005).

A life course perspective recognizes that while development occurs throughout life, the quality of familial relationships and the social context during childhood are likely to shape later life psychosocial and health outcomes (Crosnoe & Elder, 2004; McLeod & Almazan, 2004; Uhlenberg & Mueller, 2004). Indeed, various studies have linked the experience or recounting of childhood adversity, in the forms of childhood maltreatment and familial dysfunction, to negative later life health and psychosocial outcomes, such as poorer health and decreased adjustment to aging (Arnou, 2004; George, 2002; Miller, Chen, & Parker, 2011; Repetti, Taylor, & Seeman, 2002; Wilson et al., 2006). Additionally, empirical evidence demonstrates that children from lower socioeconomic backgrounds are at higher risk of having poorer physical health and well-being later in life (Enoch, 2011; Frytak, Harley, & Finch, 2004; Luo & Waite, 2005; Poulton et al., 2002).

Yet despite the negative impact of childhood adversity on later life outcomes, the story is not all gloom and despair. Life course research highlights that while adverse experiences in childhood often constrain opportunities for later life growth, these experiences might also initiate the development of stress-related growth in some individuals (Elder, 1999; McLeod & Almazan, 2004; Park & Fenster, 2004; Tedeschi & Calhoun, 2004). As Gecas (2004) and Elder (1994) both argued, even in the midst of personal and social adversity, humans are able to make proactive and creative choices that have a direct impact on later life outcomes. This emphasis on human agency does not deny the effects of adverse events on life course trajectories but allows room for continued psychosocial growth and development even in the midst of challenge. Focusing on positive growth, as opposed to a deficit model, resonates with research demonstrating that resilience is more common than previously thought in the lives of adults who experienced adversity in childhood and at later stages of the life cycle (Bonanno, 2004; Bonanno, Papa, & O'Neill, 2001; Masten, 2001; Masten, Best, & Garnezy, 1990).

Resilience has been defined as successful adaptation, or the ability to maintain healthy psychological and physical life functioning, despite the presence of significant adversity, loss, or trauma (Bonanno, 2004; Luthar, Cicchetti, & Becker, 2000; Masten et al., 1990; Werner & Smith, 2001). So defined, resilience is not recovery, as the effects of adversity are not necessarily eliminated (Bonanno, 2005). However, resilient individuals are able to “bounce back” after highly stressful experiences and continue to engage in positive growth, which suggests that the effects of childhood adversity might be moderated by the development of resilience in adulthood (Fraser et al., 2004; Masten, 2001; Wilson & Agaibi, 2006).

Although resilience is a complex process influenced by internal and external factors (Luthar et al., 2000), prior

research suggests generativity as a key indicator of resilient adults (Bonanno, 2005; Fredrickson, Tugade, Waugh, & Larkin, 2003). In Erickson's stage model of psychosocial growth and development, generativity versus self-absorption or stagnation is the seventh developmental task, whose successful mastery requires the development of a focused “interest in establishing and guiding the next generation” (Erikson, 1959, p. 97). Often occurring around midlife, the achievement of generativity is marked by a shift from a primary self-focus to an increased focus on ensuring the well-being of future generations, not just of one's own children and grandchildren but aimed at improving society for future generations in general (Erikson, 1959). The generative person acts in a manner that shows care for future generations (Erikson, 1964), while the person who fails to achieve generativity stagnates in growth and development, being unable to look beyond the needs of the self (Erikson, 1959).

As Werner and Smith (1982, 2001) discovered using qualitative interviews from their classic longitudinal study of men and women on the Hawaiian Island of Kauai, individuals who displayed the most resilience in the face of childhood and early adult adversity were the ones who demonstrated personal and generative growth, seeking both continued self-development and opportunities to help others. Previous analysis of the Harvard Sample from the Study of Adult Development found that the achievement of midlife generativity produced a resilience effect in men who experienced heavy combat during World War II and was positively associated with later life physical and psychosocial health (Ardelt, Landes, & Vaillant, 2010; Felsman & Vaillant, 1987). It appears that psychosocial growth which leads to generativity is indicative of resilience and enables individuals who experienced adversity during childhood and early adult life to persevere in positive human development and growth and create continued life meaning.

CURRENT STUDY

We expand on our earlier study on the long-term impact of combat experience (Ardelt et al., 2010) by exploring the effects of childhood adversity on later life well-being. We also add increased socioeconomic variability to the sample with the inclusion of the Inner City Cohort, a group of men initially recruited in early adolescence from highly disadvantaged families living in Boston's poorer neighborhoods in the late 1930s. In the present study, we analyzed data for 635 white men from both the Harvard Sample and Inner City Cohort of the 73-year longitudinal Study of Adult Development to explore the long-term effects of childhood adversity on later life physical health and adjustment to aging. Although the original study did not assess resilience directly; for the purpose of our current research we use one measure of midlife psychosocial growth, generativity, as an indicator of resilience in men who experienced childhood

adversity (Ardelt et al., 2010; Felsman & Vaillant, 1987; Werner & Smith, 1982, 2001; Wilson & Agaibi, 2006). Men from the Harvard Sample and Inner City Cohort were considered to have experienced midlife psychosocial growth if they reached the appropriate Eriksonian (1959) psychosocial stage of generativity by midlife. Otherwise, it was assumed that their psychosocial development was arrested.

The unique contribution of this study is the use of a longitudinal data set that spans more than 50 years to test possible mediating and moderating effects of generativity on the relationship between early life adversity and later life health and adjustment to aging. Earlier studies either relied heavily on retrospective early and midlife data or concluded that generativity was a defining characteristic of resilient individuals that mediated the relation between early life adversity and later life outcomes based upon follow-up interviews that occurred in older age. In contrast, our study uses over 50 years of prospective data from two longitudinal studies to test whether generativity, measured at midlife, mediates and/or moderates the effect of childhood adversity on later life health and adjustment to aging.

