Invisible Scars: Residual Consequences of Childhood Maltreatment Even in Adults Classified as Resilient

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Abstract

People exposed to childhood maltreatment (CM) are thought to emerge as "resilient" or "non-resilient" in adulthood, with the implication that resilient adults eluded the negative consequences of CM. However, adults with CM who are classified as "resilient" may still face negative outcomes in areas of life not captured by resilience criteria. To test this hypothesis, the present study examined whether higher levels of CM were associated with worse psychological, social, and physical health outcomes even in "resilient" adults. Using data at all three survey waves spanning two decades from the Midlife in the United States (MIDUS) longitudinal study, resilience was defined as healthy functioning across seven domains: psychiatric disorders, substance use, education, employment, homelessness, crime, and social isolation. Results showed that in both the "resilient" and "non-resilient" groups, higher CM exposure was significantly associated with worse outcomes on measures of stress reactivity, perceived stress, number of chronic conditions, self-esteem, life satisfaction, relationship quality with friends and family, and positive relations with others (measured at wave 3; all p-values <.033). These findings suggest that CM has enduring and overlooked psychological, social, and physical health consequences not captured by comprehensive resilience criteria, highlighting the need for intervention even in seemingly resilient adults.

Keywords

Introduction

In the childhood maltreatment (CM) literature, the dominant narrative posits that people exposed to CM can be classified in adulthood as "resilient" or "non-resilient," with the implication that resilient adults eluded the negative consequences of their CM exposure (Collishaw et al., 2007; DuMont et al., 2007; Liem et al., 1997; McGloin & Widom, 2001). But have they really eluded the negative consequences of CM or have some of the negative consequences not been captured by the way that resilience has been studied? Resilience is difficult to define; as such, markers of resilience have been inconsistent across studies (Aburn et al., 2016; Denckla et al., 2020; Fares-Otero et al., 2025; Luthar et al., 2000; Vella & Pai, 2019), with studies sometimes using rather limited criteria, such as defining resilience only as a lack of psychopathology (Alim et al., 2008; Collishaw et al., 2007). How resilience is defined within a study ultimately impacts how common or rare it seems to emerge resilient from CM (Haskett et al., 2006; Kaufman et al., 1994). As such, the field has moved towards measuring resilience across multiple domains (Luthar et al., 2000; Mersky & Topitzes, 2010; Vella & Pai, 2019; Wang et al., 2024; Yoon et al., 2021) assessed over time (Bonanno, 2012; Dubowitz et al., 2016; Ng & Jeffery, 2003; Wang et al., 2024).

A broad range of outcomes—not used to classify resilience—have been associated with CM, such as higher stress reactivity (Zainal et al., 2024), higher perceived stress (Edalati et al., 2020; Hong et al., 2018; Hyman et al., 2007), lower self-esteem (Fares-Otero et al., 2025; Liem & Boudewyn, 1999; Stein et al., 2002), lower life satisfaction (LaBrenz et al., 2021; Mosley-Johnson et al., 2019; Ozturk &

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Mohler, 2021), poorer quality relationships (Colman & Widom, 2004; Zamir, 2022), and a higher likelihood of experiencing chronic health conditions (Felitti et al., 1998; Hughes et al., 2017). Despite not being used to classify resilience, these outcomes are still important because they have substantial downstream consequences, increasing risk for cardiovascular disease (Turner et al., 2020), chronic pain (Boring et al., 2023), accelerated aging (Turner et al., 2020), and cognitive decline (Piolatto et al., 2022) as well as being associated with eating a higher fat diet (Ng & Jeffery, 2003), exercising less (Ng & Jeffery, 2003), using anti-hypertensive medications (Rod et al., 2009), having lower job satisfaction (Zell & Johansson, 2025), and having a shorter lifespan (Rizzuto et al., 2017). However, no study has examined whether higher exposure to CM continues to be associated with worse outcomes on these measures for adults classified as resilient, even when resilience is defined using the strictest criteria available (DuMont et al., 2007; McGloin & Widom, 2001).

This study examines this research question of whether higher exposure to CM is associated with worse outcomes on measures previously associated with CM, even among adults classified as resilient. To test this, we used the strictest resilience criteria available (McGloin & Widom, 2001). Previous studies using this same strict resilience criteria did so in a longitudinal sample of children with court documented cases of CM and demographically matched controls (DuMont et al., 2007; Jaffee & Widom, 2023; McGloin & Widom, 2001). In this study, by contrast, we measured CM as a continuous rather than dichotomous variable, in line with calls to consider the severity of CM and not just its presence or absence (Fares-Otero et al., 2025; McGloin & Widom, 2001). Therefore, our sample encompassed the full range of exposure levels, including those with no self-reported exposure to CM. This inclusion allowed us to test how the severity of CM exposure impacts psychological, social, and physical health outcomes even in adults who meet strict criteria for resilience.

Methods

Study Overview

This study used longitudinal data from the Midlife in the United States (MIDUS) study spanning three study waves across two decades in midlife adults. We used the seven domains developed by McGloin and Widom (2001) to define our resilience criteria: no psychiatric disorders, no substance use problems, graduation from high school, no homelessness, not fired from two or more jobs, no jail or prison, and no social isolation. Indicators for each domain were adapted from McGloin and Widom (2001) based on variables available in the MIDUS dataset. Resilience implies being resilient in the context of a specific stressor (Denckla et al., 2020; Rutter, 2006). In this investigation, the specific stressor of interest is CM. Those who were not exposed to CM cannot demonstrate resilience to this specific stressor; thus, we refer to them as "healthy functioning" or "non-healthy functioning" instead of "resilient" or "non-resilient" (to indicate those who did and did not successfully met criteria across all 7 domains at all 3 waves).
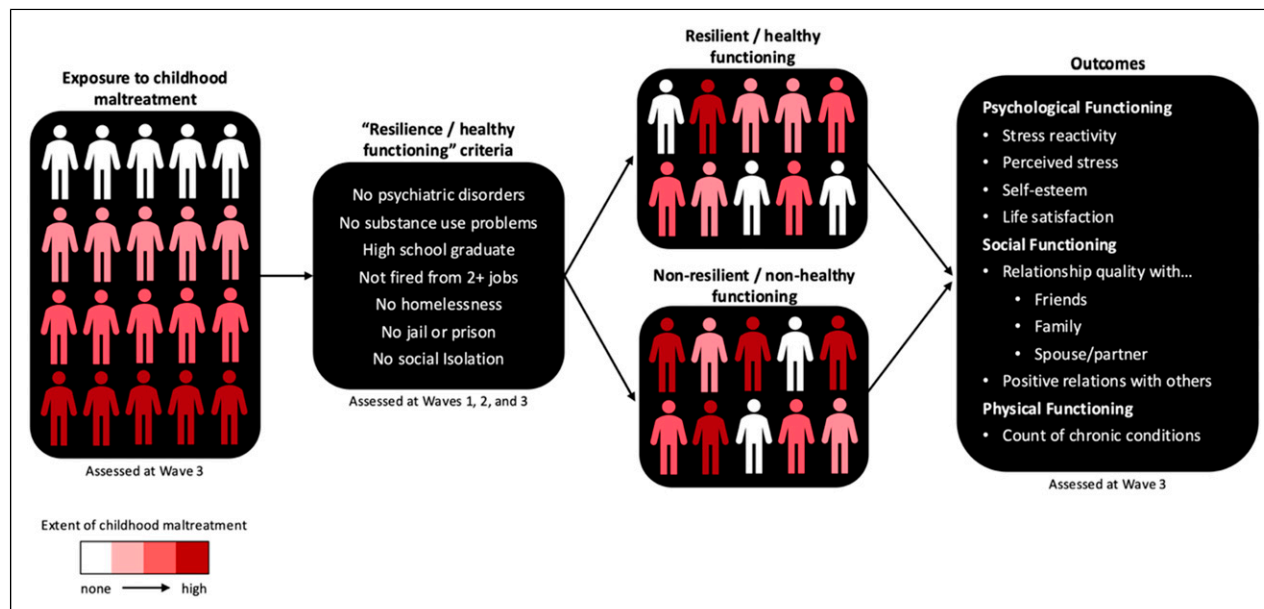
Figure 1. Overview of Research Question.
Note. Participants ranged in their exposure to childhood maltreatment and either met criteria for "resilience/healthy functioning" or did not. The main research question involved testing whether childhood maltreatment is associated with worse psychological, social, and physical health outcomes in those who met criteria for "resilience/healthy functioning." This allowed us to assess whether residual consequences of childhood maltreatment remain even in those considered "resilient/healthy functioning" using a strict definition of resilience based on McGloin and Widom (2001)

After classifying people in our sample as "resilient/healthy functioning" or "non-resilient/non-healthy functioning," we examined whether the two groups differed in their association between continuous CM scores and psychological, social, and physical health outcomes, which were measured at wave 3 and distinct from the metrics used in our criteria for "resilience/healthy functioning." Then, within these interaction models, we examined the association between continuous CM scores on our outcome measures within the "resilient/healthy functioning" and "non-resilient/non-healthy functioning" groups separately to determine the direction and magnitude of effects. For an overview of our research question, see Figure 1.

