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Exploring the Relationship Between Childhood Adversity and Adult Depression: A Risk versus Strengths-Oriented Approach

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Abstract

Background—Previous research suggests a dose-response relationship between Adverse Childhood Experiences (ACEs) and adult depression. Both constructs are also known correlates of child maltreatment risk.

Objectives—This study examines the relationship between a cumulative count of ACEs and adult depressive symptoms in a sample of families at risk for child maltreatment. The study also aims to determine if a new childhood caregiving environment (CCE) scale predicts adult depressive symptoms as well as or better than the traditional ACE score in this high-risk population, and whether it holds potential as a service needs assessment tool for the child maltreatment prevention field.

Participants and Setting—Baseline survey data from a randomized control trial testing a child maltreatment prevention program in Milwaukee, Wisconsin were used. The sample (N=618) included caregivers reported to and investigated by child protective services (CPS) for allegations of abuse or neglect.

Methods—Ordinary least squares regression was used to look at the relationship between the number of ACEs, scores on the CCE scale, and adult depressive symptoms. Exploratory factor analysis was used to examine the CCE scale items in comparison to ACEs.

Results—A high ACE score is associated with more depressive symptomatology ($\beta=0.82$, $p<0.001$). Conversely, adults with higher scores on the CCE scale have fewer depressive symptoms ($\beta=-0.30$, $p<0.001$). There is also preliminary evidence that the CCE scale may tap into similar underlying constructs as ACEs.

Conclusions—Given that the CCE measure favors strengths-oriented question items, it may be a promising substitute for the risk-oriented ACE score in assessing parental childhood adversities

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known to be associated with the maltreatment of one's own children, and as an approach for identifying service needs related to childhood trauma in a maltreatment prevention context.

Keywords

Adverse childhood experiences; depression; adults; strengths-oriented approach

Introduction

Children's experiences can have a profound influence on their health and well-being later in life. Many studies have shown that the accumulation of adverse childhood experiences (ACEs), such as exposure to child maltreatment, parental violence, and other forms of family dysfunction, can negatively impact adult health (Anda et al., 1999; Felitti et al., 1998). ACEs are considered to be potentially traumatic experiences that occur before the age of 18. The seminal study that created the notion of ACEs found that the accumulation of adverse experiences in childhood is strongly linked with health risk factors and outcomes later in life (Felitti et al., 1998). The theoretical framework that emerged out of studies on adversity hypothesizes that over the life course, ACEs lead to social, emotional, and cognitive impairment through changes in neurodevelopmental trajectories (Shonkoff & Garner, 2012). Impairment leads to an elevated risk of engaging in health-risk behaviors, developing poor health, and early death in adulthood (Shonkoff & Garner, 2012).

Depression is one of several health outcomes implicated in the ACE literature (Downey, Gudmunson, Pang, & Lee, 2017; Dube et al., 2001; Edwards, Holden, Felitti, & Anda, 2003; Font & Maguire-Jack, 2016; Merrick et al., 2017; Wade et al., 2016). It is also one of the most common risk factors for child maltreatment, in addition to parental histories of trauma and adversity in childhood (Banyard, Williams, & Siegel, 2003; Dixon, Browne, & Hamilton-Giachritsis, 2005; Madigan et al., 2019). Despite existing research on the relationship between ACEs and depression, few studies to date have focused on caregivers at risk for perpetrating child maltreatment using the cumulative ACE measure. Understanding the relationship between cumulative childhood adversity and adult depression, two salient risk factors for child maltreatment, has important implications for the prevention field related to identifying families with heightened service needs, and for the design and targeting of services for families at higher risk of child abuse and neglect. Nevertheless, the field is in need of assessment strategies that are less intrusive and more palatable in a voluntary prevention setting, particularly related to the assessment of childhood adversity.

