



Full Length Article

The association between adverse childhood experiences and personality, emotions and affect: Does number and type of experiences matter?

Jessica M. Grusnick^{a,b}, Emma Garacci^{a,b}, Christian Eiler^b, Joni S. Williams^{a,b}, Leonard E. Egede^{a,b,*}^a Division of General Internal Medicine, Department of Medicine, Froedtert & The Medical College of Wisconsin, Milwaukee, WI, United States^b Center for Advancing Population Science, Medical College of Wisconsin, Milwaukee, WI, United States

ARTICLE INFO

Article history:

Received 20 May 2019

Revised 28 November 2019

Accepted 2 December 2019

Available online 10 December 2019

Keywords:

Adverse childhood experiences

Personality traits

Emotions

Negative affect

Positive affect

ABSTRACT

Background: There is strong evidence that adverse childhood experiences (ACEs) negatively impact mental health. However, the association between ACEs and personality, emotions and affect are poorly understood. Therefore, we examined the association between composite ACE score and ACE type and personality, emotions and positive and negative affect.

Methods: Three waves of data from the Midlife Development in the United States (MIDUS) study were used. ACE was the primary independent correlate. Covariates included demographic variables and survey wave. Outcome variables included generativity, personality traits (agreeableness, conscientiousness, extraversion, neuroticism, openness, agency), and affect (positive, negative). Statistical analyses included 3 approaches: (1) treatment of ACE as dichotomous, (2) ordinal composite of ACE score, and (3) three individual ACE type components to assess the association between ACE and psychological constructs.

Results: Of 6323 adults in the sample, 53% were female, and 56% had a past ACE. In the adjusted analyses, dichotomized ACE was significantly associated with neuroticism ($\beta = 0.10$; 95% CI 0.07, 0.13) and conscientiousness ($\beta = -0.03$; 95% CI -0.05 , -0.01). All ACE scores were significantly and positively associated with neuroticism and negatively associated with conscientiousness. Abuse was significantly associated with neuroticism ($\beta = 0.20$; 95% CI 0.16, 0.24), openness ($\beta = 0.08$; 95% CI 0.05, 0.11), conscientiousness ($\beta = -0.05$; 95% CI -0.08 , -0.02), and agency ($\beta = 0.06$; 95% CI 0.02, 0.10). All ACE categories, except financial strain, were significantly associated with affect.

Conclusion: ACEs are significantly associated with personality, emotions, and affect, with greater effect seen at higher ACE scores and with ACE abuse type, which helps support the cumulative risk hypothesis and our study hypothesis. There is a need for continued research to understand the mechanistic processes and the directionality of the association between ACEs, emotions, and behaviors to help continue to drive biopsychosocial interventions.

© 2019 Elsevier Inc. All rights reserved.

1. Introduction

Adverse childhood experiences (ACEs) include various forms of abuse, neglect, and household dysfunction and are defined as stressful or traumatic events that can negatively affect health (Felitti et al., 1998). The estimated prevalence of individuals who have experienced at least one ACE is 59% and four or more ACEs is 14.3% (Centers for Disease Control and Prevention [CDC], 2016). Previous studies have shown that exposure to emotional abuse, physical abuse, and neglect increase the risk of depressive disorders, anxiety, anorexia, substance abuse, and suicide attempts

(Dube et al., 2001; Felitti et al., 1998; Norman et al., 2012). Studies have also shown an increased risk of personality and behavioral disorders in those who have experienced ACEs (Afifi et al., 2011). Overall, ACEs are correlated with increased psychological distress and decreased subjective well-being (Corcoran & McNulty, 2018; Oshio, Umeda, & Kawakami, 2013).

Psychological constructs such as affect, personality traits, and generativity help to better understand emotions and behaviors (John, Naumann, & Soto, 2008) and are tied to subjective well-being (Cox, Wilt, Olson, & McAdams, 2010; DeNeve & Cooper, 1998). Affect is comprised of two components: positive and negative, and affective states influence social cognition by way of moods and social judgements (Forgas, 2008). Positive affect is the general sense that things are going well and can include moods and emotions such as cheerfulness, happiness, or satisfaction (Diener, Pressman, Hunter, & Delgado-Chase, 2017). Negative

* Corresponding author at: Medical College of Wisconsin, Division of General Internal Medicine, 8701 Watertown Plank Road, Milwaukee, WI 53226-3596, United States.

E-mail address: legede@mcw.edu (L.E. Egede).

affect, which is not just the inverse of positive affect, is the general sense that things are not going well and can include moods and emotions such as sadness, worry, and hopelessness (Diener et al., 2017). Population studies of positive and negative affect have shown that both contribute to subjective well-being and are influenced by sociodemographic factors and personality traits (Diener et al., 2017; Mroczek & Kolarz, 1998; Mroczek, 2004).

The Five-Factor Model (FFM), or Big Five taxonomy, is a descriptive, organizational model of personality traits, which is used to describe behaviors and conceptualize mental disorders and has been a dominant model of approach in personality theory (John et al., 2008; Krueger & Eaton, 2010; McCrae & John, 1992; Trull & Widiger, 2013). Classic personality theories are built around human needs (Freud, 1927) while more modern personality theories, such as the five-factor personality theory, capture the essence that characteristic traits are different amongst people and that personality reflects a person's recurring thoughts, feelings, and emotions (Dweck, 2017; John & Srivastava, 1999; McCrae & Costa, 1999). The personality traits in the FFM—neuroticism, extraversion, agreeableness, conscientiousness, openness—have been helpful in predicting subjective well-being, physical health, and mental health (Lahey, 2009; Ozer & Benet-Martínez, 2006; Trull & Widiger, 2013). Although not a part of the FFM, agency is another personality trait, defined as the focus on self and individualization and includes qualities such as ambition, competence, and dominance (Abele & Wojciszke, 2007; Helgeson, 1994). It is a predictor of lower psychological distress and has been indirectly linked to well-being—positively through self-esteem, and negatively by dysphoria, depression, and anxiety (Helgeson, 1994; Hirokawa & Dohi, 2007; Lippa, 2001; Trudeau, Danoff-Burg, Revenson, & Paget, 2003).

According to Erickson's psychosocial development stages, generativity is the seventh stage of development that occurs in midlife when a person's focus shifts from inward to outward, with an emphasis on transmitting knowledge to and guiding future generations (Erikson, 1959). More recent research and theory postulates that generativity is not a discrete stage in life, but rather one that becomes more salient with age due to cultural demands, inner desire, beliefs, concerns, and commitments (McAdams & de St. Aubin, 1992).