The following hypotheses were tested in this study.

Hypothesis 1: Childhood adversity, operationalized as harsh parenting and/or lower social class, was expected to have a negative impact on positive aging (later life health and adjustment to aging).

Hypothesis 2: The inverse relation between childhood adversity and positive aging was expected to be partially mediated by the achievement of generativity in midlife.

Hypothesis 3: Generativity was also expected to moderate the relation between childhood adversity and positive aging. For men who did not achieve generativity in midlife, childhood adversity was predicted to have an enduring inverse effect on positive aging, whereas generative older men were hypothesized to be unaffected by childhood adversity.

METHOD

Sample

In the original study, 268 white male Harvard College sophomores who had a satisfactory freshman academic record and no history of physical and mental illness were chosen from the graduating classes of 1940 to 1944 for the Harvard Sample of the Study of Adult Development. The present study included 243 of those men born between 1915 and 1924 (with a mean birth year of 1920 and median birth year of 1921) whose psychosocial development was rated in midlife. Of these men, 1.6% did not complete their undergraduate degree, 35.8% had an undergraduate college degree, and 62.9% had engaged in some type of graduate or professional education. Though not exclusively so, the majority of men from the Harvard Sample were from a socioeconomically privileged group (Heath, 1945; Vaillant, 1977).

The Inner City Cohort consisted of 456 white males, recruited by Sheldon and Eleanor Glueck as the non-delinquent control group for their research on juvenile

delinquency (Glueck & Glueck, 1968) and subsequently followed through adulthood into late life. The childhood experiences of these men were shaped by the social context of low-income Boston neighborhoods with high rates of juvenile delinquency and higher levels of dependence on social service agencies and welfare programs (Vaillant, 2002; Vaillant & Mukamal, 2001). The present study included 392 of those men born between 1924 and 1932 (with a mean and median birth year of 1929) whose psychosocial development was rated in midlife. Of these men, 1.4% had less than 7 years of schooling, 17% partially completed and 33.3% fully completed junior high school, 32.6% were high school graduates, 8.7% completed some college, 5.3% completed an undergraduate degree, and 1.6% had graduate or professional training (Martin-Joy & Vaillant, 2010; Vaillant, 2002).

Procedure

Men from the Harvard Sample were examined during their sophomore year in college by an interdisciplinary team of internists, psychiatrists, psychologists, and anthropologists. The men participated in a follow-up in-depth interview in 1946 (when they were on average 25 years old) and subsequent qualitative interviews when they were approximately 30, 50, and 65 years old. Follow-up questionnaires were sent to the men every 2 years, and beginning at age 45 they were offered a physical examination every 5 years. The men from the Inner City Cohort were initially interviewed by an interdisciplinary team of researchers at the age of 14. They participated in follow-up interviews at ages 17, 25, 32, and 47 and subsequently were asked to complete follow-up questionnaires every 2 years. Beginning at age 47, they also participated in physical examinations every 5 years.

Measures

The measures for the current study were derived from ratings of the men's qualitative interviews (childhood adversity, generativity, adjustment to aging), constructed from questionnaire data (adjustment to aging), and culled from medical records (late life physical health). All ratings were conducted by members of Vaillant's research team who rated specific interviews and questionnaires, were independent of each other, and changed during the duration of these longitudinal studies. A summary of the descriptive statistics of the measures is provided in Tables 1 and 2.

Childhood adversity was measured with two separate variables in order to capture both the familial and socioeconomic aspects of this experience (Fraser et al., 2004). Derived from two components of a larger childhood environmental weakness scale included in each study, harsh parenting was calculated as the average of the childhood relationship with the mother and father up until the age of 14 for the Inner City Cohort and age 18 for the Harvard Sample. Based on a five-point scale, a rating of 1 represented

Table 1. Independent Sample *t* test of Mean Differences Between Groups

	Harvard Sample			Inner City Cohort			<i>t</i> score	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>		
Harsh parenting	3.13	1.09	255	3.13	1.28	453	-0.01	.99
Lower social class	2.00	0.90	265	5.21	0.66	454	-56.21	.00
Generativity	0.49	0.50	243	0.31	0.46	393	4.49	.00
Later life health	4.47	1.82	260	3.53	1.92	406	6.34	.00
Adjustment to aging	3.57	1.41	227	3.28	1.32	270	2.39	.02

Table 2. Bivariate Correlation Analyses Between Childhood Adversity Measures, Midlife Generativity, and Measures of Successful Aging

	1	2	3	4	<i>M</i>	<i>SD</i>	<i>N</i>	Range
1. Harsh parenting	—	—	—	—	3.13	1.22	708	1–5
2. Lower social class	0.07	—	—	—	4.03	1.15	719	1–6
3. Generativity	-0.15**	-0.18**	—	—	0.38	0.49	636	0–1
4. Later life health	-0.03	-0.24**	0.13**	—	3.89	1.94	666	1–7
5. Adjustment to aging	-0.14**	-0.11*	0.33**	0.32**	3.41	1.37	497	1–5

Note. ** $p < .01$. * $p < .05$.

relationships characterized as nurturing and warm, encouraging, and helpful in developing self-esteem. A rating of 5 represented relationships characterized as being distant, hostile, overly punitive, negative or destructive, and not encouraging of the child's self-esteem. Based on averages of relationships with both parents, 12.0% of the men had a warm nurturing relationship with their parents, 16.9% had a warm/nurturing to average relationship, 33.1% had an average relationship, 22.5% had an average to harsh relationship, and 15.5% experienced harsh parenting. The interrater reliability for the larger childhood weakness scale was 0.94 for the Inner City Cohort and 0.71 for the Harvard Sample (Vaillant, 1995; Vaillant & Mukamal, 2001).