Participants

MIDUS is a longitudinal study designed to investigate the role of behavioral, psychological, and social factors in understanding age-related differences in physical and mental health across three waves (wave 1: 1995-1996; wave 2: 2004-2006; wave 3: 2013-2014). Respondents were drawn from a random-digit-dial sample of non-institutionalized, English-speaking adults in the U.S., ages 25-74. Participants completed an initial telephone interview and responded to a mail-in questionnaire. More information on study design and sampling strategy has been published elsewhere (Radler, 2014).

Our sample included only participants who had data on our "resilience/healthy functioning" measures at all three waves of MIDUS as well as other predictors and covariates of interest. A subsample of 747 participants completed data collection at wave 3 for an additional study called project 4 wherein data on CM was measured. Of these 747, 103 participants were part of a Black sample from Milwaukee that was added at wave 2. These 103 participants were excluded because they did not have data at wave 1. Of the remaining 644 participants who had data at all three waves, 57 (8.9%) were missing data for the predictors and/or covariates (2 [0.3%] were missing data on CM, 21 [3.3%] were missing data on race, and 51 [7.9%] were missing data on our "resilience/healthy functioning" measure). In line with guidelines suggesting that missing data less than 10% does not require multiple imputation (Bennett, 2001), we excluded these 57 participants for an analytic sample of 587. The participants in our analytic sample (age at wave 3: mean = 61.2, standard deviation [SD] = 9.8) were 54% female, 95% white, and 76% had at least some college education. Specific questions and scales for each measure listed below are provided in Supplemental Materials.

Childhood Maltreatment Measure

The Childhood Trauma Questionnaire (CTQ) – Short Form (Bernstein et al., 2003) measures the extent of abuse (emotional, physical, and sexual) and neglect (emotional and physical) occurring before age 18 and participants completed this measure at wave 3. Each of the five subscales of CM were measured with five items rated on the following scale: 1 = never true, 2 = rarely true, 3 = sometimes true, 4 = often true, and 5 = very often true. Items were reverse coded as needed so that higher scores reflected greater CM. For each subscale, items were summed to create a subscale score if at least four

Table 1. Definitions of "Resilience/Healthy Functioning" for Each Domain

Domain	Measure	Definition of resilience/healthy functioning
No psychiatric disorders	Revised DSM-III assessed with the World Mental Health Organization's Composite International Diagnostive Interview Short Form (American Psychiatric Association, 1987; Kessler et al., 1998; Wang et al., 2000)	Not meet criteria for depression, generalized anxiety disorder, and/or panic disorder in the past 12 months at any wave
No substance use problems	Michigan Alcohol Screening Test (Selzer, 1971) adapted to assess substance use problems as well	Not meet criteria for alcohol and/or substance use problems in the past 12 months at any wave
High school education	Self-report	Not report having less than a high school education at any wave
Not fired from 2+ jobs	Self-report	Not report having been fired from two or more jobs over their lifetime
No homelessness	Self-report	Not report homelessness over the past 5 years at wave 1 or homelessness since previous wave at waves 2 and 3
No jail or prison	Self-report	Not check boxes indicating that they had ever experienced "detention in jail or comparable institution" or "serious legal difficulties/prison" at any wave
No social isolation	Self-report	Report having at least weekly contact with friends and/or family (e.g., visits, phone calls, letters, and emails) at each wave

items had a valid value. If one item had a missing value, the mean value of completed items was imputed. Then, the five subscale scores were averaged together to create a composite measure of CM ranging from 5 to 25 (alpha = .88).

"Resilience/Healthy Functioning" Classification

"Resilience/healthy functioning" was defined based on McGloin & Widom (McGloin & Widom, 2001) and adapted for MIDUS based on available indicators in the dataset for the following seven domains: psychiatric disorders, substance use, education, employment, homelessness, crime, and social isolation (see Table 1 for details on how each domain was defined). Those who met criteria on all domains across all three waves were considered "resilient/healthy functioning." At each wave, participants needed at least one non-missing value on a domain to compute their domain score. Only those with non-missing domain scores on all seven domains across all three waves were included in the sample. Those who met criteria for "resilience/healthy functioning" on all seven domains across all three waves were classified as "resilient/healthy functioning" whereas those who did not were classified as "non-resilient/non-healthy functioning."

Outcome Measures to Test for Residual Consequences of Childhood Maltreatment

Psychological, social, and physical health outcomes were measured at wave 3. Importantly, these outcomes tapped a broad range of metrics that were not used to define "resilience/healthy functioning" and, as such, could be used to test for residual psychological, social, and physical health consequences of CM in those classified as "resilient/healthy functioning." The scales were computed by the MIDUS research team using the methods described below.

Psychological Outcomes

Stress Reactivity. Participants responded to three items that comprised the stress reactivity scale, a subscale of a negative emotionality measure (Patrick et al., 2002). For each item, participants reported on a scale from 1 = *true of you*, 2 = *somewhat true*, 3 = *somewhat false*, to 4 = *false*. Items were reverse coded so that higher scores indicated greater stress reactivity. Then, the items were summed to create a composite measure of stress reactivity ranging from 3 to 12 (alpha = .73). The scale was computed for participants with valid values on at least two items. If one item had a missing value, the mean value of completed items was imputed.

Perceived Stress. Participants responded to ten items that comprised the perceived stress scale (Cohen et al., 1983). For each item, participants reported on the frequency that they had experienced each item over the past month on a scale from 1 = *never*, 2 = *almost never*, 3 = *sometimes*, 4 = *fairly often*, to 5 = *very often*. Four items were reverse coded so that higher scores

indicated greater perceived stress. Items were summed to create a composite measure of perceived stress ranging from 10 to 50 (alpha = .86). The scale was computed for participants with valid values on at least nine items. If one item had a missing value, the mean value of completed items was imputed.

Self-Esteem. Participants responded to seven items that comprised the self-esteem scale (Rosenberg, 1965). For each item, participants reported on a scale from 1 = *strongly agree* to 7 = *strongly disagree*. Three items were reverse scored so that higher scores reflect higher self-esteem. Then, items were summed to create a composite score of self-esteem ranging from 7 to 49 (alpha = .76). The scale was computed for participants with valid values on at least four items. For items with a missing value, the mean value of completed items was imputed.

Life Satisfaction. Participants responded to six items that comprised the life satisfaction scale (Prenda & Lachman, 2001). Respondents were asked to rate their satisfaction with their life overall and (when relevant) with their work, financial situation, health, relationship with spouse/partner, and relationship with children on a scale ranging from 0 = *the worst possible* to 10 = *the best possible*. Scores for relationship with spouse/partner and children were averaged to create a score for one item. Then, all items were averaged to create a composite score of life satisfaction (alpha = .71). The scale was computed for participants with a valid value on at least one item. Scores ranged from 0 to 10.

Social Relationship Outcomes

Quality of Friendships. Participants self-reported on friendship quality with four items that measured friendship support and four items that measured friendship strain (Schuster et al., 1990; Whalen & Lachman, 2000). The friendship support items were reverse coded so that higher scores reflected more supportive friendships. Items were averaged to create a composite of friendship quality (alpha = .78). The scale was computed for participants who had valid values on at least one item.

Quality of Family Relationships. Participants self-reported on family relationship quality (excluding their spouse/partner) with four items that measured family support and four items that measured family strain (Schuster et al., 1990; Whalen & Lachman, 2000). The family support items were reverse coded so that higher scores reflected more supportive family relationships. Items were averaged to create a composite of family relationship quality (alpha = .78). The scale was computed for participants who had valid values on at least one item.

Quality of Spouse/Partner Relationship. For participants in a marriage or marriage-like relationship, they self-reported on spouse/partner relationship quality (n = 423) with six items that measured spouse/partner support and six items that measured spouse/partner strain (Schuster et al., 1990; Whalen & Lachman, 2000). The spouse/partner support items were

reverse coded so that higher scores reflected a more supportive relationship. Items were then averaged to create a composite of spouse/partner relationship quality (alpha = .78). The scale was computed for participants who had valid values on at least one item of each subscale.