Previous evidence has shown an association between ACEs and various psychological constructs. ACEs negatively impact affect such that a decrease in positive affect and an increase in negative affect occurs, as well as an increase in positive affect variability and a higher persistence of negative affect over time (Corcoran & McNulty, 2018; Greger, Myhre, Klöckner, & Jozefiak, 2017; Hirokawa & Dohi, 2007; Perea, Paternina, Gomez, & Lattig, 2012; Somers, Ibrahim, & Luecken, 2017; Teicher, Ohashi, Lowen, Polcari, & Fitzmaurice, 2015). ACEs are associated with big five personality traits such as an increase in neuroticism and openness and decrease in extraversion (Hovens, Giltay, Van Hemert, & Penninx, 2016; Mc Elroy & Hevey, 2014), and, in men, specific ACE types, financial strain and harsh parenting, have been shown to decrease the likelihood of achieving generativity in midlife (Landes, Ardelt, Vaillant, & Waldinger, 2014). The previous studies on positive and negative affect and the big five personality traits do not deconstruct ACE into the types or number experienced, and the previous study on achieving generativity in midlife, assesses only two types of ACEs and the effect only in a male population. To our knowledge no study has examined the association between ACEs and agency. The cumulative risk hypothesis, which posits that the cumulative effect of risk factors increases the probability of adverse outcomes, has been applied in ACE research and has shown a grade effect on mental health and somatic health outcomes, substance abuse, and sexuality outcomes (Anda et al., 2006). ACE research by type of ACE

experienced has shown that all types of ACE can influence poor adult health but that childhood abuse may have a unique adverse influence (Chartier, Walker, & Naimark, 2010).

Therefore, to address these gaps in the literature, we examined the association between composite ACE score and ACE type and personality, emotions and affect using a nationally representative sample of adults in the United States. We hypothesized that increasing number of ACEs and specific ACE subtypes would be significantly associated with personality, emotions and affect.

2. Methods

2.1. Sample and study population

This analysis used three waves of data from the MacArthur Foundation Survey for Midlife Development in the United States (MIDUS), a national longitudinal study of health and well-being. The purpose of the MIDUS study was to investigate the role of behavioral, psychological, and social factors in understanding age-related differences in physical and mental health. The first wave of the MIDUS study (MIDUS 1) collected survey data from a total of 7108 participants in 1995–1996. All eligible participants were non-institutionalized English-speaking adults in the coterminous United States, age 25 to 74, with the baseline sample that included four subsamples: (1) a national RDD (random digit dialing) sample ($n = 3487$); (2) oversamples from five metropolitan areas in the U.S. ($n = 757$); (3) siblings of individuals from the RDD sample ($n = 950$); and (4) a national RDD sample of twin pairs ($n = 1914$). The survey dataset contained responses from a 30-minute phone interview and two 50-page Self-Administered Questionnaire (SAQ) instruments with \$20 compensation for data collection. MIDUS 2, which included 4963 of the original MIDUS 1 participants, was conducted between 2004 and 2006. Of those who participated in the MIDUS 2 phone interview, 3294 participated in MIDUS 3 between 2013 and 2014. Individuals who participated in all phases of data collection were compensated \$60. We included participants who answered both the phone interview and SAQ in MIDUS 1 for this study for a total of 6325 participants. Two participants without age information were excluded from the analysis, so the final analysis cohort size was 6323. As this was a secondary analysis of data from a survey with a large sample size, no power calculation was performed.

2.2. Independent predictor variable: adverse childhood experiences (ACEs)

We used the ACE Study Questionnaire (Felitti et al., 1998) as a template to construct measures of adverse events experienced during childhood. The MIDUS surveys collected childhood background and childhood family background information during the MIDUS 1 phone interview and self-administered questionnaire. Three components of ACE were used: (1) abuse, (2) household dysfunction, and (3) financial strain. Items covering abuse (emotional abuse; physical abuse) were derived from childhood family background regarding abuse questions completed by participants. A dichotomous variable was recoded indicating the experience of a given adversity; reported "often" was categorized as "Yes". Items covering household dysfunction (did not live with biological parents including parental divorce or never lived together; death of a parent; adoption; lack of male head in the household; parental alcohol or drug use; parental mental illness) were derived from childhood background questions. Items covering financial strain (receipt of welfare; reported being "worse off" than other families; less than a high school education for father or mother) were derived from

childhood background and childhood family background questions. With any of the above, a given adversity was categorized as “Yes”. A composite ACE score ranging from 0 to 3 was generated by coding all “Yes” responses as 1 and “No” responses as 0. ACE was defined as score of ≥ 1 .

2.3. Outcome variables: generativity, personality traits, positive and negative affect

All outcome variables were measured in MIDUS 1, 2, and 3 survey waves by self-administered questionnaires using Likert scales (Brim, Balthes, Bumpass, Cleary, Featherman, Hazzard, & Shweder, 2019; Ryff, Almeida, Ayanian, Binkley, Carr, Coe, & Williams, 2019; Ryff, Almeida, Ayanian, Carr, Cleary, Coe, & Williams, 2017).

Loyola generativity was measured with a 6-item survey using a 4-point scale (1 = a lot, 4 = not at all). Items Included: (a) “Others would say that you have made unique contributions to society”, (b) “You have important skills you can pass along to others”, (c) “Many people come to you for advice”, (d) “You feel that other people need you”, (e) “You have had a good influence on the lives of many people”, (f) “You like to teach things to people”. Participants indicated how well the items described them. The generativity scale was constructed by calculating the sum of the reverse-coded values of the items and has been validated and used to methodologically evaluate generativity (McAdams & de St. Aubin, 1992; Rossi, 2001, chap. 7; Lachman & Weaver, 1998; Marks, Bumpass, & Jun, 2004), and the reported alpha based on the RDD sample in MIDUS 1 was 0.84.

Personality traits were measured by asking respondents how much each of the 30 self-descriptive adjectives described them on a 4-point scale (1 = a lot, 4 = not at all). The adjectives measured six personality traits: (1) Agreeableness (helpful, warm, caring, softhearted, sympathetic); (2) Conscientiousness (organized, responsible, hardworking, careless); (3) Extraversion (outgoing, friendly, lively, talkative, active); (4) Neuroticism (moody, worrying, nervous, calm); (5) Openness (creative, imaginative, intelligent, adventurous, curious, broadminded, sophisticated); and (6) Agency (self-confident, forceful, assertive, outspoken, dominant). Scores were constructed by calculating the mean across each set of items. Items were recoded so that high scores reflect higher standings in each dimension. The reported alpha based on the RDD sample in MIDUS 1 was: (1) Agreeableness = 0.80, (2) Conscientiousness = 0.58, (3) Extraversion = 0.78, (4) Neuroticism = 0.74, (5) Openness = 0.77, (6) Agency = 0.79. The scale has been validated and used methodologically to evaluate personality traits (Keyes, Shmotkin, & Ryff, 2002; Lachman & Weaver, 1997; Rossi, 2001; Staudinger, Fleeson, & Balthes, 1999).

