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

Jessica M. Grusnick, Emma Garacci, Christian Eiler, Joni S. Williams, Leonard E. Egede

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 (β = 0.10; 95% CI 0.07, 0.13) and conscientiousness (β = −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 (β = 0.20; 95% CI 0.16, 0.24), openness (β = 0.08; 95% CI 0.05, 0.11), conscientiousness (β = −0.05; 95% CI −0.08, −0.02), and agency (β = 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.

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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
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; Trueude, 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, Klockner, & Jozeflak, 2017; Hirokawa & Dohi, 2007; Perea, Patermina, Gomez, & Lattig, 2012; Somers, Ibrahim, & Lukeck, 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, Gillay, 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 coterminal 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
were measured by asking respondents how
2019; Ryff, Almeida, Ayanian, Carr, Cleary, Coe, & Williams, 2017).
2019; Ryff, Almeida, Ayanian, Binkley, Carr, Coe, & Williams,
(Brim, Baltes, Bumpass, Cleary, Featherman, Hazzard, & Shweder,
vey waves by self-administered questionnaires using Likert scales
and used to methodologically evaluate generativity (McAdams & de St. Aubin, 1992; Rossi,
1998; Marks, Bumpass, & Jun,
and reported the 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, careful); (3) Extraversion (outgoing,
friendly, lively, talkative, active); (4) Neuroticism (moody, worry-
ing, nervous, calm); (5) Openness (creative, imaginative, intelli-
gent, 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) Neuroti-
cism = 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, & Baltes, 1999).
Positive and Negative affect were measured using two 6-item
scales. To assess negative affect, participants were asked how fre-
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 pos-
itive 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 (dichoto-
mized as married and not married), household total income
(grouped as less than $25,000; $25,000–$74,999; and ≥$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 equa-
tions (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. Genera-
tivity, 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 compo-
ponents: abuse, household dysfunction, and financial strain. General-
ized 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 sur-
vey wave (1, 2, 3). Each outcome was ran as a separate set of mod-
els. 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 com-
pleted 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 vs. 3.40 ± 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),
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lower conscientiousness (p < .0001), higher agency (p = 0.0321),
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 = 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 (β = 0.10, 95% CI 0.07, 0.13, p < .0001), lower conscientiousness (β = −0.03, 95% CI −0.05, −0.01, p = 0.0029), higher negative affect (β = 0.13, 95% CI 0.10, 0.16, p < .0001), and lower positive affect (β = −0.13, 95% CI −0.16, −0.10, p < .0001). Higher ACE score was positively associated with neuroticism (β = 0.24, 95% 0.15, 0.33 for 3 ACEs vs. β = 0.16, 95% 0.11, 0.21 for 2 ACEs vs. β = 0.07, 95% 0.04, 0.11 for 1 ACE), negatively associated with conscientiousness (β = −0.08, 95% −0.14, −0.02 for 3 ACEs vs. β = −0.05, 95% −0.08, −0.02 for 2 ACEs), positively associated with negative affect (β = 0.32, 95% 0.21, 0.42 for 3 ACEs vs. β = 0.22, 95% 0.17, 0.27 for 2 ACEs vs. β = 0.08, 95% 0.06, 0.11 for 1 ACE), negatively associated with positive affect (β = −0.25, 95% −0.35, −0.15 for 3 ACEs vs. β = −0.20, 95% −0.25, −0.15 for 2 ACEs vs. β = −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, and Positive and Negative Affect Scales (Mean (SD));
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

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Multivariable GEE Regression model of all MIDUS waves.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood adversity with ACE</td>
<td>Composite childhood adversity score</td>
</tr>
<tr>
<td><strong>Generativity</strong></td>
<td></td>
</tr>
<tr>
<td>Neuroticism Personality Trait</td>
<td>0.10 (0.07, 0.13)</td>
</tr>
<tr>
<td>Extraversion Personality Trait</td>
<td>-0.00 (0.03, 0.03)</td>
</tr>
<tr>
<td>Openness Personality Trait</td>
<td>-0.00 (0.03, 0.02)</td>
</tr>
<tr>
<td>Conscientiousness Personality Trait</td>
<td>-0.03 (-0.05, -0.01)</td>
</tr>
<tr>
<td>Agreeableness Personality Trait</td>
<td>0.02 (0.01, 0.04)</td>
</tr>
<tr>
<td>Agency Personality Trait</td>
<td>0.01 (0.02, 0.05)</td>
</tr>
<tr>
<td>Positive and Negative Affect</td>
<td></td>
</tr>
<tr>
<td>Negative affect</td>
<td>0.13 (0.01, 0.16)</td>
</tr>
<tr>
<td>Positive affect</td>
<td>-0.13 (-0.16, -0.10)</td>
</tr>
</tbody>
</table>

* 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, 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.
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 testing 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.

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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