For all the scales above, the support items were reported using the following scale: 1 = *a lot*, 2 = *some*, 3 = *a little*, and 4 = *not at all*. The strain items were reported using the following scale: 1 = *often*, 2 = *sometimes*, 3 = *rarely*, and 4 = *never*. Total scores ranged from 1 to 4.

Positive Relations with Others. Participants completed seven items that measured positive relations with others, a subscale of a psychological well-being measure (Ryff, 1989). For each item, participants reported on a scale from 1 = *strongly agree* to 7 = *strongly disagree*. One item was reverse coded so that higher scores reflected more positive relations with others. Then, items were summed to create a composite of positive relations with others ranging from 7 to 49 (alpha = .62). If an item had a missing value, the mean value of completed items was imputed. The scale was computed for participants who had valid values on at least four items.

Physical Health Outcomes
Count of Chronic Conditions. Participants reported which of 39 chronic health conditions (e.g., diabetes, thyroid disease, autoimmune disorders, hypertension, migraine headaches, asthma, stroke, chronic sleep problems) they had experienced in the past 12 months. The number of chronic conditions were summed. Possible total scores ranged from 0 to 39.

Analytic Plan

For each outcome except for the count of chronic conditions outcome, multivariable linear regressions were conducted (separately for each outcome). For the count of chronic conditions outcome, a negative binomial regression was conducted. The predictors were CM (measured at wave 3), "resilience/healthy functioning" status (measured across all three waves), and their interaction. Age, sex, and race were included as covariates because these variables were either significant within some of the models or associated with a 10% or greater change in the effect estimation of at least one of the predictors within some of the models (age cohort effects were also considered but results were similar with and without). We first tested for an interaction effect. Then, within these models, we examined the simple slopes of CM on our outcomes (measured at wave 3) within the "resilience/healthy functioning" and "non-resilient/non-healthy functioning" groups to determine the significance, size, and direction of effects. All analyses were conducted using SPSS (version 29). Two-tailed p-values <0.05 were considered statistically significant.

Post-hoc power calculations were conducted to evaluate the difference in slopes between the "resilient/healthy functioning"

and "non-resilient/non-healthy functioning" groups for the association between CM (measured using the CTQ) and each outcome. Slope estimates represent the change in the outcome (standardized) associated with each increase of 1 point on the CTQ. This study has 80% or better power to detect differences in slopes of 0.11 SD or larger.

Results

Percentage Meeting "Resilience/Healthy Functioning" Criteria

Overall, 37.6% met criteria for "resilience/healthy functioning" on all domains across all three waves (see Table 2 for the breakdown of "resilience/healthy functioning" by domain and wave). See Table 3 for means and SDs for all outcome variables overall and broken down by "resilience/healthy functioning" status.

Psychological, Social, and Physical Health Consequences of Childhood Maltreatment do not Differ by "Resilience/Healthy Functioning" Status

To evaluate our hypothesis regarding whether the residual consequences of CM differed within the "resilient/healthy functioning" and "non-resilient/non-healthy functioning" groups, we tested for an interaction between CM and "resilient/healthy functioning" status separately for each of our outcomes. None of the interactions were significant for any of the outcomes (see Table 4 for p-values), indicating that the residual consequences of CM do not differ between the "resilient/healthy functioning" and "non-resilient/non-healthy functioning" groups.

To quantify the residual consequences of CM within the "resilient/healthy functioning" and "non-resilient/non-healthy functioning" groups separately, we estimated the simple slopes of CM on our outcomes within the interaction model for the "resilient/healthy functioning" and "non-resilient/non-healthy functioning" groups. The slope is presented as standardized betas for all outcomes except for count of chronic conditions in which exponentiated unstandardized betas are presented

Table 2. Percentage Demonstrating "Resilience/Healthy Functioning" by Domain and Wave

Domains	Wave 1	Wave 2	Wave 3	Overall
No psychiatric disorders	80.1%	79.4%	75.6%	60.3%
No substance use problems	82.5%	92.2%	87.6%	73.8%
High school graduate[a]	96.8%	98.0%	97.8%	95.6%
Not fired from 2+ jobs ever	99.5%	98.1%	97.3%	97.3%
No homelessness	99.1%	99.8%	99.5%	98.6%
No jail or prison ever	96.3%	95.2%	94.0%	94.0%
No social isolation	93.7%	94.4%	93.7%	85.3%

[a]At wave 2, 12 reported not graduating high school, which is discrepant with wave 3 where 13 reported not graduating high school.

Table 3. Means of Predictors, Covariates, and Outcomes Overall and by "Resilience/Healthy Functioning" Status

	N	Overall	Resilient/Healthy functioning	Non-resilient/Non-healthy functioning	p-value
Predictors and covariates		N = 587	N = 222	N = 365	
Childhood maltreatment	587	7.5 (2.8)	6.8 (2.0)	7.9 (3.1)	<.001
Age (wave 3)	587	61.2 (9.8)	63.1 (10.0)	60.0 (9.5)	<.001
Sex (% female vs. male)	587	54.0%	55.4%	53.2%	.596
Race (% white vs. non-white)	587	95.4%	96.8%	94.5%	.165
Psychological outcomes					
Stress reactivity	583	5.8 (2.2)	5.1 (1.9)	6.1 (2.2)	<.001
Perceived stress	586	21.0 (6.0)	19.2 (5.0)	22.1 (6.2)	<.001
Self-esteem	584	38.3 (7.0)	40.1 (5.6)	37.1 (7.5)	<.001
Life satisfaction	587	7.7 (1.3)	8.1 (1.0)	7.5 (1.4)	<.001
Social outcomes					
Relationship quality with friends	581	3.3 (0.4)	3.4 (0.4)	3.3 (0.4)	<.001
Relationship quality with family	586	3.3 (0.5)	3.4 (0.5)	3.2 (0.5)	<.001
Relationship quality with spouse/partner	420	3.3 (0.6)	3.3 (0.5)	3.2 (0.6)	.018
Positive relations with others	585	41.0 (6.7)	42.6 (5.8)	40.0 (7.0)	<.001
Physical outcomes					
Count of chronic conditions	582	2.9 (2.9)	2.1 (2.3)	3.4 (3.1)	<.001

Note. Percentages are provided for binary measures, and means (standard deviations) are given for continuous measures. P-values are given for two-sided t-tests comparing the "resilient/healthy functioning" and "non-resilient/non-healthy functioning" groups.

instead. See Table 4 for effect estimates and p-values for the association between CM and psychological, social, and physical health outcomes within the "resilient/healthy functioning" and "non-resilient/non-healthy functioning" groups and Figures 2(A)-(I) for scatterplots and trendlines for both groups.

As can be seen in Figures 2(A)-(I), one of the participants in the "non-resilient/non-healthy functioning" group was a leverage point, with a score of 24 out of a possible score of 25 on the CTQ. In Table 1S in Supplemental Materials, the results are provided without this participant. When this participant is removed, the associations generally became stronger within the "non-resilient/non-healthy functioning" group and even significant for one of the results; however, we report the results below with this participant included in the analyses to provide more conservative estimates.