Positive and Negative affect were measured using two 6-item scales. To assess negative affect, participants were asked how frequently in the last 30 days they felt (a) so sad nothing could cheer them up, (b) nervous, (c) restless or fidgety, (d) hopeless, (e) that everything was an effort, and (f) worthless. Similarly, to assess positive affect, participants were asked how frequently they felt (a) cheerful, (b) in good spirits, (c) extremely happy, (d) calm and peaceful, (e) satisfied, and (f) full of life. Respondents answered each of the 12 affect items by using a 5-point scale (1 = all of the time, 5 = none of the time). Scores were constructed by calculating the mean across each set of items. Items were recoded so that higher scores indicated more negative and more positive affect. MIDUS 1 reported the alpha based on the RDD sample: Positive affect = 0.91, Negative affect = 0.87. The scale has been validated and used methodologically to evaluate positive affect and negative affect (Grzywacz, 2000; Keyes, 2000; Mroczek & Kolarz, 1998; Mroczek, 2004; Walen & Lachman, 2000).

2.4. Covariates

Covariates included gender (either male or female), age (grouped as 20–39 years; 40–54 years; 55–75 years for baseline, >75 years for MIDUS 2 and 3), race/ethnicity (grouped as White; Black; Other Minority), education (dichotomized as high school diploma or less and higher education), marital status (dichotomized as married and not married), household total income (grouped as less than \$25,000; \$25,000–\$74,999; and \geq \$75,000). All the demographic variables were collected from MIDUS 1 to 3 when outcomes were measured.

2.5. Statistical analysis

All analyses were performed using SAS software, Verison 9.4 for Windows (SAS Institute, Cary NC). Generalized estimating equations (GEE) were chosen to account for the repeated measures over 3 waves. Descriptive statistics were used to describe the sample. Characteristics of the sample over waves were compared. Generativity, Personality Traits, and Positive and Negative Affect scales were assessed separately for their associations with ACEs (see Appendix A for correlation table). We approached ACEs in three different ways. The first approach involved treating ACE as dichotomous yes/no to the presence of any ACE. The second approach was ordinal composite ACE score, reported as 0, 1, 2, and 3. The third approach was the three individual ACE components: abuse, household dysfunction, and financial strain. Generalized Linear Models (GLM) with GEE approach were developed to test the unadjusted and adjusted associations for ACEs and the three psychosocial scale groups. Unadjusted GEE models with each ACE approach were ran separately first followed by the adjusted GEE models with each ACE approach, which controlled for each survey wave (1, 2, 3) and for demographic covariables at each survey wave (1, 2, 3). Each outcome was ran as a separate set of models. Missing value were treated as Missing At Random with the missing percentage being <4%, and $P < 0.05$ was considered significant.

3. Results

The longitudinal sample included 6323 adults, and the sample baseline demographics for all participants and those who completed three waves are represented in Table 1. The median age of the cohort was 46 (Interquartile Range (IQR): 36–57) with 52.51% being female, and 55.92% reporting ACEs. Women, middle age (40–54 years), white, higher education, married, and higher income groups were more likely to have completed all three waves of the survey.

The baseline MIDUS wave 1 Generativity, Personality Traits, and Positive and Negative Affect scales are represented in Table 2. Participants with a history of any ACE (yes/no) had higher neuroticism than those without ACE (2.29 ± 0.67 with ACE vs. 2.17 ± 0.65 no ACE, $p < .0001$), lower openness (3.00 ± 0.53 with ACE vs. 3.04 ± 0.52 no ACE, $p = 0.0033$), lower conscientiousness (3.40 ± 0.45 with ACE vs. 3.45 ± 0.43 no ACE, $p < .0001$), higher agreeableness (3.51 ± 0.49 with ACE vs. 3.46 ± 0.49 no ACE, $p = 0.0003$), higher negative affect (1.61 ± 0.69 with ACE vs. 1.45 ± 0.52 no ACE, $p < .0001$), lower positive affect (3.33 ± 0.76 with ACE vs. 3.47 ± 0.68 no ACE, $p < .0001$). Higher ACE score was associated with a higher neuroticism score ($p < .0001$), lower conscientiousness score ($p < .0001$), higher agreeableness ($p = 0.0007$), higher negative affect ($p < .0001$), and lower positive affect ($p < .0001$). Participants with a history of childhood abuse had higher neuroticism ($p < .0001$), higher openness ($p < .0001$), lower conscientiousness ($p < .0001$), higher agency ($p = 0.0321$),

Table 1
MIDUS Cohort Baseline Descriptions.

	Baseline (MIDUS 1)	Completed 3 Waves (MIDUS 1, 2, 3)
Count	6323	2511
Sex		
Male	3003 (47.49%)	1106 (44.05%)
Female	3320 (52.51%)	1405 (55.95%)
Age in years at interview (Median(IQR))	46 (36–57)	46 (38–55)
Age group (years)		
20–39	2103 (33.26%)	722 (28.75%)
40–54	2345 (37.09%)	1127 (44.88%)
55–75	1875 (29.65%)	662 (26.36%)
Race		
missing	70 (1.11%)	
White	5651 (89.37%)	2366 (94.23%)
Black	336 (5.31%)	80 (3.19%)
Other	266 (4.21%)	65 (2.59%)
Education level		
missing	13 (0.21%)	4 (0.16%)
High school diploma or less	2387 (37.75%)	776 (30.90%)
Higher education	3923 (62.04%)	1731 (68.94%)
Marital status		
missing	1 (0.02%)	
Married	4272 (67.56%)	1840 (73.28%)
Not Married	2050 (32.42%)	671 (26.72%)
Household total income category		
missing	215 (3.40%)	47 (1.87%)
Less than \$25 k	1226 (19.39%)	363 (14.46%)
\$25 k - <\$75 k	2776 (43.90%)	1096 (43.65%)
\$75 k +	2106 (33.31%)	1005 (40.02%)

higher negative affect ($p < .0001$), and lower positive affect ($p < .0001$) compared to those without a history of abuse. Participants with a history of childhood household dysfunction had higher neuroticism ($p < .0001$), lower conscientiousness ($p = 0.0016$), higher negative affect ($p < .0001$), and lower positive affect ($p < .0001$) compared to those without a history of household dysfunction. Participants with a history of financial strain, in childhood, had lower openness ($p < .0001$), higher agreeableness ($p < .0001$), lower agency ($p = 0.0033$), and higher negative affect

($p = 0.0104$) compared to those without a history of financial strain.