Ratings of class status for the Harvard Sample and Inner City Cohort were based on Hollingshead's and Redlich's (1958) Index of Social Position, which factored in social stratification in the community, as well as the highest educational degree and occupational position of the head of the family (Vaillant, 1995). Lower social class in this study was coded 1 for upper class, 2 for upper middle class, 3 for middle class, 4 for lower middle class, 5 for lower class, and 6 for lower lower class. This measure of childhood adversity captured both the childhood socioeconomic status of each individual man and the variance between the Harvard Sample and Inner City Cohort men. Interrater reliability scores were not available for this measure.

Generativity is an index of psychosocial maturity based on Erikson's (1959) stage model of psychosocial development. For both the Harvard Sample and Inner City Cohort, researchers blind to data collected prior to age 30 used information from 2-hr interviews conducted around the ages of 47–50 to rate generativity. Men who "demonstrated a definite capacity for establishing and guiding the next generation, beyond raising their own children, through their actual sustained responsibility for the growth, well-being, and leadership of other adults" were rated as generative

(Snarey, Son, Kuehne, Hauser, & Vaillant, 1987, p. 596). Although raters were aware of other midlife outcomes, such as health status, these were not included as markers of generativity. In fact, raters assigned each man the highest level of Eriksonian development ever achieved, even if the "man now functioned at a lower stage than previously, because of alcoholism or physical illness" (Vaillant & Milofsky, 1980, p. 1352). In the original measure, men were rated according to the developmental stage they had reached, ranging from 4 (industry achieved/failed identity) to 8 (generativity achieved). In this study, the achievement of generativity was scored as 1, while all other cases were assigned a score of 0. Thirty-eight percent ($n = 240$) of the men in this study were rated as having achieved generativity in midlife. For the Inner City Cohort, all ratings of generativity were completed by the team of researchers and then rerated by a blind reviewer. Snarey and colleagues (1987) report an interrater reliability of 0.75 for the Inner City Cohort, with disagreements between raters resolved by further discussion and consensus. For the Harvard Sample, two independent raters determined the generativity score of 91 men, obtaining an interrater reliability of 0.52 ($p < .001$) as measured by Spearman's rho. One judge individually rated the interviews of 152 additional men.

Health provided a measure of the men's average later life health state, inclusive of morbidity and mortality status. For both the Harvard Sample and Inner City Cohort, researchers blind to information collected prior to age 30 as well as the men's midlife generativity ratings and later life psychological adjustment scores rated physical examinations that were performed by the men's own physicians at approximately 60, 70, and 75 years of age (Vaillant, 1977, 1995; Vaillant & Mukamal, 2001). It is important to note that these examinations were not performed at the same point in time for all men but for each man when he was 60, 70, and 75 years of age, effectively controlling for age. For each examination,

health was coded 1 (deceased), 2 (confined to bed, nursing home), 3 (limited mobility), 4 (chronic illness with disability), 5 (chronic illness without disability), 6 (minor health problems), and 7 (excellent health). For the current study, ratings of physical health at these ages were averaged. With 21.6% of the men deceased by the age of 70, the average later life health score for the men in this study was 3.89.

Adjustment to aging was based on ratings from questionnaire data and transcribed interviews collected from each man at multiple times between the ages of 50 and 65. As with the health variable, it is important to note that data on adjustment to aging were not obtained from all the men at the same point in time but at multiple times when the men were between the ages of 50 and 65. The men from both the Inner City Cohort and Harvard Sample provided information on the meaning found in their career, marriage, leisure activities, retirement (if applicable), and psychological well-being (Vaillant, 2002, 2012). Raters blind to early and midlife outcomes then provided a global rating of these items, ranging from 1 (mental health and adjustment to aging worse than for most men) to 5 (mental health and adjustment to aging good). Though 29% of the men were rated with the highest adjustment to aging score, the average score for the entire sample was 3.41. For the Inner City Cohort, all subjective ratings of adjustment to aging were provided by one member of the research team. For the Harvard Sample, two independent judges rated 173 of the men, with an interrater reliability of 0.68 ($p < .001$) as assessed by Spearman's rho. One of the judges rated an additional 54 men.

For generativity to have mediated a significant relation between childhood adversity and later life outcomes, it was necessary that (a) childhood adversity was associated with generativity, (b) generativity was associated with adjustment to aging and health status at age 60–75 even when controlling for childhood adversity variables, and (c) the inclusion of generativity reduced the effect of childhood adversity on later life outcomes (Baron & Kenny, 1986). When a mediation effect was indicated, a Sobel test was performed to confirm mediation (MacKinnon & Dwyer, 1993; Sobel, 1982). To test the moderation effect of generativity, interaction effects were constructed by multiplying generativity with harsh parenting and lower social class, respectively. Both childhood adversity variables were centered at the mean to reduce the effect of multicollinearity due to the interaction term (Aiken & West, 1991; Jaccard & Turrisi, 2003).

Age was not included as a control variable in this study as both outcome variables effectively controlled for the men's age. As detailed earlier, data for both health and adjustment to aging were measured when each man was of a particular age rather than at a particular point in time. Therefore, both outcome variables were averages of each man's health and adjustment to aging when they were of a similar age. The level of education achieved by each man was not included

as a control variable as education was highly correlated with lower social childhood class, $r = -.77$ ($p < .001$). Therefore, the inclusion of lower social class and level of education in the same model inflated multicollinearity to an unacceptable level (Allison, 2012). Wanting to fully capitalize on the rare opportunity that the Study of Adult Development provides to include a measure that records the origins of social class from early childhood, we therefore chose to utilize the childhood social class variable instead of the education variable for this study.

RESULTS

Comparison of the Harvard Sample and the Inner City Cohort

Independent sample *t* tests were used to compare the Harvard Sample with the Inner City Cohort on all variables. As reported in Table 1, compared with the men in the Harvard Sample, the men from the Inner City Cohort had lower childhood social class status, lower achievement of generativity in midlife, poorer later life health status, and poorer adjustment to aging. However, there were no significant differences between the two samples regarding harsh parenting.