Table 4. Interaction Effect Models

	Interaction	Resilient/Healthy Functioning		Non-Resilient/Non-Healthy Functioning	
Outcomes	p-value	Slope	P-value	Slope	p-value
Psychological functioning					
Stress reactivity	.290	.075	.019	.037	.022
Perceived stress	.706	.085	.007	.099	<.001
Self-esteem	.746	−.069	.033	−.081	<.001
Life satisfaction	.831	−.070	.026	−.078	<.001
Social relationships					
Relationship quality with friends	.469	−.101	.002	−.074	<.001
Relationship quality with family	.212	−.120	<.001	−.075	<.001
Relationship quality with spouse/partner	.610	−.063	.182	−.037	.079
Positive relations with others	.582	−.107	<.001	−.088	<.001
Physical health					
Number of chronic conditions	.110	1.038	.012	1.102	.005

Note. Models testing for the effect of childhood maltreatment (measured using the CTQ), "resilience/healthy functioning" status, and their interaction on psychological, social, and physical health outcomes controlling for age, sex, and race. For all outcomes (except for the number of chronic conditions), the slope represents the standard deviation change in each standardized outcome associated with each additional point on the CTQ scale. For number of chronic conditions, the effect estimates are presented as exponentiated unstandardized betas and represent the relative increase in the number of chronic conditions for each additional point on the CTQ. CTQ = Childhood Trauma Questionnaire, measuring childhood maltreatment and yielding continuous scores.
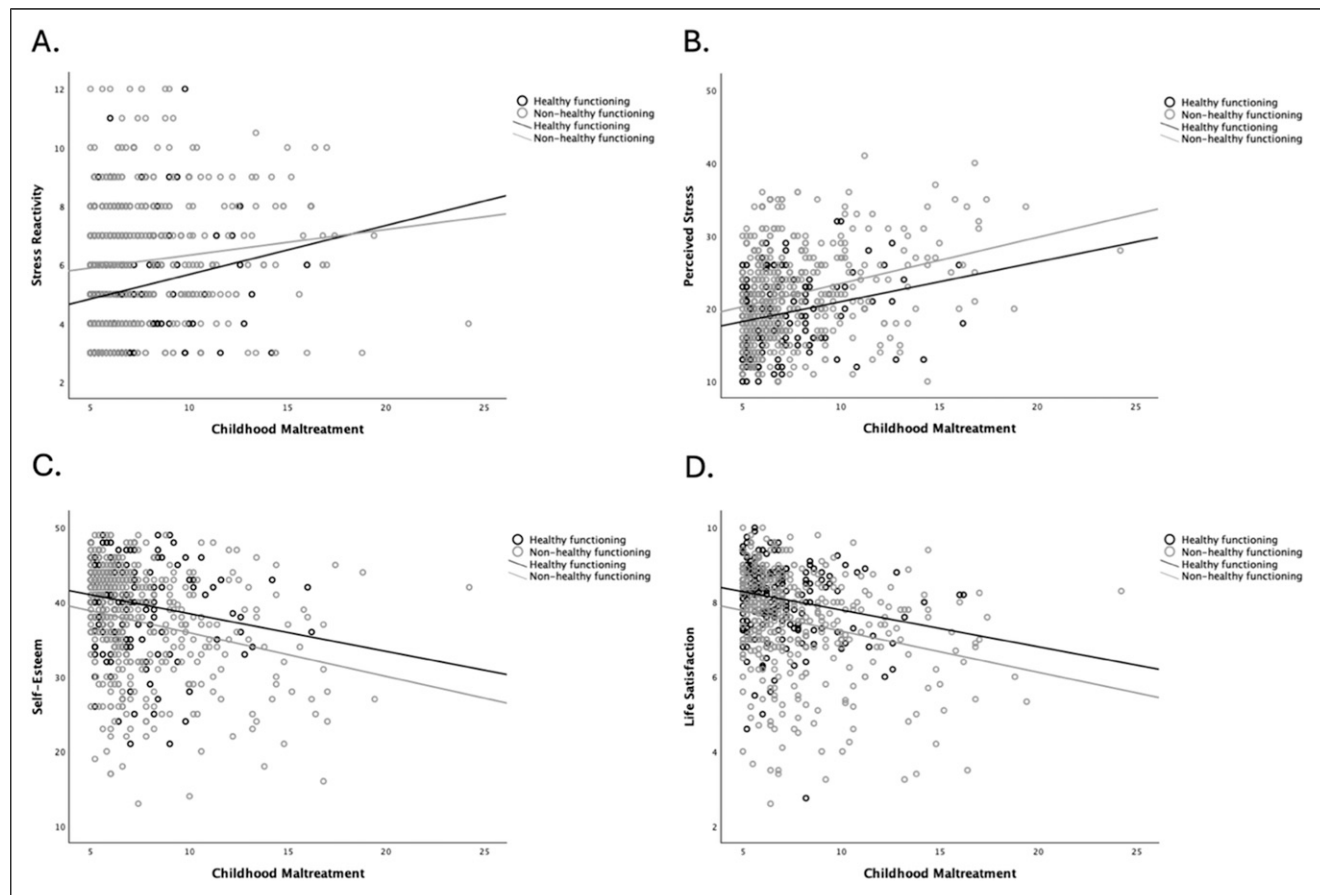
Figure 2. (A–I) Association Between Childhood Maltreatment and Psychological, Social, and Physical Health Outcomes.
Note. Slopes are unadjusted for age, sex, and race. Except for relationship quality with spouse/partner, all slopes are significant for the "resilient/healthy functioning" and "non-resilient/non-healthy functioning" groups

Psychological, Social, and Physical Health Consequences of Childhood Maltreatment Within the "Resilient/Healthy Functioning" and "Non-Resilient/Non-Healthy Functioning" Groups

Within both the "resilient/healthy functioning" (β_h) and "non-resilient/non-healthy functioning" (β_{nh}) groups, higher CM was significantly associated with higher stress reactivity (Figure 2(A); $\beta_h = .208, p = .019; \beta_{nh} = .103, p = .022$), higher perceived stress (Figure 2(B); $\beta_h = .234, p = .007; \beta_{nh} = .271, p < .001$), lower self-esteem (Figure 2(C); $\beta_h = -.191, p = .033; \beta_{nh} = -.223, p < .001$), lower life satisfaction (Figure 2(D); $\beta_h = -.195, p = .026; \beta_{nh} = -.215, p < .001$), worse relationship quality with friends (Figure 2(E); $\beta_h = -.278, p = .002; \beta_{nh} = -.205, p < .001$) and family (Figure 2(F); $\beta_h = -.332, p < .001; \beta_{nh} = -.207, p < .001$), lower positive relations with others (Figure 2(G); $\beta_h = -.296, p < .001; \beta_{nh} = -.243, p < .001$), and a greater number of chronic health conditions experienced in the past 12 months (Figure 2(I); $\exp(B)_h = 1.038, p = .012; \exp(B)_{nh} = 1.102, p = .005$). Although the simple slopes for the association between CM and relationship quality with the spouse/partner was non-

significant for both groups (Figure 2(H); $\beta_h = -.165, p = .182; \beta_{nh} = -.096, p = .079$), the simple slopes showed trend level correlations in the expected direction.

Discussion

Many research studies have suggested that a significant portion of those exposed to CM are resilient in adulthood (Collishaw et al., 2007; DuMont et al., 2007; Liem et al., 1997; McGloin & Widom, 2001; Wingo et al., 2014), with the implication that these resilient adults emerge unscathed from their CM experiences. Our study is the first to test whether people who meet strict criteria for resilience nevertheless exhibit an association between higher exposure to CM and worse outcomes on psychological, social, and physical health metrics not used to define resilience. We found that, among the third of our sample who met the strictest resilience criteria available (McGloin & Widom, 2001), higher exposure to CM was still associated with worse outcomes, including higher stress reactivity, higher perceived stress, poorer self-esteem, lower life satisfaction, poorer quality relationships, and a greater number of chronic health conditions. The effect sizes
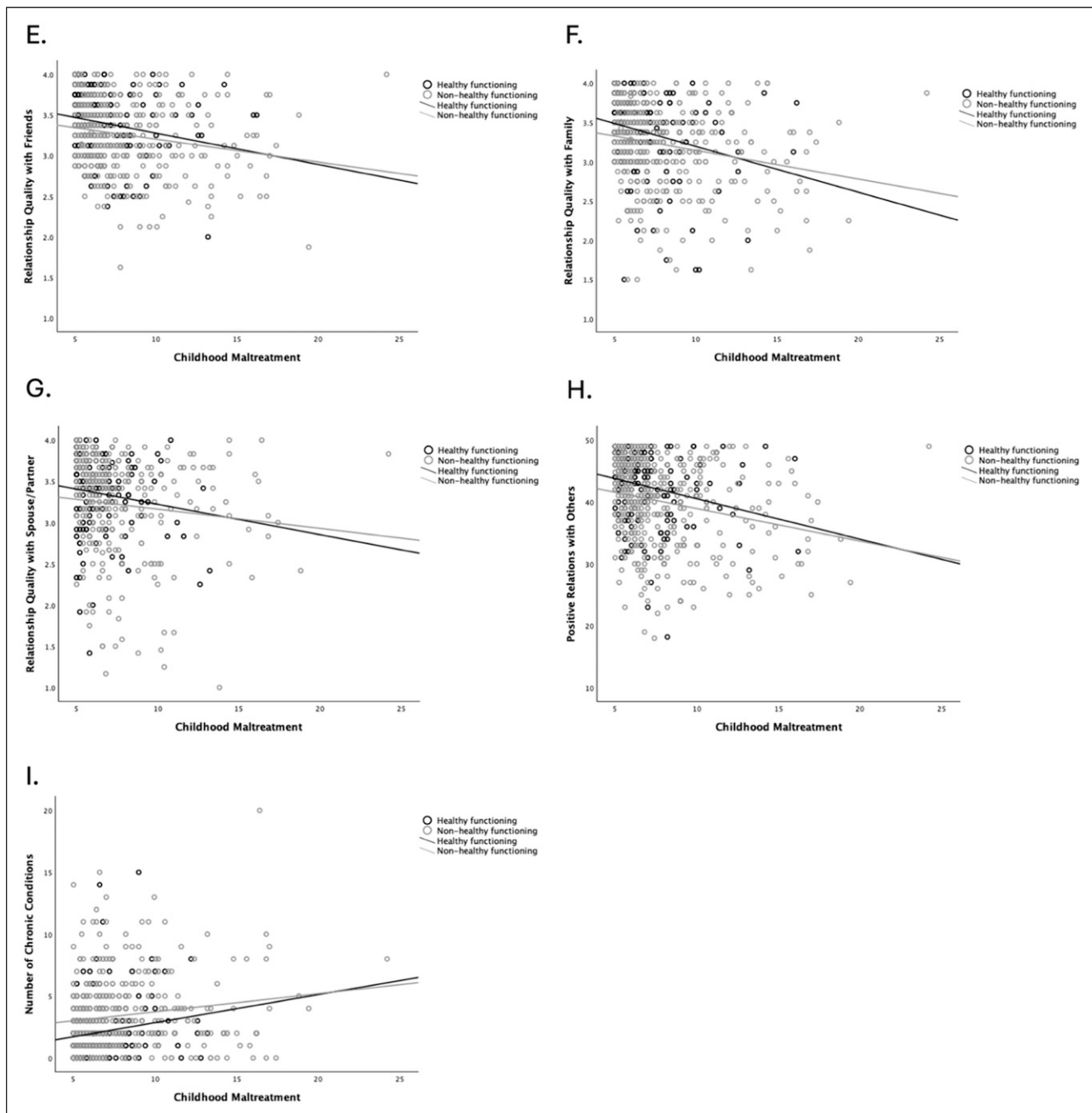
Figure 2. Continued.