The multivariable GEE model estimates for each Generativity, Personality Traits, and Positive and Negative Affect scale adjusted by demographic variables and survey wave are represented in Table 3. There was no significant associations between generativity and ACE. Having any ACE was significantly associated with higher neuroticism ($\beta = 0.10$, 95% CI 0.07, 0.13, $p < .0001$), lower conscientiousness ($\beta = -0.03$, 95% CI -0.05 , -0.01 , $p = 0.0029$), higher negative affect ($\beta = 0.13$, 95% CI 0.10, 0.16, $p < .0001$), and lower positive affect ($\beta = -0.13$, 95% CI -0.16 , -0.10 , $p < .0001$). Higher ACE score was positively associated with neuroticism ($\beta = 0.24$, 95% 0.15, 0.33 for 3 ACEs vs. $\beta = 0.16$, 95% 0.11, 0.21 for 2 ACEs vs. $\beta = 0.07$, 95% 0.04, 0.11 for 1 ACE), negatively associated with conscientiousness ($\beta = -0.08$, 95% -0.14 , -0.02 for 3 ACEs vs. $\beta = -0.05$, 95% -0.08 , -0.02 for 2 ACEs), positively associated with negative affect ($\beta = 0.32$, 95% 0.21, 0.42 for 3 ACEs vs. $\beta = 0.22$, 95% 0.17, 0.27 for 2 ACEs vs. $\beta = 0.08$, 95% 0.06, 0.11 for 1 ACE), negatively associated with positive affect ($\beta = -0.25$, 95% -0.35 , -0.15 for 3 ACEs vs. $\beta = -0.20$, 95% -0.25 , -0.15 for 2 ACEs vs. $\beta = -0.09$, 95% -0.13 , -0.06 for 1 ACE). Abuse was significantly associated with higher neuroticism, higher openness, lower conscientiousness, and higher agency personality traits as well as with higher negative affect and lower positive affect. Household dysfunction was significantly associated with higher neuroticism personality trait, higher negative affect and lower positive affect. Financial strain was significantly associated with lower openness and higher agreeableness personality traits.

4. Discussion

In this study, ACEs were found to significantly impact psychosocial constructs, specifically, positive and negative affect and personality traits. At all composite levels of ACE, positive and negative affect were negatively impacted, where regardless of score, having an ACE resulted in less positive affect and more negative affect. This effect was also seen with the specific ACE types of abuse and household dysfunction with a more prominent effect seen with abuse. For personality traits, neuroticism was increased by ACE at all scores and by ACE abuse and household dysfunction

Table 2
Baseline Generativity, Personality Traits, Positive and Negative Affect Scales (Mean (SD)).

	Scale Range	Overall	Childhood adversity		Composite childhood adversity score				Abuse		Household dysfunction		Financial strain	
			no ACE	with ACE	0	1	2	3	No	Yes	No	Yes	No	Yes
Count		6323	2787	3536	2787	2450	875	211	5004	1245	4961	1361	4095	2227
Generativity	6–24	16.95 (3.78)	16.99 (3.75)	16.92 (3.81)	16.99 (3.75)	16.87 (3.79)	17.04 (3.89)	16.86 (3.65)	16.92 (3.75)	17.07 (3.91)	16.94 (3.78)	16.96 (3.79)	17.01 (3.80)	16.84 (3.76)
Personality Traits														
Neuroticism	1–4	2.24 (0.66)	2.17 (0.65)	2.29 (0.67)	2.17 (0.65)	2.25 (0.66)	2.35 (0.68)	2.51 (0.71)	2.19 (0.64)	2.44 (0.71)	2.22 (0.66)	2.32 (0.67)	2.23 (0.67)	2.25 (0.66)
Personality Trait														
Extraversion	1–4	3.20 (0.56)	3.20 (0.56)	3.20 (0.56)	3.20 (0.56)	3.20 (0.56)	3.21 (0.57)	3.17 (0.56)	3.20 (0.56)	3.21 (0.57)	3.20 (0.56)	3.20 (0.55)	3.20 (0.56)	3.19 (0.57)
Personality Trait														
Openness Personality	1–4	3.02 (0.53)	3.04 (0.52)	3.00 (0.53)	3.04 (0.52)	3.00 (0.53)	3.00 (0.54)	3.02 (0.55)	3.00 (0.52)	3.08 (0.54)	3.02 (0.52)	3.01 (0.54)	3.05 (0.52)	2.95 (0.53)
Trait														
Conscientiousness	1–4	3.42 (0.44)	3.45 (0.43)	3.40 (0.45)	3.45 (0.43)	3.42 (0.44)	3.38 (0.46)	3.33 (0.44)	3.43 (0.43)	3.37 (0.47)	3.43 (0.44)	3.39 (0.45)	3.43 (0.44)	3.41 (0.44)
Personality Trait														
Agreeableness	1–4	3.49 (0.49)	3.46 (0.49)	3.51 (0.49)	3.46 (0.49)	3.51 (0.49)	3.50 (0.50)	3.57 (0.45)	3.48 (0.49)	3.50 (0.51)	3.49 (0.49)	3.50 (0.50)	3.47 (0.50)	3.53 (0.48)
Personality Trait														
Agency Personality	1–4	2.69 (0.66)	2.70 (0.65)	2.68 (0.67)	2.70 (0.65)	2.67 (0.67)	2.71 (0.69)	2.69 (0.64)	2.68 (0.65)	2.73 (0.69)	2.69 (0.66)	2.70 (0.65)	2.71 (0.65)	2.66 (0.67)
Trait														
Positive and Negative Affect														
Negative affect	1–5	1.54 (0.62)	1.45 (0.52)	1.61 (0.69)	1.45 (0.52)	1.56 (0.64)	1.70 (0.72)	1.87 (0.91)	1.48 (0.56)	1.80 (0.79)	1.51 (0.59)	1.65 (0.71)	1.53 (0.60)	1.57 (0.67)
Positive affect	1–5	3.39 (0.73)	3.47 (0.68)	3.33 (0.76)	3.47 (0.68)	3.37 (0.75)	3.27 (0.76)	3.13 (0.86)	3.45 (0.70)	3.16 (0.80)	3.42 (0.72)	3.29 (0.77)	3.39 (0.72)	3.39 (0.74)

Table 3
Multivariable GEE Regression model of all MIDUS waves.