We decided to include a measure for childhood adversity from lower social class in the analyses rather than a measure that distinguished the two study samples. This decision was based on the following reasoning. The lower social class and study variables were highly correlated (.903 ($p < .001$), indicating that these two variables were measuring similar characteristics of the men. However, the lower social class variable had greater variability than the study variable. Whereas the study variable only indicated whether the participant belonged to the Harvard Sample or Inner City Cohort, the social class variable captured the childhood social status range of men from both the Harvard Sample (from lower middle class to upper class) and the Inner City Cohort (from lower lower class to middle class). Finally, prior research indicated that the poorer later life health found in the men from the Inner City Cohort may relate to socioeconomic standing (Vaillant, 2002; Vaillant & Mukamal, 2001). Thus, inclusion of the childhood social class variable, as opposed to the study variable, effectively captured the differences between the two samples as well as the variability present in childhood socioeconomic standing, and allowed insight into the effects of early socioeconomic standing on later life health.

Bivariate Correlations

Correlations provided an initial bivariate analysis of the relationship between all independent and dependent measures and were used to evaluate Hypothesis 1. As shown in Table 2, the two childhood adversity measures, harsh

parenting and lower social class, were not significantly associated with each other. Hypothesis 1, contending a negative relationship between childhood adversity and positive aging, was supported. Childhood adversity, in the form of both harsh parenting and lower social class, was negatively correlated with adjustment to aging. Lower social class was negatively correlated with later life health status, but harsh parenting was not. There was a low, negative correlation between the achievement of generativity and both measures of childhood adversity. The achievement of generativity was also positively correlated with later life health status and adjustment to aging. Among the dependent variables, later life health status was positively associated with better adjustment to aging.

Childhood Adversity and Generativity in Midlife

Logistic regression and cross-tabulations were used to substantiate the initial requirements for generativity as a mediating variable between childhood adversity and later life outcomes (Baron & Kenny, 1986). As required for mediation, both measures of childhood adversity were significantly negatively associated with generativity. Based on logistic regression analysis, men who experienced greater levels of harsh parenting, $\beta = -.24, p < .001$, and lower social class standing during childhood, $\beta = -.21, p < .001$, were less likely to achieve generativity in midlife. As reported in Table 3, cross-tabulation analysis revealed that both harsh parenting and lower social class had a relatively linear relationship with generativity, with the likelihood of achieving generativity decreasing with increased childhood adversity. Because harsh parenting was the average of the relationship ratings with mother and father, a few cases had a decimal score (i.e., 1.5, 2.5). For the cross-tabulation analysis, these decimal scores were rounded either up or down toward the median (3.0) to reduce the number of categories and preserve the most extreme scores.

Later Life Health Status and Childhood Adversity

OLS regression models in Table 4 show that although harsh parenting had no direct effect on later life health status, lower social class was associated with poorer later life health outcomes as predicted by Hypothesis 1 (Model 1). The achievement of generativity in midlife was weakly associated with better later life health outcomes, but the addition of generativity to the model barely reduced the negative effect of lower social class on later life health status (Model 2). A Sobel test (MacKinnon & Dwyer, 1993) showed that generativity failed to mediate the relation between lower social childhood class and later life health outcomes, as the significance of the indirect mediation effect was slightly above the .05 level of statistical significance ($z = -1.90, p = .06$). This suggests that lower social class and generativity are operating independently on later life health outcomes (Model 2). Because harsh parenting did not have a direct effect on later life health status, generativity did not mediate this relation (Baron & Kenny, 1986). Generativity also did not moderate the relation between either measure of childhood adversity and later life health status as both interaction effects were insignificant (Models 3 and 4). The variables in Model 2 explained 7% of the variation in later life health status.

Adjustment to Aging and Childhood Adversity

Model 1 in Table 5 reveals that both childhood adversity measures, harsh parenting and lower social class, adversely affected men's positive adjustment to the aging process, corroborating Hypothesis 1. As predicted by Hypothesis 2, the achievement of generativity was positively related to adjustment to aging and partially mediated the negative effects of childhood adversity on later life adjustment to aging (Model 2). A Sobel test indicated that the indirect effects of harsh parenting ($z = -3.17, p = .001$) and lower social childhood class ($z = -3.68, p < .001$) on later life adjustment to aging mediated by generativity were significant. Generativity did not moderate the effect of harsh

Table 3. Long-Term Effects of Childhood Adversity on Midlife Generativity: Cross-Tabulations

	Generativity		χ^2	N
	Not achieved	Achieved		
Harsh parenting				
Warm, nurturing relationships	40 (51.3%)	38 (48.7%)		
Average to warm relationships	62 (56.4%)	48 (43.6%)		
Average relationships	122 (58.1%)	88 (41.9%)	17.42*	636
Average to harsh relationships	103 (73.0%)	38 (27.0%)		
Harsh relationship	69 (71.1%)	28 (28.9%)		
Childhood social class				
Upper class	36 (44.4%)	45 (55.6%)		
Upper middle class	52 (55.3%)	42 (44.7%)		
Middle class	34 (59.6%)	23 (40.4%)	27.79**	635
Lower middle class	27 (54.0%)	23 (46.0%)		
Lower class	163 (69.4%)	72 (30.6%)		
Lower lower class	83 (70.3%)	35 (29.7%)		

Note. * $p < .05$. ** $p < .01$.