of the association between higher levels of CM and these outcomes did not differ between the "resilient/healthy functioning" and "non-resilient/non-healthy functioning" groups, suggesting that higher levels of CM have a similarly negative impact on various psychological, social, and physical health outcomes regardless of "resilience/healthy functioning" status as defined in this study. Our study was adequately powered (80%) to detect differences in the slopes between resilient and non-resilient groups for differences

greater than 0.11 SD. The largest difference in slopes between the "resilient/healthy functioning" and "non-resilient/ non-healthy functioning" groups was 0.045 SD for the outcome "relationship status with family," suggesting that our non-significant differences between groups were not due to a lack of power. Thus, those who meet strict criteria for resilience are not resistant to all the negative consequences of CM, despite the dominant narrative on resilience suggesting otherwise.

We acknowledge that people exposed to CM exhibit variability in adaptation and we consider resilience to be an appropriate characterization for those who demonstrate more positive adaptation. Nevertheless, we were surprised to find that within both the "resilient/healthy functioning" and "non-resilient/non-healthy functioning" groups, higher levels of CM had effects of a strikingly similar size on a broad range of outcomes, distinct from those used to define "resilience/healthy functioning." Our study used primarily subjective outcome measures, which demonstrated that although adults with higher levels of CM who met strict "resilience/healthy functioning" criteria based on objective measures (e.g., graduating high school, not being fired from two or more jobs) may seem like they are doing well, they nevertheless report worse subjective experiences on psychological and social measures. These subjective effects are meaningful. For example, those with the highest exposure to CM in the "resilient/healthy functioning" and "non-resilient/non-healthy functioning" groups have average perceived stress levels comparable to samples of patients with serious medical diagnoses, such as multiple sclerosis (Wu & Amtmann, 2013), breast cancer (Golden-Kreutz et al., 2005), and lupus (Mills et al., 2017). This observation is novel given that previous studies have not examined negative outcomes associated with higher levels of CM in those who have already meet strict criteria for resilience (DuMont et al., 2007; McGloin & Widom, 2001).

The idea that those who appear resilient may have invisible scars is gaining traction. CM is associated with reduced hippocampal volume in otherwise healthy adults with no lifetime history of psychiatric disorders (Dannlowski et al., 2012; Samplin et al., 2013). These adults, who would be characterized as resilient by a common definition of resilience (Alim et al., 2008; Collishaw et al., 2007; Walsh et al., 2010), still manifested what the authors refer to as "limbic scars" (Dannlowski et al., 2012). Furthermore, in midlife women without current psychiatric disorders, a higher number of adverse childhood experiences is associated with lower functional network connectivity (Shanmugan et al., 2017), suggesting lasting impacts on large-scale functional networks underlying executive function. Finally, in midlife adults with court-documented CM, allostatic load is high (compared to sociodemographically matched controls) regardless of the extent to which they displayed resilience during early adulthood as measured by the number of domains on which they exhibited healthy functioning (Jaffee & Widom, 2023). Our results combined with these studies suggest that although adults with CM histories may appear to be doing well based on previously used resilience criteria, these experiences have lasting consequences on a psychological, social, physical, and neural level even in adults who otherwise seem healthy.

Clinical and Policy Implications and Future Directions

Clinically, our results suggest that support should not be overlooked in adults who do not appear to be negatively affected by CM because CM is associated with specific challenges even in those who meet strict criteria for resilience. For example, our results show that regardless of resilience, those exposed to CM tend to react more strongly to stressors and have poorer quality social relationships, which means they may be more likely to experience stress but less able to buffer it (Cohen, 2004). Interventions aimed at dampening emotional reactivity to stressors and enhancing the supportiveness of social relationships are likely to benefit physical health, as the aberrant stress response over time is hypothesized to be how the psychological and social consequences of CM become biologically embedded (Raposa et al., 2014). Mindfulness-based cognitive therapy may be a beneficial option as it seems to be more efficacious in adults *with* rather than *without* CM exposure, at least in lowering the risk of relapse to major depressive disorder (Joss & Teicher, 2021). For trauma survivors with subsyndromal psychological symptoms, cognitive behavioral resilience training tailored to trauma exposed adults has demonstrated preliminary efficacy in decreasing anxiety symptoms and boosting resilience (Zalta et al., 2016). Our study results suggest that these treatments should be considered in adults with CM histories even if they appear resilient.

From a policy perspective, our findings suggest that the impact of CM may be worse than initially suspected as some of its long-term effects are "hidden" among those who otherwise appear resilient. As such, policies and evidence-based interventions created to eradicate CM need to be strengthened and scaled. In addition to policies, strategies, and interventions that already exist to lower the incidence of CM, such as the child protection system, child welfare policies, early childhood education, home visitations, school- and clinic-based programs, parenting interventions, child tax credit policies, nutrition assistance programs, and the expansion of Medicaid (Harden et al., 2021), universal childcare and paid family leave have also been proposed (Bullinger et al., 2025; Puls et al., 2022). Our study highlights the pervasive impact of CM and emphasizes the urgency of improving prevention.

Strengths and Limitations

Retrospective reports of CM have been criticized because they may underestimate the actual occurrence of CM (Hardt & Rutter, 2004) as well as correlate more strongly with subjective outcomes than objective outcomes (Reuben et al., 2016). However, multiple lines of evidence support the use of retrospective reports in our study. First, retrospective and prospective measures of adverse childhood experiences show moderate agreement, and both correlate with social, physical, mental, and cognitive health outcomes at midlife (Reuben et al., 2016). Second, the short form version of the CTQ used in our study is considered a valid and reliable measure in diverse populations (Cruz, 2023). Third, using retrospective reports of CM allowed us to capture the types and severities of CM that occur in the general population better than

prospective studies, which often rely on court records to confirm CM and thus only capture the types and severities of CM that are more likely to be officially reported (DuMont et al., 2007; Jaffee & Widom, 2023; McGloin & Widom, 2001; Mersky & Topitzes, 2010). As such, our study is the first to use the strictest resilience criteria available (McGloin & Widom, 2001) in a national sample and capture the full spectrum of CM exposure—from no exposure to high levels of CM—ensuring that our findings are more generalizable to the full range of CM experiences.