	Childhood adversity with ACE	Composite childhood adversity score			Abuse Yes	Household dysfunction Yes	Financial strain Yes
		1	2	3			
Generativity	0.05 (−0.13, 0.22)	−0.00 (−0.20, 0.19)	0.18 (−0.10, 0.45)	0.12 (−0.37, 0.62)	0.22 (−0.00, 0.45)	−0.02 (−0.24, 0.20)	−0.01 (−0.20, 0.18)
Personality Traits							
Neuroticism Personality Trait	0.10 (0.07, 0.13)	0.07 (0.04, 0.11)	0.16 (0.11, 0.21)	0.24 (0.15, 0.33)	0.20 (0.16, 0.24)	0.06 (0.02, 0.09)	0.01 (−0.03, 0.04)
Extraversion Personality Trait	−0.00 (−0.03, 0.03)	0.00 (−0.03, 0.03)	−0.01 (−0.05, 0.03)	−0.04 (−0.12, 0.03)	0.00 (−0.03, 0.04)	−0.02 (−0.05, 0.02)	−0.01 (−0.04, 0.02)
Openness Personality Trait	−0.00 (−0.03, 0.02)	−0.00 (−0.03, 0.02)	−0.00 (−0.04, 0.03)	−0.01 (−0.08, 0.07)	0.08 (0.05, 0.11)	−0.02 (−0.05, 0.01)	− 0.06 (−0.08, −0.03)
Conscientiousness Personality Trait	− 0.03 (−0.05, −0.01)	−0.02 (−0.04, 0.00)	− 0.05 (−0.08, −0.02)	− 0.08 (−0.14, −0.02)	− 0.05 (−0.08, −0.02)	−0.02 (−0.05, 0.00)	−0.01 (−0.03, 0.02)
Agreeableness Personality Trait	0.02 (−0.01, 0.04)	0.01 (−0.01, 0.04)	0.01 (−0.03, 0.04)	0.06 (0.01, 0.12)	0.01 (−0.02, 0.03)	−0.01 (−0.04, 0.02)	0.04 (0.01, 0.06)
Agency Personality Trait	0.01 (−0.02, 0.05)	0.00 (−0.03, 0.04)	0.04 (−0.01, 0.09)	0.04 (−0.05, 0.12)	0.06 (0.02, 0.10)	0.03 (−0.01, 0.07)	−0.03 (−0.06, 0.01)
Positive and Negative Affect							
Negative affect	0.13 (0.10, 0.16)	0.08 (0.06, 0.11)	0.22 (0.17, 0.27)	0.32 (0.21, 0.42)	0.24 (0.20, 0.28)	0.09 (0.05, 0.12)	0.01 (−0.02, 0.04)
Positive affect	− 0.13 (−0.16, −0.10)	− 0.09 (−0.13, −0.06)	− 0.20 (−0.25, −0.15)	− 0.25 (−0.35, −0.15)	− 0.21 (−0.26, −0.17)	− 0.10 (−0.14, −0.06)	0.01 (−0.02, 0.05)

* Adjusted by sex, age group, race, education level, marital status, household total income, and survey wave 1, 2, 3.

**Reference for childhood adversity is no ACE, for childhood adversity score is 0, for abuse is No, for household dysfunction is No, for financial strain is No.

***Bold type represents β regression coefficient estimates significant at $p < 0.05$ level.

types with the most prominent effect seen at the ACE score of three and with abuse type. Conscientiousness was decreased at higher ACE scores of two and three and by ACE abuse type, and agreeableness was increased at an ACE score of three and by ACE financial strain type. Openness was increased by ACE abuse type and decreased by ACE financial strain type. Overall, when we looked at ACE types, abuse impacted the greatest number of personality traits as seen by increased neuroticism, openness, and agency, and decreased conscientiousness. No effect on generativity was seen at any of the categorization levels of ACE used in this study.

Our findings were supported by evidence from previous studies that assessed the association between ACEs and psychological constructs. In this sample, we found positive and negative affect were detrimentally impacted by ACEs (Perea et al., 2012; Somers et al., 2017) regardless of the number present, and that abuse and household dysfunction had the most impact. These findings were similar to those by Perea et al., and Somers et al., who found a strong association between ACE and higher negative affect and lower positive affect, respectively (Perea et al., 2012; Somers et al., 2017). These findings implied that affectivity was highly sensitive to ACE exposure and should be evaluated at all ACE thresholds because of the link of high negative affect and low positive affect to lower levels of happiness and higher levels of depression when compared to other affective profiles (Schütz et al., 2013). Past empirical evidence showed the relationship between affect and cognition was complex and multifaceted, and that emotional reactions, perceptions, and interpretations of situations were influenced by cognitive processes (Forgas, 2008).

For the personality traits studied, we found that neuroticism was increased within a population with a history of ACE, which was consistent with a previous study completed by Hovens et al., who found that ACE was associated with higher levels of neuroticism, which was a mediator of lower depression and anxiety remission rates (Hovens et al., 2016). In addition, we found that neuroticism was increased at all ACE scores, which indicated neuroticism had the highest susceptibility to ACE compared to the other personality traits. This was an important finding as increased

neuroticism has been linked to mood disorders and decreased well-being (Mc Elroy & Hevey, 2014; Kendler, Kuhn, & Prescott, 2004). Mc Elroy and Hevey (2014) found that ACEs correlated with higher neuroticism and lower conscientiousness and agreeableness (Mc Elroy & Hevey, 2014). Our study found this same correlation at an ACE score of 3, but the association did not hold at lower ACE scores (Mc Elroy & Hevey, 2014). The occurrence of higher neuroticism and lower conscientiousness in tandem at higher ACE scores was important as higher neuroticism was a predictor of poor coping, increased stress with illness, and depression (John et al., 2008; Kendler et al., 2004); and lower conscientiousness was a predictor of risky behaviors such as substance use, violence, and suicide (Bogg & Roberts, 2004). Finally, ACEs increased openness in previous studies (Allen & Lauterbach, 2007; Hampson et al., 2016; Hovens et al., 2016; Pos et al., 2016), and our study found that openness was increased by ACE abuse type, but not at the ACE score thresholds. At face value, increased openness to experiences or situations might be viewed as a positive finding or result as openness was found in previous research to be positively and significantly associated with positive life events (Pos et al., 2016). However, openness to experiences was also shown to be associated with higher reactivity to daily stressors (Komulainen et al., 2014), and additionally as noted by Pos et al. (2016) the directional link between openness and ACE was unclear such that the authors questioned if the openness trait during early childhood was a factor in experiencing trauma or if the trauma shaped the openness trait (Pos et al., 2016). A critical question, historically, was if personality traits were relatively fixed over time and experience, or if they were malleable to meaningful change through experiences or interventions (Dweck, 2017). A recent cognitive training intervention altered openness in older adults, albeit in a non-ACE population, which provided evidence supporting the change theory and an opportunity to further explore nonpharmacotherapy based interventions on personality traits that are negatively affected by ACE to attempt to reduce or reverse the altered directionality of the trait (Dweck, 2017; Jackson, Hill, Payne, Roberts, & Stine-Morrow, 2012). In totality, the impact of ACEs on psychological

constructs touched broadly on health outcomes of poor coping, increased stress, substance abuse, mood disorders, happiness, and subjective well-being (John et al., 2008; Kendler et al., 2004; Mc Elroy & Hevey, 2014; Schütz et al., 2013).

While a strength of this study was that we evaluated the impact of ACE at different composite scores and by type of ACE on psychological constructs, several limitations must be mentioned. First, this study was limited by the retrospective nature of the dataset with recall bias of self-report that possibly affected the accuracy; however, Dube et al., showed good test-retest reliability of ACE data when analyzed retrospectively (Dube, Williamson, Thompson, Felitti, & Anda, 2004). Second, the categorization of abuse was restricted to physical and emotional abuse and did not include sexual abuse, which may have resulted in an uncaptured effect of sexual abuse on the psychological constructs studied. Third, the prevalence of ACE in this study was lower compared to other studies (CDC, 2016); however the difference may be related to the utilization of an ACE count composite score of 0–3 compared to other studies that utilized higher ACE counts. Fourth, potential confounders not included in the analyses that may have influenced the findings are social support, mental health disorders, and other comorbid medical conditions; therefore, we were unable to substantiate these findings based on those additional factors. And lastly, we chose to use gender as a covariate and adjusted for it to avoid bias as not all of the psychology constructs that we examined have known gender differences. However, we acknowledge that this was a potential limitation of our study particularly in regards to the personality traits of neuroticism, agreeableness, and conscientiousness as a previous study showed that in developed human societies, such as the U.S., that men had less neuroticism, agreeableness, and conscientiousness than women (Schmitt, Realo, Voracek, & Allik, 2008).