Some researchers have raised concerns over the use of ACEs as an assessment tool for childhood adversity (Finkelhor, 2018). The ACE scale was designed as a population-level indicator of traumatic experiences, and not as a screening tool (Anda, Porter, & Brown, 2020). Despite this concern, the ACE measure is often used in medical and social service settings to assess children or adults for childhood trauma. Concerns related to ACEs include that the scale implicitly assumes that certain childhood experiences are traumatic when they may in actuality be beneficial to family functioning, as in the case of parental separation or divorce in situations of intimate partner violence. And some service providers and health care professionals may be averse to using the ACE measure, given the risk-orientation

of the questions, which the provider or client may view as too intrusive or potentially re-traumatizing (Albaek, Kinn, & Milde, 2018; Ford et al., 2019; Schilling et al., 2019). Evidence is mixed regarding client discomfort with ACE-specific assessment, but for some of the more sensitive ACEs (e.g., sexual abuse history), clients may feel less inclined to disclose information about their childhoods (Ford et al., 2019; Mersky, Lee, & Gilbert, 2019).

The ACE scale focuses on risk factors, almost all of which emphasize the family caregiving context. When working with families in child maltreatment prevention settings, the goal is to identify both risk and protective factors associated with child maltreatment. Several strengths-based tools have been developed to identify familial protective factors. However, these tools are either focused on the present context or they include items that are not exclusive to the family caregiving context during childhood (Bethell, Jones, Gombojav, Linkenbach, & Sege, 2019; Counts, Buffington, Chang-Rios, Rasmussen, & Preacher, 2010; Narayan, Rivera, Bernstein, Harris, & Lieberman, 2018). In countering the risk-oriented ACE measure, an alternative approach is to measure positive experiences in the childhood caregiving context to determine if lower scores on such measures predict the same outcomes as ACEs, while also being strongly (and inversely) correlated with ACEs. A strengths-oriented substitute for assessing childhood adversity in the family caregiving context may be more palatable to implement in voluntary child maltreatment prevention settings, where practitioners are particularly sensitive to concerns about re-traumatization.

This study aims to determine if a new childhood caregiving environment (CCE) scale, developed with strengths-oriented question items, works just as well or better than the ACE count measure to predict adult depressive symptoms within the same sample. The CCE scale is designed as an alternative to the ACE score. It measures positive familial experiences in childhood, for which lower scores may capture adverse experiences. The scale is meant to capture adult recollections of feeling happy, safe, and secure during childhood in the family caregiving context. This differentiates the scale from other measures of positive childhood experiences that focus on internal psychological processes, such as positive sense of self and core beliefs, and on both intra-familial and extra-familial relationships and environments (Narayan et al., 2018). To be clear, this study pilots the CCE scale as a service needs-assessment tool for use with families at risk for child maltreatment in voluntary settings, rather than as an assessment tool for depression, or as a risk or safety assessment tool for child maltreatment perse.

Depression was selected as the outcome of interest because correlational ACE research has shown strong and relatively consistent findings related to mental health in adulthood and because the population of interest (families at risk for child maltreatment) is known to be at heightened risk for depressive symptoms. Positive childhood experiences have the potential to be influenced by an individual's current mental health state. However, it is also possible that the disclosure of childhood adversities may be influenced by an individual's current mental health state and the sensitivity of several ACE questions (Vrielynck, Deplus, & Philippot, 2007). Both strategies have potential limitations, but previous studies have repeatedly shown a strong linear association between the count of ACEs and adult depressive symptoms in various samples. This relationship has yet to be

adequately explored with an adult sample at risk for child maltreatment, for whom both childhood adversities and adult depression are well-established correlates of the outcome.

Materials and Methods

Sample

Data from a large randomized control trial testing a child maltreatment prevention program —Project Getting Access to Income Now (GAIN)—were used to assess the relationship between ACEs, CCEs, and adult depressive symptoms. This intervention is designed to help families at risk for child maltreatment by providing access to economic resources, thereby reducing financial stressors and increasing economic stability for families. Families in Milwaukee, Wisconsin who were reported to and investigated by child protective services (CPS) for allegations of child maltreatment, but whose investigation did not result in a CPS case being opened for ongoing services due to insufficient child safety concerns, were randomized to a treatment group and offered a community-based, voluntary intervention, Project GAIN, or to a control group, which did not receive any offer of voluntary services. The study did not include caregivers whose investigations resulted in a CPS case opening because it was part of a larger evaluation of a program designed for families investigated but not ultimately served by CPS. Previous research has shown that this group of "CPS-deflected" families has a high recidivism rate and is thus at high risk for child maltreatment (Drake, Jonson-Reid, Way, & Chung, 2003). This study was approved by the Institutional Review Board at the University of Wisconsin-Madison.