Although our study captures a broad range of CM types, it only addresses the impact of cumulative CM rather than the impact of specific types of CM, which are likely to associate differentially with our psychological, social, and physical health outcomes. In a meta-analysis, different types of CM correlate with psychological outcomes (e.g., self-esteem) with varying effect sizes (Zhang et al., 2023). In addition, CM types differentially impact domains of social functioning (Fares-Otero et al., 2023) and risk for certain physical health conditions (Clemens et al., 2018). Thus, our hypotheses should be tested in future research based on CM type.

Most participants in our analytic sample were white and relatively well-educated. Although the MIDUS research team attempted to address the lack of diversity in the MIDUS sample by recruiting a sample of Black participants in Milwaukee starting in wave 2, we had to exclude these participants from our analytic sample as we required participants to have data at all three waves. This limits the generalizability of our findings; however, given that we still observe associations between CM and worse psychological, social, and physical health outcomes among the "resilient/healthy functioning" group in a sample with high socioeconomic status and relatively fewer compounding life stressors (e.g., racial discrimination, poverty, neighborhood violence), we might expect even larger effects in samples that include more people from disadvantaged groups.

Because this was a secondary data analysis, we were beholden to the measures that were available in the dataset. As such, our "no psychiatric disorders" domain was comprised of depression disorders, anxiety disorders, and panic disorder because data was not available for other psychiatric disorders that have been associated with CM, such as ADHD, bipolar disorder, and schizophrenia (Chaiyachati & Gur, 2021; Etain & Aas, 2020; Sanderud et al., 2016). However, the way we operationalized our "no psychiatric disorders" domain is closely in line with the way the study we based our "resilience/ healthy functioning" criteria on defined their "no psychiatric disorders" domain: no major depressive disorder, dysthymia, generalized anxiety disorder, post-traumatic stress disorder, and antisocial personality disorder (McGloin & Widom, 2001). In addition, for all outcomes, we used the scale scores that were derived by the MIDUS research team. This meant that there was variability in how scale scores were computed in terms of how many items were allowed to be missing for a participant's score to still be computed. We

acknowledge this limitation with regards to the variability in how missing data was handled across scales. Our results should be tested in other studies using different measures to test for residual effects of CM.

Despite these limitations, our study had many strengths. First, we assessed resilience in older adults (the average age was 61 at wave 3 in our sample)—an age group uncommonly studied in the resilience literature (Haczkewicz et al., 2024). Even though resilience tends to be defined using fewer criteria in adults compared with children (Alim et al., 2008; Collishaw et al., 2007; Walsh et al., 2010), we defined resilience based on many different domains across a timespan of nearly twenty years in line with recommendations that have called for the use of resilience definitions that encompass a wider range of functional domains (Denckla et al., 2020; Haskett et al., 2006; Luthar et al., 2000; Wang et al., 2024; Yoon et al., 2021) over a longer period of time (Bonanno, 2012; McGloin & Widom, 2001). This allowed us to demonstrate that, even among the group that met strict criteria for resilience that was stable for two decades on a wide range of domains, the negative consequences of CM are observable decades later.

Conclusions

Although many research studies have suggested that a significant portion of those exposed to CM are resilient in adulthood, our findings question the validity of this conclusion. Here, we show that even using a comprehensive definition of resilience, CM has lasting residual consequences, predicting worse psychological, social, and physical health outcomes of a similar magnitude among the resilient and non-resilient groups. This suggests that CM has pervasive and enduring negative consequences even among those considered resilient.

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Ethical Considerations

The survey project (IRB protocol # 2016-1051) and biomarker project (IRB protocol # 2014-0813) of the MIDUS study were approved by the institutional review board at the University of Wisconsin-Madison on 11/22/2016 and 09/18/2014, respectively.

Consent to Participate

All participants provided written informed consent to participate in the MIDUS study.

Author Contributions

KAD designed research, performed research, analyzed data, and wrote the paper. MDS provided critical consultation on the analytic approach. CEP and CNE provided critical consultation on the research design. MDS, CEP, and CNE provided substantive edits to the manuscript.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

Declaration of Conflicting Interests

The authors declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: CNE was an investigator for a multisite clinical trial conducted by Sage Therapeutics. She is also a consultant to EmbarkNeuro, Skyland Trail, and Health Rhythms and a member of the scientific advisory board of Babyscripts.

Data Availability Statement

MIDUS datasets are publically available. In line with MIDUS policies, the subset of data and analytic code used in this investigation will be shared with individual researchers on a case-by-case basis.

Supplemental Material

Supplemental material for this article is available online.

References

Aburn, G., Gott, M., & Hoare, K. (2016). What is resilience? An integrative review of the empirical literature. *Journal of Advanced Nursing*, *72*(5), 980–1000. https://doi.org/10.1111/jan.12888

Alim, T., Feder, A., Graves, R., Wang, Y., Weaver, J., Westphal, M., Alonso, A., Aigbogun, N., Smith, B., Doucette, J., Mellman, T., Lawson, W., & Charney, D. (2008). Trauma, resilience, and recovery in a high-risk African-American population. *American Journal of Psychiatry*, *165*(12), 1566–1575. https://doi.org/10.1176/appi.ajp.2008.07121939

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed. Revised ed.). APA.

Bennett, D. A. (2001). How can I deal with missing data in my study? *Australian & New Zealand Journal of Public Health*, *25*(5), 464–469.

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., Stokes, J., Handelsman, L., Medrano, M., Desmond, D., & Zule, W. (2003). Development and validation of a brief screening version of the childhood trauma questionnaire. *Child Abuse & Neglect*, *27*(2), 169–190. https://doi.org/10.1016/s0145-2134(02)00541-0

Bonanno, G. A. (2012). Uses and abuses of the resilience construct: Loss, trauma, and health-related adversities. *Social Science & Medicine*, *74*(5), 753–756. https://doi.org/10.1016/j.socscimed.2011.11.022

Boring, B. L., Richter, A., & Mathur, V. A. (2023). Higher self-perceived stress reactivity is associated with increased chronic pain risk. *PAIN Reports*, *8*(2), e1068. https://doi.org/10.1097/PR9.0000000000001068

Bullinger, L. R., Raissian, K. M., Klika, B., Merrick, M., & Thibodeau, E. (2025). More than snuggles: The effect of paid family leave on infant maltreatment. *Child Maltreatment*, Advanced Online Publication. https://doi.org/10.1177/10775595251318939

Chaiyachati, B. H., & Gur, R. E. (2021). Effect of child abuse and neglect on schizophrenia and other psychotic disorders. *Pharmacology Biochemistry and Behavior*, *206*, 173195. https://doi.org/10.1016/j.pbb.2021.173195

Clemens, V., Huber-Lang, M., Plener, P. L., Brahler, E., Brown, R. C., & Fegert, J. M. (2018). Association of child maltreatment subtypes and long-term physical health in a German representative sample. *European Journal of Psychotraumatology*, *9*(1), Article 1510278. https://doi.org/10.1080/20008198.2018.1510278

Cohen, S. (2004). Social relationships and health. *American Psychologist*, *59*(8), 676–684. https://doi.org/10.1037/0003-066X.59.8.676

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*(4), 385–396.

Collishaw, S., Pickles, A., Messer, J., Rutter, M., Shearer, C., & Maughan, B. (2007). Resilience to adult psychopathology following childhood maltreatment: Evidence from a community sample. *Child Abuse & Neglect*, *31*(3), 211–229. https://doi.org/10.1016/j.chiabu.2007.02.004

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

Cruz, D. (2023). Childhood trauma questionnaire-short form: Evaluation of factor structure and measurement invariance. *Journal of Child & Adolescent Trauma*, *16*(4), 1099–1108. https://doi.org/10.1007/s40653-023-00556-8

Dannlowski, U., Stuhrmann, A., Beutelmann, V., Zwanzger, P., Lenzen, T., Grotegerd, D., Domschke, K., Hohoff, C., Ohrmann, P., Bauer, J., Lindner, C., Postert, C., Konrad, C., Arolt, V., Heindel, W., Suslow, T., & Kugel, H. (2012). Limbic scars: Long-term consequences of childhood maltreatment revealed by functional and structural magnetic resonance imaging. *Biological Psychiatry*, *71*(4), 286–293. https://doi.org/10.1016/j.biopsych.2011.10.021

Denckla, C. A., Cicchetti, D., Kubzansky, L. D., Seedat, S., Teicher, M. H., Williams, D. R., & Koenen, K. C. (2020). Psychological resilience: An update on definitions, a critical appraisal, and research recommendations. *European Journal of Psychotraumatology*, *11*(1), Article 1822064. https://doi.org/10.1080/20008198.2020.1822064