5. Conclusion

In this national sample of adults, ACEs were associated with personality, emotions and affect. An ACE score of three impacted the most psychological constructs compared to lower ACE scores, and ACE abuse type impacted the most psychological constructs compared to household dysfunction and financial strain. Therefore, higher ACE scores and abuse have a unique adverse influence on emotions and personality. There is a need for continued research in the behavior and psychosocial dimensions to advance the mechanistic and directionality of the association between ACEs, emotions, and behaviors. Future research is needed with a focus on openness and agreeableness, as these traits have not been as thoroughly studied in the population with a history ACE, and further research is needed to clarify if an association between ACEs and generativity exists. A better understanding of the underlying mechanisms between ACEs and psychological constructs will allow for further innovation and creation of targeted interventions, to add to the current interventions, with relatively modest effects, that focus on enriching the childhood environment, parental education, and informal support to alter the trajectory that poor coping and stress have on health disparities (Shonkoff & Fisher, 2013). Shonkoff and Fisher (2013) argue that strengthening and integrating two-generational programs by utilizing creative designs and testings strategies will help researchers push towards translational applications (Shonkoff & Fisher, 2013). Avenues of biopsychosocial clinical interventions, as proposed by Larkin, Felitti, and Anda (2014), are: trauma-focused cognitive behavioral therapy (TF-CBT), structured psychotherapy for adolescents responding to chronic stress (SPARCS), and child parent psychotherapy (CPP) (Larkin et al., 2014). Public health interventions to address or change health risky behaviors need to be cognizant

that many of the risky behaviors practiced by individuals, who have experienced trauma, are being used consciously or unconsciously as coping behaviors, which is why traditional public health interventions may fall short on effectiveness in this domain and that interventions that involve mind-body coping processes may be more beneficial (Larkin et al., 2014). An increase in translation and application of knowledge will help to better effect health policy changes such as expansion of healthcare coverage and facilitating better access to care and resources to those afflicted by ACEs (Srivastav, Fairbrother, & Simpson, 2017).

Author contributions

LEE designed the study. EG acquired and analyzed the data. EG and LEE developed the analyses, and JP, EG, CE, JSW, and LEE interpreted the data. JP, EG, CE, JSW, and LEE wrote and critically revised the manuscript for important intellectual content. All authors approved the final manuscript.

Funding

Effort for this study was partially supported by the National Institute of Diabetes and Digestive Kidney Disease (K24DK093699, R01DK118038, R01DK120861, PI: Egede) and the National Institute for Minority Health and Health Disparities (R01MD013826, PI: Egede/Walker).

Data Availability

Data used for this study is publicly available at url: <http://midus.wisc.edu/data/index.php>

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jrp.2019.103908>.

References

- Abele, A. E., & Wojciszke, B. (2007). Agency and communion from the perspective of self versus others. *Journal of Personality and Social Psychology*, 93(5), 751–763. <https://doi.org/10.1037/0022-3514.93.5.751>.
- Affifi, T. O., Mather, A., Boman, J., Fleisher, W., Enns, M. W., MacMillan, H., & Sareen, J. (2011). Childhood adversity and personality disorders: Results from a nationally representative population-based study. *Journal of Psychiatric Research*, 45(6), 814–822. <https://doi.org/10.1016/j.jpsychires.2010.11.008>.
- Allen, B., & Lauterbach, D. (2007). Personality characteristics of adult survivors of childhood trauma. *Journal of Traumatic Stress*, 20(4), 587–595. <https://doi.org/10.1002/jts.20195>.
- Anda, R. F., Felitti, V. J., Bremner, J. D., Walker, J. D., Whitfield, C., Perry, B. D., ... Giles, W. H. (2006). The enduring effects of abuse and related adverse experiences in childhood. *European Archives of Psychiatry and Clinical Neuroscience*, 256(3), 174–186. <https://doi.org/10.1007/s00406-005-0624-4>.
- Bogg, T., & Roberts, B. W. (2004). Conscientiousness and health-related behaviors: A meta-analysis of the leading behavioral contributors to mortality. *Psychological Bulletin*, 130(6), 887–919. <https://doi.org/10.1037/0033-2909.130.6.887>.
- Brim, O. G., Baltes, P. B., Bumpass, L. L., Cleary, P. D., Featherman, D. L., Hazzard, W. R., ... Shweder, R. A. (2019). Midlife in the United States (MIDUS 1), 1995–1996. Ann Arbor, MI: Inter-university Consortium for Political and Social Research, 2019-08-05. <https://doi.org/10.3886/ICPSR02760.v17>.
- Centers for Disease Control and Prevention (2016). *Behavioral Risk Factor Surveillance System Survey ACE Module Data, 2010*. Atlanta, GA: US Department of Health and Human Services. Retrieved from <https://www.cdc.gov/violenceprevention/acestudy>.