Table 4. Long-Term Effects of Childhood Adversity and Midlife Generativity on Later Life Health Status: Nested OLS Regression Models

Independent variables	Model 1			Model 2			Model 3			Model 4		
	<i>b</i>	β	(SE)	<i>b</i>	β	(SE)	<i>b</i>	β	(SE)	<i>b</i>	β	(SE)
Childhood adversity												
Harsh parenting	-0.03	-0.02	(0.06)	-0.01	-0.01	(0.06)	-0.10	-0.07	(0.08)	-0.01	-0.01	(0.06)
Lower social class	-0.26	-0.26***	(0.04)	-0.25	-0.24***	(0.04)	-0.25	-0.24***	(0.04)	-0.27	-0.26***	(0.06)
Generativity				0.32	0.09*	(0.15)	0.34	0.09*	(0.15)	0.33	0.09*	(0.15)
Interaction terms												
Generativity \times harsh parenting							0.22	0.10	(0.12)			
Generativity \times lower social class										0.05	0.03	(0.08)
Model fit												
R^2		0.067			0.074			0.079			0.074	
R^2 change		—			0.007			0.005			0.001 ^a	
F change		21.03***			4.46*			3.46			0.39 ^a	

Notes. $n = 593$.

^aComparing Model 2 with Model 4.

*** $p < .001$. ** $p < .05$.

Table 5. Long-Term Effects of Childhood Adversity and Midlife Generativity on Adjustment to Aging: Nested OLS Regression Models

Independent variables	Model 1			Model 2			Model 3			Model 4		
	<i>b</i>	β	(SE)	<i>b</i>	β	(SE)	<i>b</i>	β	(SE)	<i>b</i>	β	(SE)
Childhood adversity												
Harsh parenting	-0.14	-0.13**	(0.05)	-0.10	-0.09*	(0.05)	-0.11	-0.10	(0.06)	-0.10	-0.09*	(0.05)
Lower social class	-0.08	-0.10*	(0.04)	-0.04	-0.06	(0.03)	-0.04	-0.06	(0.03)	-0.11	-0.14*	(0.05)
Generativity				0.87	0.31***	(0.12)	0.87	0.31***	(0.12)	0.92	0.33***	(0.12)
Interaction terms												
Generativity \times harsh parenting							0.04	0.02	0.10			
Generativity \times lower social class										0.15	0.13*	(0.07)
Model fit												
R^2		0.029			0.123			0.123			0.131	
R^2 change		—			0.094			0.000			0.008 ^a	
F change		7.20**			52.23***			0.13			4.73 ^a	

Notes. $n = 492$.

^aComparing Model 2 with Model 4.

*** $p < .001$. ** $p < .01$. * $p < .05$.

parenting on adjustment to aging (Model 3), but it did moderate the association between lower social childhood class and adjustment to aging, supporting Hypothesis 3 (Model 4). As the slopes in Figure 1 show, for those men who did not achieve generativity, lower social class was associated with poorer later life adjustment to aging. However, the achievement of midlife generativity neutralized the negative effect of lower social class during childhood on later life adjustment to aging, as the unstandardized effect of the interaction term, generativity \times lower social class (0.15), was greater than the main effect of lower social class (-0.11). Together, the variables in Model 4 explained 13% of the variation in adjustment to aging.

DISCUSSION

Does the experience of childhood adversity necessarily result in poor physical and psychological later life health and well-being, or is it possible that after experiencing

adversity during childhood, a resilient individual can adjust and continue to engage in positive growth? Conceptualized within a life course perspective, our findings are consistent with theories of stress-related growth (Aldwin & Levenson, 2004; Linley & Joseph, 2004; Park, 1998; Tedeschi & Calhoun, 2004) and confirm that even after undergoing childhood adversity, resilient individuals who continue to engage in psychosocial growth throughout the life course can experience positive later life health and adjustment to aging. Although prior studies have often found education to be a predictive factor for later life health and adjustment to aging (Adler & Newman, 2002; Feinstein, 1993; Frytak et al., 2004; Hays, Schoenfeld, & Blazer, 1996; Ross & Wu, 1995; Wilson et al., 2006), less attention has been devoted to the effect of earlier childhood social class on later life health (Hayward & Gorman, 2004; Luo & Waite, 2005). In fact, this study appears to be the first to analyze the effects of childhood social class on adjustment to aging.

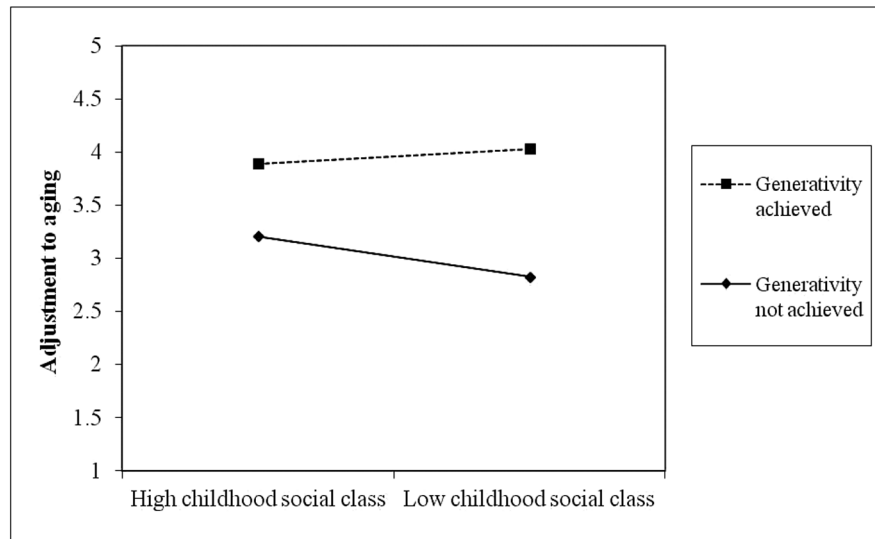


Figure 1. Long-term effects of childhood social class on adjustment to aging moderated by midlife generativity.