Dubowitz, H., Thompson, R., Proctor, L., Metzger, R., Black, M. M., English, D., Poole, G., & Magder, L. (2016). Adversity, maltreatment, and resilience in young children. *Academic Pediatrics*, *16*(3), 233–239. https://doi.org/10.1016/j.acap.2015.12.005

DuMont, K. A., Widom, C. S., & Czaja, S. J. (2007). Predictors of resilience in abused and neglected children grown-up: The role of individual and neighborhood characteristics. *Child Abuse & Neglect*, *31*(3), 255–274. https://doi.org/10.1016/j.chiabu.2005.11.015

Edalati, H., Krank, M. D., & Schütz, C. G. (2020). Childhood maltreatment and perceived stress in individuals with concurrent psychiatric disorders. *Journal of Aggression, Maltreatment & Trauma*, *29*(1), 22–37. https://doi.org/10.1080/10926771.2019.1595802

Etain, B., & Aas, M. (2020). Childhood maltreatment in bipolar disorders. In A. H. Young & M. F. Juruena (Eds.), *Bipolar disorder: From neuroscience to treatment* (*48*, pp. 277–301). Springer International Publishing. https://doi.org/10.1007/7854_2020_149

Fares-Otero, N. E., Carranza-Neira, J., Womersley, J. S., Stegemann, A., Schalinski, I., Vieta, E., Spies, G., & Seedat, S. (2025). Child maltreatment and resilience in adulthood: A systematic review and meta-analysis. *Psychological Medicine*, *55*, 1–27. https://doi.org/10.1017/S0033291725001205

Fares-Otero, N. E., De Prisco, M., Oliva, V., Radua, J., Halligan, S. L., Vieta, E., & Martinez-Aran, A. (2023). Association between childhood maltreatment and social functioning in individuals with affective disorders: A systematic review and meta-analysis. *Acta Psychiatrica Scandinavica*, *148*(2), 142–164. https://doi.org/10.1111/acps.13557

Felitti, V., Anda, R., Nordenberg, D., Williamson, D., Spitz, A., Edwards, V., Koss, M., & Marks, J. (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

Golden-Kreutz, D., Thornton, L., Wells-Di Gregorio, S., Frierson, G., Jim, H., Carpenter, K., Shelby, R., & Andersen, B. (2005). Traumatic stress, perceived global stress, and life events: Prospectively predicting quality of life in breast cancer patients. *Health Psychology*, *24*(3), 288–296. https://doi.org/10.1037/0278-6133.24.3.288

Haczkewicz, K. M., Shahid, S., Finnegan, H. A., Monnin, C., Cameron, C. D., & Gallant, N. L. (2024). Adverse childhood experiences (ACEs), resilience, and outcomes in older adulthood: A scoping review. *Child Abuse & Neglect*, Advanced Online Publication.

Harden, B. J., Simons, C., Johnson-Motoyama, M., & Barth, R. (2021). The child maltreatment prevention landscape: Where are we now, and where should we go? *The Annals of the American Academy of Political and Social Science*, *692*(1), 97–118. https://doi.org/10.1177/0002716220978361

Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood experiences: Review of the evidence. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, *45*(2), 260–273. https://doi.org/10.1111/j.1469-7610.2004.00218.x

Haskett, M. E., Nears, K., Sabourin Ward, C., & McPherson, A. V. (2006). Diversity in adjustment of maltreated children: Factors associated with resilient functioning. *Clinical Psychology Review*, *26*(6), 796–812. https://doi.org/10.1016/j.cpr.2006.03.005

Hong, F., Tarullo, A. R., Mercurio, A. E., Liu, S., Cai, Q., & Malley-Morrison, K. (2018). Childhood maltreatment and perceived stress in young adults: The role of emotion regulation strategies, self-efficacy, and resilience. *Child Abuse & Neglect*, *86*, 136–146. https://doi.org/10.1016/j.chiabu.2018.09.014

Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., Jones, L., & Dunne, M. P. (2017). The effect of multiple adverse childhood experiences on health: A systematic review and meta-analysis. *The Lancet Public Health*, *2*(8), e356–e366. https://doi.org/10.1016/S2468-2667(17)30118-4

Hyman, S., Paliwal, P., & Sinha, R. (2007). Childhood maltreatment, perceived stress, and stress-related coping in recently abstinent cocaine dependent adults. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors*, *21*(2), 233–238. https://doi.org/10.1037/0893-164X.21.2.233

Jaffee, S., & Widom, C. S. (2023). Resilience to maltreatment in early adulthood does not predict low allostatic load at midlife. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, *57*(6), 489–498. https://doi.org/10.1093/abm/kaac057

Joss, D., & Teicher, M. H. (2021). Clinical effects of mindfulness-based interventions for adults with a history of childhood maltreatment: A scoping review. *Current Treatment Options in Psychiatry*, *8*(2), 31–46. https://doi.org/10.1007/s40501-021-00240-4

Kaufman, J., Cook, A., Libby, A., Jones, B., & Pittinsky, T. (1994). Problems defining resiliency: Illustrations from the study of maltreated children. *Development and Psychopathology*, *6*(1), 215–229. https://doi.org/10.1017/s0954579400005964

Kessler, R. C., Andrews, G., Mroczek, D., Ustun, B., & Wittchen, H. U. (1998). The world health organization composite international diagnostic interview short-form (CIDI-SF). *International Journal of Methods in Psychiatric Research*, *7*(4), 171–185. https://doi.org/10.1002/mpr.47

LaBrenz, C., Dell, P., Fong, R., & Liu, V. (2021). Happily ever after? Life satisfaction after childhood exposure to violence. *Journal of Interpersonal Violence*, *36*(13-14), NP6747–NP6766. https://doi.org/10.1177/0886260518820706

Liem, J., & Boudewyn, A. (1999). Contextualizing the effects of childhood sexual abuse on adult self- and social functioning: An attachment theory perspective. *Child Abuse & Neglect*, *23*(11), 1141–1157. https://doi.org/10.1016/s0145-2134(99)00081-2

Liem, J., James, J., O'Toole, J., & Boudewyn, A. (1997). Assessing resilience in adults with histories of childhood sexual abuse. *American Journal of Orthopsychiatry*, *67*(4), 594–606. https://doi.org/10.1037/h0080257

Luthar, S., Cicchetti, D., & Becker, B. (2000). The construct of resilience: A critical evaluation and guidelines for future work.

Child Development, *71*(3), 543–562. https://doi.org/10.1111/1467-8624.00164

McGloin, J. M., & Widom, C. S. (2001). Resilience among abused and neglected children grown up. *Development and Psychopathology*, *13*(4), 1021–1038. https://doi.org/10.1017/s095457940100414x

Mersky, J. P., & Topitzes, J. (2010). Comparing early adult outcomes of maltreated and non-maltreated children: A prospective longitudinal investigation. *Children and Youth Services Review*, *32*(8), 1086–1096. https://doi.org/10.1016/j.childyouth.2009.10.018

Mills, S., Azizoddin, D., Racaza, G., Wallace, D., Weisman, M., & Nicasso, P. (2017). The psychometric properties of the perceived stress Scale-10 among patients with systemic lupus erythematosus. *Lupus*, *26*(11), 1218–1223. https://doi.org/10.1177/0961203317701844

Mosley-Johnson, E., Garacci, E., Wagner, N., Mendez, C., Williams, J. S., & Egede, L. E. (2019). Assessing the relationship between adverse childhood experiences and life satisfaction, psychological well-being, and social well-being: United States longitudinal cohort 1995–2014. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation*, *28*(4), 907–914. https://doi.org/10.1007/s11136-018-2054-6

Ng, D. M., & Jeffery, R. W. (2003). Relationships between perceived stress and health behaviors in a sample of working adults. *Health Psychology: Official Journal of the Division of Health Psychology, American Psychological Association*, *22*(6), 638–642. https://doi.org/10.1037/0278-6133.22.6.638

Ozturk, E., & Mohler, J. (2021). Childhood adversities and life satisfaction: The moderator role of perceived resilience in early adulthood. *Journal of Family Trauma, Child Custody & Child Development*, *18*(2), 121–138. https://doi.org/10.1080/26904586.2021.1918038

Patrick, C. J., Curtin, J. J., & Tellegen, A. (2002). Development and validation of a brief form of the multidimensional personality questionnaire. *Psychological Assessment*, *14*(3), 262. https://doi.org/10.1037/1040-3590.14.2.150

Piolatto, M., Bianchi, F., Rota, M., Marengoni, A., Akbaritabar, A., & Squazzoni, F. (2022). The effect of social relationships on cognitive decline in older adults: An updated systematic review and meta-analysis of longitudinal cohort studies. *BMC Public Health*, *22*(1), 278. https://doi.org/10.1186/s12889-022-12567-5

Prenda, K. M., & Lachman, M. E. (2001). Planning for the future: A life management strategy for increasing control and life satisfaction in adulthood. *Psychology and Aging*, *16*(2), 206–216.