- Chartier, M. J., Walker, J. R., & Naimark, B. (2010). Separate and cumulative effects of adverse childhood experiences in predicting adult health and health care utilization. *Child Abuse and Neglect*, 34(6), 454–464. <https://doi.org/10.1016/j.chiabu.2009.09.020>.
- Corcoran, M., & McNulty, M. (2018). Examining the role of attachment in the relationship between childhood adversity, psychological distress and subjective well-being. *Child Abuse and Neglect*, 76(November 2017), 297–309. <https://doi.org/10.1016/j.chiabu.2017.11.012>.
- Cox, K. S., Wilt, J., Olson, B., & McAdams, D. P. (2010). Generativity, the Big Five, and psychosocial adaptation in midlife adults. *Journal of Personality*, 78(4), 1185–1208. <https://doi.org/10.1111/j.1467-6494.2010.00647.x>.
- DeNeve, K. M., & Cooper, H. (1998). The happy personality: A meta-analysis of 137 personality traits and subjective well-being. *Psychological Bulletin*, 124(2), 197–229. <https://doi.org/10.1037/0033-2909.124.2.197>.
- Diener, E., Pressman, S. D., Hunter, J., & Delgado-Gil-Chase, D. (2017). If, why, and when subjective well-being influences health, and future needed research. *Applied Psychology: Health and Well-Being*, 9(2), 133–167. <https://doi.org/10.1111/aphw.12090>.
- Dube, S. R., Anda, R. F., Felitti, V. J., Chapman, D. P., Williamson, D. F., & Giles, W. H. (2001). Childhood abuse, household dysfunction, and the risk of attempted suicide throughout the life span: Findings from the Adverse Childhood Experiences Study. *JAMA*, 286(24), 3089–3096. <https://doi.org/10.1001/jama.286.24.3089>.
- Dube, S. R., Williamson, D. F., Thompson, T., Felitti, V. J., & Anda, R. F. (2004). Assessing the reliability of retrospective reports of adverse childhood experiences among adult HMO members attending a primary care clinic. *Child Abuse and Neglect*, 28(7), 729–737. <https://doi.org/10.1016/j.chiabu.2003.08.009>.
- Dweck, C. S. (2017). From needs to goals and representations: Foundations for a unified theory of motivation, personality, and development. *Psychological Review*, 124(6), 689–719. <https://doi.org/10.1037/rev0000082>.
- Erikson, E. H. (1959). Identity and the life cycle: Selected papers. *Psychological Issues*, 1, 1–171. <https://doi.org/10.1001/archinte.1966.00290150102025>.
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., ... Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine*, 14(4), 245–258. [https://doi.org/10.1016/S0749-3797\(98\)00017-8](https://doi.org/10.1016/S0749-3797(98)00017-8).
- Forgas, J. P. (2008). Affect and cognition. *Perspectives on Psychological Science*, 3(2), 94–101. <https://doi.org/10.1111/j.1745-6916.2008.00067.x>.
- Freud, S. (1927). *The ego and the id*. London, England: Hogarth Press.
- Greger, H. K., Myhre, A. K., Klöckner, C. A., & Jozefiak, T. (2017). Childhood maltreatment, psychopathology and well-being: The mediator role of global self-esteem, attachment difficulties and substance use. *Child Abuse and Neglect*, 70(June), 122–133. <https://doi.org/10.1016/j.chiabu.2017.06.012>.
- Grzywacz, J. G. (2000). Work-family spillover and health during midlife: Is managing conflict everything? *American Journal of Health Promotion*, 14(4), 236–243. <https://doi.org/10.4278/0890-1171-14.4.236>.
- Hampson, S. E., Edmonds, G. W., Goldberg, L. R., Barckley, M., Klest, B., Dubanoski, J. P., & Hillier, T. A. (2016). Lifetime trauma, personality traits, and health: A pathway to midlife health status. *Psychological Trauma: Theory, Research, Practice, and Policy*, 8(4), 447–454. <https://doi.org/10.1037/tra0000137>.
- Helgeson, V. S. (1994). Relation of agency and communion to well-being: Evidence and potential explanations. *Psychological Bulletin*, 116(3), 412–428. <https://doi.org/10.1037/0033-2909.116.3.412>.
- Hirokawa, K., & Dohi, I. (2007). Agency and communion related to mental health in Japanese young adults. *Sex Roles*, 56(7–8), 517–524. <https://doi.org/10.1007/s11199-007-9190-8>.
- Hovens, J. G. F. M., Giltay, E. J., Van Hemert, A. M., & Penninx, B. W. J. H. (2016). Childhood maltreatment and the course of depressive and anxiety disorders: The contribution of personality characteristics. *Depression and Anxiety*, 33(1), 27–34. <https://doi.org/10.1002/da.22429>.
- SAS Institute (2017). *SAS version 9.4 for Windows*. Cary, NC: SAS Institute.
- Jackson, J. J., Hill, P. L., Payne, B. R., Roberts, B. W., & Stine-Morrow, E. A. (2012). Can an old dog learn (and want to experience) new tricks? Cognitive training increases openness to experience in older adults. *Psychology and Aging*, 27(2), 286–292. <https://doi.org/10.1037/a0025918>.
- John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 114–158). New York, NY, US: Guilford Press.
- John, O. P., & Srivastava, S. (1999). The Big-Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102–138). New York, NY: Guilford Press.
- Kendler, K. S., Kuhn, J., & Prescott, C. A. (2004). The interrelationship of neuroticism, sex, and stressful life events in the prediction of episodes of major depression. *American Journal of Psychiatry*, 161(4), 631–636. <https://doi.org/10.1176/appi.ajp.161.4.631>.
- Keyes, C. L. M. (2000). Subjective change and its consequences for emotional well-being. *Motivation and Emotion*, 24(2), 67–83. <https://doi.org/10.1023/A:1005659114155>.
- Keyes, C. L. M., Shmotkin, D., & Ryff, C. D. (2002). Optimizing well-being: The empirical encounter of two traditions. *Journal of Personality and Social Psychology*, 82(6), 1007–1022. <https://doi.org/10.1037/0022-3514.82.6.1007>.
- Komulainen, E., Meskanen, K., Lipsanen, J., Lahti, J., Jylha, P., Melartin, T., ... Ekelund, J. (2014). The effect of personality on daily life emotional processes. *PLoS One*, 9(10). <https://doi.org/10.1371/journal.pone.0110907>.
- Krueger, R. F., & Eaton, N. R. (2010). Personality traits and the classification of mental disorders: Toward a more complete integration in DSM-5 and an empirical model of psychopathology. *Personality Disorders: Theory, Research, and Treatment*, 1(2), 97–118. <https://doi.org/10.1037/a0018990>.
- Lachman, M. E., & Weaver, S. L. (1997). *The Midlife Development Inventory (MIDI) Personality Scales: Scale construction and scoring* (pp. 1–9). Waltham, MA: Brandeis University.
- Lachman, M. E., & Weaver, S. L. (1998). Sociodemographic variations in the sense of control by domain: Findings from the MacArthur Studies of Midlife. *Psychology and Aging*, 13(4), 553–562. <https://doi.org/10.1037/0882-7974.13.4.553>.
- Lahey, B. B. (2009). Public health significance of neuroticism. *American Psychologist*, 64(4), 241–256. <https://doi.org/10.1037/a0015309>.
- Landes, S. D., Ardel, M., Vaillant, G. E., & Waldinger, R. J. (2014). Childhood adversity, midlife generativity, and later life well-being. *The Journals of Gerontology: Series B*, 69(6), 942–952. <https://doi.org/10.1093/geronb/gbu055>.
- Larkin, H., Felitti, V. J., & Anda, R. F. (2014). Social work and adverse childhood experiences research: Implications for practice and health policy. *Social Work in Public Health*, 29(1), 1–16. <https://doi.org/10.1080/19371918.2011.619433>.
- Lippa, R. A. (2001). On deconstructing and reconstructing masculinity-femininity. *Journal of Research in Personality*, 35, 168–207. <https://doi.org/10.1006/jrpe.2000.2307>.
- Marks, N. F., Bumpass, L. L., & Jun, H. J. (2004). Family roles and well-being during the middle life courses. In O. G. Brim, C. D. Ryff & R. C. Kessler (Eds.), *How healthy are we?: A national study of well-being at midlife*. (pp. 514–549). Chicago: Univ. of Chicago Press.
- Mc Elroy, S., & Hevey, D. (2014). Relationship between adverse early experiences, stressors, psychosocial resources and wellbeing. *Child Abuse and Neglect*, 38(1), 65–75. <https://doi.org/10.1016/j.chiabu.2013.07.017>.
- McAdams, D. P., & de St. Aubin, E. (1992). A theory of generativity and its assessment through self-report, behavioral acts, and narrative themes in autobiography. *Journal of Personality and Social Psychology*, 62(2), 1003–1015.
- McCrae, R. R., & Costa, P. T. (1999). A five-factor theory of personality. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (pp. 139–153). New York, NY: Guilford Press.
- McCrae, R. R., & John, O. P. (1992). An introduction to the five-factor model and its applications. *Journal of Personality*, 60, 175–215. <https://doi.org/10.1111/j.1467-6494.1992.tb00970.x>.
- Mroczek, D. K., & Kolarz, C. M. (1998). The effect of age on positive and negative affect: A developmental perspective on happiness. *Journal of Personality and Social Psychology*, 75(5), 1333–1349. <https://doi.org/10.1037/0022-3514.75.5.1333>.
- Mroczek, D. K. (2004). Positive and negative affect at midlife. In O. G. Brim, C. D. Ryff, & R. C. Kessler (Eds.), *The John D. and Catherine T. MacArthur foundation series on mental health and development. Studies on successful midlife development. How healthy are we?: A national study of well-being at midlife* (pp. 205–226). Chicago, IL, US: University of Chicago Press.
- Norman, R. E., Byambaa, M., De, R., Butchart, A., Scott, J., & Vos, T. (2012). The long-term health consequences of child physical abuse, emotional abuse, and neglect: A systematic review and meta-analysis. *PLoS Medicine*, 9(11), 1–30. <https://doi.org/10.1371/journal.pmed.1001349>.
- Oshio, T., Umeda, M., & Kawakami, N. (2013). Childhood adversity and adulthood subjective well-being: Evidence from Japan. *Journal of Happiness Studies*, 14(3), 843–860. <https://doi.org/10.1007/s10902-012-9358-y>.
- Ozer, D. J., & Benet-Martinez, V. (2006). Personality and the prediction of consequential outcomes. *Annual Review of Psychology*, 57(1), 401–421. <https://doi.org/10.1146/annurev.psych.57.102904.190127>.
- Perea, C. S., Paternina, A. C., Gomez, Y., & Lattig, M. C. (2012). Negative affectivity moderated by BDNF and stress response. *Journal of Affective Disorders*, 136, 767–774. <https://doi.org/10.1016/j.jad.2011.09.043>.
- Pos, K., Boyette, L. L., Meijer, C. J., Koeter, M., Krabbendam, L., de Haan, L., ... Wiersma (2016). The effect of childhood trauma and Five-Factor Model personality traits on exposure to adult life events in patients with psychotic disorders. *Cognitive Neuropsychiatry*, 21(6), 462–474. <https://doi.org/10.1080/13546805.2016.1236014>.
- Rossi, A. S. (2001). *Caring and doing for others: Social responsibility in the domains of family, work, and community*. Chicago: University of Chicago Press.: Developmental Roots of Adult Social Responsibility.
- Ryff, C., Almeida, D.M., Ayanian, J., Carr, D.S., Cleary, P.D., Coe, C., ... Williams, D. (2017). Midlife in the United States (MIDUS 2), 2004–2006. Ann Arbor, MI: Inter-university Consortium for Political and Social Research, 2017-11-20. <https://doi.org/10.3886/ICPSR04652.v7>.
- Ryff, C., Almeida, D.M., Ayanian, J., Binkley, N., Carr, D.S., Coe, C., ... Williams, D. (2019). Midlife in the United States (MIDUS 3), 2013–2014. Ann Arbor, MI: Inter-university Consortium for Political and Social Research, 2019-04-30. <https://doi.org/10.3886/ICPSR36346.v7>.
- Schmitt, D. P., Realo, A., Voracek, M., & Allik, J. (2008). Why can't a man be more like a woman? Sex differences in Big Five personality traits across 55 cultures. *Journal of Personality and Social Psychology*, 94(1), 168–182. <https://doi.org/10.1037/0022-3514.94.1.168>.
- Schütz, E., Sailer, U., Al Nima, A., Rosenberg, P., Andersson Arntén, A.-C., Archer, T., & Garcia, D. (2013). The affective profiles in the USA: Happiness, depression, life satisfaction, and happiness-increasing strategies. *PeerJ*, 1. <https://doi.org/10.7717/peerj.156> e156.