Analysis of men from the Harvard Sample and Inner City Cohort from the 73-year longitudinal Study of Adult Development showed that childhood adversity by itself tended to have long-term negative consequences for psychosocial growth and successful aging (Crosnoe & Elder, 2004; George, 2002). As expected, both measures of childhood adversity were negatively correlated with adjustment to aging. Additionally, lower social childhood class was associated with poorer later life health. Furthermore, both experiences of childhood adversity decreased the odds of achieving generativity in midlife. Confirming findings from earlier research (Arnou, 2004; Enoch, 2011; Frytak et al., 2004; George, 2002), the men's experiences of harsh parenting and/or lower social class during childhood posed enduring risks to their adult psychosocial development and later life well-being.

Despite the negative effects of childhood adversity on development and later life outcomes, a life course perspective emphasizes that resilient individuals choose to engage in continued positive psychosocial growth (Elder, 1994; Gecas, 2004; Werner & Smith, 1982). The lives of the men from the Harvard Sample and the Inner City Cohort revealed that resilience, conceptualized as the achievement of midlife generativity despite childhood adversity, can act as a protective factor that counters and neutralizes the negative long-lasting impact of at least one type of early childhood adversity. In order to best understand this protective mechanism, our results differentiated between the mediating and moderating effects of generativity (Baron & Kenny, 1986).

The achievement of midlife generativity mediated the effects of harsh parenting and lower childhood social class on later life adjustment to aging. In addition, generativity moderated the adverse effect of lower social class on adjustment to aging. Men who grew up in a lower social class and did not achieve midlife generativity tended to have the poorest later life adjustment to aging. In contrast, the

negative effect of growing up in a lower social class on later life adjustment to aging was neutralized for men who did achieve midlife generativity. These results suggest that the achievement of midlife generativity can reduce the negative impact of childhood adversity on a later life psychological outcome, adjustment to aging. Though not addressed in our analysis, this is consistent with the finding of Aldwin (1990) that the achievement of generativity can increase the capacity to constructively cope with stressors by changing the focus from solely one's own life concerns to the concerns of loved ones and the larger community.

Despite finding that midlife generativity effectively reduces the negative effects of childhood adversity, results from this study contend that the same does not hold true for a more structural later life outcome such as health. The experience of lower social class during childhood was highly predictive of poorer later life health outcomes. Although the achievement of generativity had a positive relationship with later life health, it did not mitigate the entrenched negative effect of lower childhood social class on later life health. This relationship persisted even when controlling for generativity, suggesting that generative men were not able to fully free themselves from the bondage of their lower social class roots. The structural inequality of lower social class was highly predictive of poorer health outcomes despite the achievement of midlife generativity. These findings are supportive of cumulative advantage/disadvantage theory, proposing that the structural inequality of early life socioeconomic disadvantage accumulates throughout the life course and has a direct negative effect on later life health (Dannefer, 2003; DiPrete & Eirich, 2006; Elo, 2009; O'Rand, 1996; Willson, Shuey, & Elder, 2007).

The major limitation of this study is that it is based on data that was collected a long time ago. As Vaillant (2002) explains regarding the Study of Adult Development, "By

modern standards, the study was old-fashioned” (p. 328). Reflecting data collection that began in the 1930s, the measures of childhood adversity are limited, independent and dependent variables used in this study consist of ratings, and interrater reliability scores are not available for each measure. Furthermore, the Study of Adult Development only included white men. Although we are not able to generalize our findings to the lives of women or minorities, research by Versey, Stewart, and Duncan (2013) shows that generativity is also associated with successful aging in women. A final limitation is that the variables in this study explain only a relatively small proportion of the variation in positive aging.

Yet, analysis of this longitudinal data set, spanning the childhood years to old age, allowed us to formally test whether generativity mediates and/or moderates the relation between childhood adversity and later life outcomes, demonstrating the enduring impact of childhood adversity and midlife generativity on later life outcomes. Although it has been previously documented that childhood adversity has a persistent negative effect on later life health and well-being, and that resilient individuals are able to overcome adversity, many of these previous studies were based on cross-sectional and retrospective data. While Werner and Smith (2001) used longitudinal data to suggest the possibility that generativity was a key characteristic of resilient individuals, our study allowed us to formally test the mediating and moderating effects of midlife generativity on the relations between childhood adversity and later life outcomes. Overall, our findings present a clear message. Even though 60 years have passed for the men of the Harvard Study and Inner City Cohort, the effects of childhood adversity still linger in relation to midlife generativity and later life outcomes. While these early life adversities can be overcome through continued generative growth and subsequently better adjustment to aging, the negative effect of early life social inequality on health outcomes seems to persist throughout life.

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CORRESPONDENCE

Correspondence should be addressed to Scott D. Landes, PhD, Department of Sociology, Anthropology, and Social Work, University of North Florida, 1 UNF Drive, Jacksonville, FL 32224-2659. E-mail: scott.landes@unf.edu