Puls, H. T., Chung, P. J., & Anderson, C. (2022). Universal child care as a policy to prevent child maltreatment. *Pediatrics*, *150*(2), e2022056660. https://doi.org/10.1542/peds.2022-056660

Radler, B. T. (2014). The Midlife in the United States (MIDUS) series: A national longitudinal study of health and well-being. *Open Health Data*, *2*(1), 1–7. https://doi.org/10.5334/ohd.ai

Raposa, E. B., Hammen, C. L., Brennan, P. A., O'Callaghan, F., & Najman, J. M. (2014). Early adversity and health outcomes in young adulthood: The role of ongoing stress. *Health*

Psychology: Official Journal of the Division of Health Psychology, American Psychological Association, *33*(5), 410–418. https://doi.org/10.1037/a0032752

Reuben, A., Moffitt, T. E., Caspi, A., Belsky, D. W., Harrington, H., Schroeder, F., Hogan, S., Ramrakha, S., Poulton, R., & Danese, A. (2016). Lest we forget: Comparing retrospective and prospective assessments of adverse childhood experiences in the prediction of adult health. *The Journal of Child Psychology and Psychiatry and Allied Disciplines*, *57*(10), 1103–1112. https://doi.org/10.1111/jcpp.12621

Rizzuto, D., Melis, R. J. F., Angleman, S., Qiu, C., & Marengoni, A. (2017). Effect of chronic diseases and multimorbidity on survival and functioning in elderly adults. *Journal of the American Geriatrics Society*, *65*(5), 1056–1060. https://doi.org/10.1111/jgs.14868

Rod, N. H., Grønbæk, M., Schnohr, P., Prescott, E., & Kristensen, T. S. (2009). Perceived stress as a risk factor for changes in health behaviour and cardiac risk profile: A longitudinal study. *Journal of Internal Medicine*, *266*(5), 467–475. https://doi.org/10.1111/j.1365-2796.2009.02124.x

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.

Rutter, M. (2006). Implications of resilience concepts for scientific understanding. *Annals of the New York Academy of Sciences*, *1094*(1), 1–12. https://doi.org/10.1196/annals.1376.002

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, *57*(6), 1069–1081. https://doi.org/10.1037//0022-3514.57.6.1069

Samplin, E., Ikuta, T., Malhotra, A. K., Szeszko, P. R., & DeRosse, P. (2013). Sex differences in resilience to childhood maltreatment: Effects of trauma history on hippocampal volume, general cognition and subclinical psychosis in healthy adults. *Journal of Psychiatric Research*, *47*(9), 1174–1179. https://doi.org/10.1016/j.jpsychires.2013.05.008

Sanderud, K., Murphy, S., & Elklit, A. (2016). Child maltreatment and ADHD symptoms in a sample of young adults. *European Journal of Psychotraumatology*, *7*(1), Article 32061. https://doi.org/10.3402/ejpt.v7.32061

Schuster, T., Kessler, R., & Aseltine, R. (1990). Supportive interactions, negative interactions, and depressive mood. *American Journal of Community Psychology*, *18*(3), 423–438. https://doi.org/10.1007/BF00938116

Selzer, M. (1971). The Michigan alcohol screening test: The quest for a new diagnostic instrument. *American Journal of Psychiatry*, *127*(12), 89–94.

Shanmugan, S., Satterthwaite, T. D., Sammel, M. D., Cao, W., Ruparel, K., Gur, R. C., Epperson, C. N., & Loughead, J. (2017). Impact of early life adversity and tryptophan depletion on functional connectivity in menopausal women: A double-blind, placebo-controlled crossover study. *Psychoneuroendocrinology*, *84*, 197–205. https://doi.org/10.1016/j.psyneuen.2017.07.239

Stein, J. A., Leslie, M. B., & Nyamathi, A. (2002). Relative contributions of parent substance use and childhood maltreatment

to chronic homelessness, depression, and substance abuse problems among homeless women: Mediating roles of self-esteem and abuse in adulthood. *Child Abuse & Neglect*, *26*(10), 1011–1027. https://doi.org/10.1016/s0145-2134(02)00382-4

Turner, A. I., Smyth, N., Hall, S. J., Torres, S. J., Hussein, M., Jayasinghe, S. U., Ball, K., & Clow, A. J. (2020). Psychological stress reactivity and future health and disease outcomes: A systematic review of prospective evidence. *Psychoneuroendocrinology*, *114*, 104599. https://doi.org/10.1016/j.psyneuen.2020.104599

Vella, S.-L. C., & Pai, N. B. (2019). A theoretical review of psychological resilience: Defining resilience and resilience research over the decades. *Archives of Medicine and Health Sciences*, *7*(2), 233–239. https://doi.org/10.4103/amhs.amhs_119_19

Walsh, W. A., Dawson, J., & Mattingly, M. J. (2010). How are we measuring resilience following childhood maltreatment? Is the research adequate and consistent? What is the impact on research, practice, and policy? *Trauma, Violence, & Abuse*, *11*(1), 27–41. https://doi.org/10.1177/1524838009358892

Wang, P., Berglund, P., & Kessler, R. (2000). Recent care of common mental disorder in the United States: Prevalence and conformance with evidence-based recommendations. *Journal of General Internal Medicine*, *15*(5), 284–292. https://doi.org/10.1046/j.1525-1497.2000.9908044.x

Wang, S., Walsh, K., & Li, J. (2024). A prospective longitudinal study of multidomain resilience among youths with and without maltreatment histories. *Development and Psychopathology*, *36*(2), 750–764. https://doi.org/10.1017/S0954579423000032

Whalen, H., & Lachman, M. (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.

Wingo, A. P., Ressler, K. J., & Bradley, B. (2014). Resilience characteristics mitigate tendency for harmful alcohol and illicit drug use in adults with a history of childhood abuse: A cross-sectional study of 2024 inner-city men and women. *Journal of Psychiatric Research*, *51*, 93–99. https://doi.org/10.1016/j.jpsychires.2014.01.007

Wu, S. M., & Amtmann, D. (2013). Psychometric evaluation of the perceived stress scale in multiple sclerosis. *ISRN Rehabilitation*, *2013*(1), 1–9. https://doi.org/10.1155/2013/608356

Yoon, S., Howell, K., Dillard, R., McCarthy, K., Napier, T., & Pei, F. (2021). Resilience following child maltreatment: Definitional considerations and developmental variations. *Trauma, Violence, & Abuse*, *22*(3), 541–559. https://doi.org/10.1177/1524838019869094

Zainal, N. H., Soh, C. P., & Van Doren, N. (2024). Daily stress reactivity and risk appraisal mediates childhood parental abuse predicting adulthood psychopathology severity: An 18-year longitudinal mediation analysis. *Journal of Affective Disorders*, *358*, 138–149. https://doi.org/10.1016/j.jad.2024.04.068

Zalta, A. K., Tirone, V., Siedjak, J., Boley, R. A., Vechiu, C., Pollack, M. H., & Hobfoll, S. E. (2016). A pilot study of tailored cognitive–behavioral resilience training for trauma survivors with subthreshold distress. *Journal of Traumatic Stress*, *29*(3), 268–272. https://doi.org/10.1002/jts.22094

Zamir, O. (2022). Childhood maltreatment and relationship quality: A review of type of abuse and mediating and protective factors. *Trauma, Violence, & Abuse*, *23*(4), 1344–1357. https://doi.org/10.1177/1524838021998319

Zell, E., & Johansson, J. S. (2025). The association of self-esteem with health and well-being: A quantitative synthesis of 40 meta-analyses. *Social Psychological and Personality Science*, *16*(4), 412–421. https://doi.org/10.1177/19485506241229308

Zhang, H., Wang, W., Liu, S., Feng, Y., & Qingong, W. (2023). A meta-analytic review of the impact of child maltreatment on self-esteem: 1981 to 2021. *Trauma, Violence, & Abuse*, *24*(5), 3398–3411. https://doi.org/10.1177/15248380221129587