- Shonkoff, J. P., & Fisher, P. A. (2013). Rethinking evidence-based practice and two-generation programs to create the future of early childhood policy. *Development and Psychopathology*, 25(4 Pt 2), 1635–1653. <https://doi.org/10.1017/S0954579413000813>.
- Somers, J. A., Ibrahim, M. H., & Luecken, L. J. (2017). Biological sensitivity to the effects of childhood family adversity on psychological well-being in young adulthood. *Child Maltreatment*, 22(3), 236–244. <https://doi.org/10.1177/1077559517711041>.
- Srivastav, A., Fairbrother, G., & Simpson, L. A. (2017). Addressing adverse childhood experiences through the Affordable Care Act: Promising advances and missed opportunities. *Academic Pediatrics*, 17(7), S136–S143. <https://doi.org/10.1016/j.acap.2017.04.007>.
- Staudinger, U. M., Fleeson, W., & Baltes, P. B. (1999). Predictors of subjective physical health and global well-being: Similarity and differences between the United States and Germany. *Journal of Personality and Social Psychology*, 76(2), 305–319. <https://doi.org/10.1037/0022-3514.76.2.305>.
- Teicher, M. H., Ohashi, K., Lowen, S. B., Polcari, A., & Fitzmaurice, G. M. (2015). Mood dysregulation and affective instability in emerging adults with childhood maltreatment: An ecological momentary assessment study. *Journal of Psychiatric Research*, 70, 1–8. <https://doi.org/10.1080/10937404.2015.1051611>.
- Trudeau, K. J., Danoff-Burg, S., Revenson, T. A., & Paget, S. A. (2003). Agency and communion in people with rheumatoid arthritis. *Sex Roles*, 49(7–8), 303–311. <https://doi.org/10.1023/A:1025192818638>.
- Trull, T. J., & Widiger, T. A. (2013). Dimensional models of personality: The Five-Factor model and the DSM-5. *Dialogues in Clinical Neuroscience*, 15(2), 135–146. <https://doi.org/10.1097/ALN.0b013e318212ba87>.
- Walen, H. R., & Lachman, M. E. (2000). Social support and strain from partner, family, and friends: Costs and benefits for men and women in adulthood. *Journal of Social and Personal Relationships*, 17(1), 5–30. <https://doi.org/10.1177/0265407500171001>.