REFERENCES

- Adler, N. E., & Newman, K. (2002). Socioeconomic disparities in health: Pathways and policies. *Health Affairs (Project Hope)*, *21*, 60–76. doi:10.1377/hlthaff.21.2.60
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Thousand Oaks, CA: Sage Publications Inc.
- Aldwin, C. M. (1990). The elders life stress inventory: Egocentric and non-egocentric stress. In M. A. Stephens, J. H. Crowther, S. E. Hobfoll, & D. L. Tennenbaum (Eds.), *Stress and coping in later-life families* (pp. 49–63). New York: Hemisphere Pub. Corp.
- Aldwin, C. M., & Levenson, M. R. (2004). Posttraumatic growth: A developmental perspective. *Psychological Inquiry*, *15*, 19–22. doi:10.1207/s15327965pli1501_02
- Allison, P. D. (2012). *Logistic regression using SAS theory and application*, second edition (2nd ed.). Cary, NC: SAS Institute.
- Ardelt, M., Landes, S. D., & Vaillant, G. E. (2010). The long-term effects of World War II combat exposure on later life well-being moderated by generativity. *Research in Human Development*, *7*, 202–220. doi:10.1080/15427609.2010.504505
- Arnou, B. A. (2004). Relationships between childhood maltreatment, adult health and psychiatric outcomes, and medical utilization. *The Journal of Clinical Psychiatry*, *65*(Suppl. 12), 10–15.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182. doi:10.1037/0022-3514.51.6.1173
- Bonanno, G. A. (2004). Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *The American Psychologist*, *59*, 20–28. doi:10.1037/0003-066X.59.1.20
- Bonanno, G. A. (2005). Resilience in the face of potential trauma. *Current Directions in Psychological Science*, *14*, 135–138. doi:10.1111/j.0963-7214.2005.00347.x
- Bonanno, G. A., Papa, A., & O’Neill, K. (2001). Loss and human resilience. *Applied and Preventive Psychology*, *10*, 193–206. doi:10.1016/S0962-1849(01)80014-7
- Crosnoe, R., & Elder, G. H. (2004). From childhood to the later years: Pathways of human development. *Research on Aging*, *26*, 623–654. doi:10.1177/0164027504268491
- Dannefer, D. (2003). Cumulative advantage/disadvantage and the life course: Cross-fertilizing age and social science theory. *The Journals of Gerontology: Series B, Psychological Sciences and Social Sciences*, *58*, S327–S337. doi:10.1093/geronb/58.6.S327
- Dannefer, D., & Settersten, R. A. (2010). The study of the life course: Implications for social gerontology. In D. Dannefer, & C. Phillipson (Eds.), *The SAGE Handbook of social gerontology* (pp. 3–19). Thousand Oaks, CA: Sage.
- DiPrete, T. A., & Eirich, G. M. (2006). Cumulative advantage as a mechanism for inequality: A review of theoretical and empirical developments. *Annual Review of Sociology*, *32*, 271–297. doi:10.1146/annurev.soc.32.061604.123127
- Elder, G. H. Jr. (1994). Time, human agency, and social change: Perspectives on the life course. *Social Psychology Quarterly*, *57*, 4–15. doi:10.4135/9781446200933.n1
- Elder, G. H. Jr. (1999). *Children of the great depression: Social change in life experience* (25th Anniversary Edition ed.). Boulder, CO: Westview Press.
- Elo, I. T. (2009). Social class differentials in health and mortality: Patterns and explanations in comparative perspective. *Annual Review of Sociology*, *35*, 553–572. doi:10.1146/annurev-soc-070308-115929
- Enoch, M. A. (2011). The role of early life stress as a predictor for alcohol and drug dependence. *Psychopharmacology*, *214*, 17–31. doi:10.1007/s00213-010-1916-6
- Erikson, E. H. (1959). *Identity and the life cycle*. New York: International Universities Press, Inc.
- Erikson, E. H. (1964). *Insight and responsibility*. New York: Norton.
- Feinstein, J. S. (1993). The relationship between socioeconomic status and health: A review of the literature. *The Milbank Quarterly*, *71*, 279–322.
- Felsman, J. K., & Vaillant, G. (1987). Resilient children as adults: A 40 year study. In E. J. Anthony, & B. J. Cohler (Eds.), *The Invulnerable child* (pp. 432). New York: Guilford Press.

- Fraser, M. W., Kirby, L. D., & Smokowski, P. R. (2004). Risk and resilience in childhood. In M. W. Fraser (Ed.), *Risk and resilience in childhood: An ecological perspective* (2nd ed., pp. 13–66). Washington, DC: NASW Press.
- Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crises? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology, 84*, 365–376. doi:10.1037/0022-3514.84.2.365
- Frytak, J. R., Harley, C. R., & Finch, M. D. (2004). Socioeconomic status and health over the life course. In J. T. Mortimer, & M. J. Shanahan (Eds.), *Handbook of the life course* (pp. 623–643). New York: Springer.
- Gecas, V. (2004). Self-agency and the life course. In J. T. Mortimer, & M. J. Shanahan (Eds.), *Handbook of the life course* (pp. 369–388). New York: Springer.
- George, L. K. (2002). What life-course perspectives offer the study of aging and health. In R. A. Settersten (Ed.), *Invitation to the life course: Toward new understandings of later life* (pp. 161–188). Amityville, NY: Baywood.
- Glueck, S., & Glueck, E. T. (1968). *Delinquents and nondelinquents in perspective*. Cambridge: Harvard University Press.
- Hays, J. C., Schoenfeld, D. E., & Blazer, D. G. (1996). Determinants of poor self-rated health in late life. *The American Journal of Geriatric Psychiatry, 4*, 188–196. doi:10.1097/00019442-199622430-00002
- Hayward, M. D., & Gorman, B. K. (2004). The long arm of childhood: The influence of early-life social conditions on men's mortality. *Demography, 41*, 87–107. doi:10.1353/dem.2004.0005
- Heath, C. W. (1945). *What people are. A study of normal young men*. Cambridge, MA: Harvard University Press.
- Hollingshead, A. B., & Redlich, F. C. (1958). *Social class and mental illness*. New York: John Wiley.
- Jaccard, J., & Turrissi, R. (2003). *Interaction effects in multiple regression* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Linley, P. A., & Joseph, S. (2004). Positive change following trauma and adversity: A review. *Journal of Traumatic Stress, 17*, 11–21. doi:10.1023/B:JOTS.0000014671.27856.7e
- Luo, Y., & Waite, L. J. (2005). The impact of childhood and adult SES on physical, mental, and cognitive well-being in later life. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences, 60*, S93–S101. doi:10.1093/geronb/60.2.S93
- Luthar, S. S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work. *Child Development, 71*, 543–562. doi:10.1111/1467-8624.00164
- MacKinnon, D. P., & Dwyer, J. H. (1993). Estimating mediated effects in prevention studies. *Evaluation Review, 17*, 144–158. doi:10.1177/0193841x9301700202
- Martin-Joy, J., & Vaillant, G. E. (2010). Recognizing and promoting resilience. In C. A. Depp, & D. V. Jeste (Eds.), *Successful cognitive and emotional aging* (pp. 363–381). Washington, DC: American Psychiatric Publishing.
- Masten, A. S. (2001). Ordinary magic. Resilience processes in development. *The American Psychologist, 56*, 227–238. doi:10.1037/0003-066X.56.3.227
- Masten, A. S., Best, K. M., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcome adversity. *Development and Psychopathology, 2*, 425–444. doi:10.1017/S0954579400005812
- McLeod, J. D., & Almazan, E. P. (2004). Connections between childhood and adulthood. In J. T. Mortimer, & M. J. Shanahan (Eds.), *Handbook of the life course* (pp. 391–411). New York: Springer.
- 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*, 959–997. doi:10.1037/a0024768
- Nash, J. K., & Randolph, K. A. (2004). Methods in the analysis of risk and protective factors: Lessons from epidemiology. In M. W. Fraser (Ed.), *Risk and resilience in childhood: An ecological perspective* (2nd ed., pp. 67–87). Washington, DC: NASW Press.
- O'Rand, A. M. (1996). The precious and the precocious: Understanding cumulative disadvantage and cumulative advantage over the life course. *The Gerontologist, 36*, 230–238. doi:10.1093/geront/36.2.230
- Park, C. L. (1998). Stress-related growth and thriving through coping: The roles of personality and cognitive processes. *Journal of Social Issues, 54*, 267–277. doi:10.1111/j.1540-4560.1998.tb01218.x
- Park, C. L., & Fenster, J. R. (2004). Stress-related growth: Predictors of occurrence and correlates with psychological adjustment. *Journal of Social and Clinical Psychology, 23*, 195–215. doi:10.1521/jscp.23.2.195.31019
- Poulton, R., Caspi, A., Milne, B. J., Thomson, W. M., Taylor, A., Sears, M. R., & Moffitt, T. E. (2002). Association between children's experience of socioeconomic disadvantage and adult health: A life-course study. *Lancet, 360*, 1640–1645. doi:10.1016/S0140-6736(02)11602-3
- Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: Family social environments and the mental and physical health of offspring. *Psychological Bulletin, 128*, 330–366. doi:10.1037/0033-2909.128.2.330
- Ross, C. E., & Wu, C.-I. (1995). The links between education and health. *American Sociological Review, 60*, 719–745.
- Snarey, J., Son, L., Kuehne, V. S., Hauser, S., & Vaillant, G. (1987). The role of parenting in men's psychosocial development: A longitudinal study of early adulthood infertility and midlife generativity. *Developmental Psychology, 23*, 593–603. doi:10.1037/0012-1649.23.4.593
- Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhardt (Ed.), *Sociological method* (pp. 290–312). San Francisco: Jossey-Bass.
- Tedeschi, R. G., & Calhoun, L. G. (2004). Posttraumatic growth: Conceptual foundations and empirical evidence. *Psychological Inquiry: An International Journal for the Advancement of Psychological Theory, 15*, 1–18. doi:10.1207/s15327965pli1501_01
- Uhlenberg, P., & Mueller, M. (2004). Family context and individual well-being: Patterns and mechanisms in the life course perspective. In J. T. Mortimer, & M. J. Shanahan (Eds.), *Handbook of the life course* (pp. 123–148). New York: Springer.
- Vaillant, G. E. (1977). *Adaptation to life*. Boston, MA: Little, Brown and Company.
- Vaillant, G. E. (1995). *The natural history of alcoholism revisited*. Cambridge, MA: Harvard University Press.
- Vaillant, G. E. (2002). *Aging well: Surprising guideposts to a happier life from the landmark Harvard Study of Adult Development*. Boston, MA: Little, Brown.
- Vaillant, G. E. (2012). *Triumphs of experience: The men of the Harvard Grant Study*. Boston, MA: Belknap Press.
- Vaillant, G. E., & Milofsky, E. S. (1980). Natural history of male psychological health, IX: Empirical evidence for Erikson's model of the life cycle. *American Journal of Psychiatry, 137*, 1348–1359.
- Vaillant, G. E., & Mukamal, K. (2001). Successful aging. *The American Journal of Psychiatry, 158*, 839–847. doi:10.1176/appi.ajp.158.6.839
- Versey, H. S., Stewart, A., & Duncan, L. (2013). Successful aging in late midlife: The role of personality among college-educated women. *Journal of Adult Development, 20*, 63–75. doi:10.1007/s10804-013-9157-7
- Werner, E. E. (1993). Risk, resilience, and recovery: Perspectives from the Kauai Longitudinal Study. *Development and Psychopathology, 5*, 503–515. doi:10.1017/S095457940000612X
- Werner, E. E., & Smith, R. S. (1982). *Vulnerable, but invincible: A longitudinal study of resilient children and youth*. New York: McGraw-Hill.
- Werner, E. E., & Smith, R. S. (2001). *Journeys from childhood to midlife: Risk, resilience, and recovery*. Ithaca, NY: Cornell University Press.

- Willson, A. E., Shuey, K. M., & Elder, G. H. Jr. (2007). Cumulative advantage processes as mechanisms of inequality in life course health. *American Journal of Sociology, 112*, 1886–1924.
- Wilson, J. P., & Agaibi, C. E. (2006). The resilient trauma survivor. In J. P. Wilson (Ed.), *The posttraumatic self: Restoring meaning and wholeness to personality* (pp. 369–398). New York: Routledge.
- Wilson, R. S., Krueger, K. R., Arnold, S. E., Barnes, L. L., Mendes de Leon, C. F., Bienias, J. L., & Bennett, D. A. (2006). Childhood adversity and psychosocial adjustment in old age. *The American Journal of Geriatric Psychiatry: Official Journal of the American Association for Geriatric Psychiatry, 14*, 307–315. doi:10.1097/01.JGP.0000196637.95869.d9