The data used for the present analysis came from a baseline survey administered to families eligible for the intervention (N=1,095), regardless of treatment assignment status. Reasons for ineligibility included an inability to complete the survey in English (N=48), and if the sample member had moved out of the study catchment area (N=26), was incarcerated or institutionalized (N=12), no longer had children in the home, was under the age of 18, no longer had available contact information or the interviewer could not confirm the identity of the sample member (N=16), was deceased (N=2), or had apparent mental health limitations that prevented survey participation (N=1). The baseline survey was fielded from February-August of 2016 and had a final response rate of 66.4% (N=727), with reasons for non-response including lack of contact (i.e., the sample member could not be reached after repeated attempts; N=209), survey break-off (i.e., sample member willing to participate but unavailable for survey participation; N=76), and respondent refusal (N=75).

In addition, some respondents did not provide complete information on key predictors and covariates (N=31) or the main outcome (N=78) and were dropped from the sample. This resulted in a final sample of 618 respondents. The 109 respondents dropped from the sample differed from the final sample in their reported race/ethnicity, education level, and overall health. Those that were dropped were less likely to identify as Black, completed less education, and reported being in worse health than those included in the sample, although these statistically significant differences were substantively small. Extensive information from administrative data (three years of historical data on child protection system involvement, income amounts, sources from employment, various means-tested benefits, and socio-demographic characteristics) that pre-dated randomization was used to

create predicted probabilities of survey participation. These predicted probabilities enabled the creation of sampling weights to adjust for survey non-response for the purpose of generating findings that more accurately reflect the full eligible sample.

Measures

Table 1 provides an overview of the ACE questions included in the survey. The items comprising the ACE score largely compare with prior studies, but some minor wording changes were made, and some ACE items from the original study were collapsed into one question (e.g., instead of asking separate questions about various types of sexual abuse to create one sexual abuse indicator, a single question inclusive of different types of sexual abuse was asked). The sexual abuse items were collapsed in order to reduce the burden on participants, as the ACE questions were asked as a part of a longer baseline pre-intervention assessment. The last question listed in Table 1 (Did your parents live together for your entire childhood from birth to age 18?) was used to create a proxy for parental divorce or separation. The “yes/no” responses to the ACE questions were summed to create an ACE count variable. The resulting values of the continuous ACE scale range from 0–8, with good internal consistency (α=0.75). High (ACE score ≥ 4) and low (ACE score ≤ 3) ACE groups were also created for bivariate analyses.

Eighty-four respondents (13.6% of the analysis sample) did not answer all eight of the ACE questions. However, nearly all of those with missing values on the ACE measure were missing only one or two item responses, and the group that had any missing items did not differ substantively from the group with complete ACE items on the sociodemographic control variables. Rather than dropping cases with any missing ACE items from the analysis, we imputed the ACE count for these respondents by dividing the number of indicated ACEs by the number of ACE questions answered and multiplied by eight. Only three cases were dropped from the analysis because they lacked responses on all ACE items. We also ran our final regression models without the cases where one or more ACE items were missing, and our results did not meaningfully change. For our remaining covariates and the outcome variable, we dropped cases with missing values from the analysis.

Table 2 provides an overview of the CCE questions. The scale is comprised of 8 items that tap into childhood experiences indicative of safe, stable, nurturing relationships and environments within the family caregiving context, and occurring before the age of 18. This scale is a frequency measure with response options of never, rarely, sometimes, often, and very often. Questions 1, 2, and 4 were reverse coded to reflect positive experiences. The items were summed to create a scale measure with good internal consistency (α=0.87). The resulting values of the CCE scale range from 0–40, with higher scores indicating more positive experiences in childhood. The median of the distribution was also used to create a cut-off for low (CCE score ≤ 30) and high (CCE score ≥ 31) CCE groups for bivariate analyses.

Adult depression was measured using an adapted version of the Center for Epidemiologic Studies Depression Scale-Revised (CESD-R). The CESD-R is a well-validated and widely used instrument within the field of psychiatric epidemiology (Eaton, Smith, Ybarra, Muntaner, & Tien, 2004; Radloff, 1977). The CESD-R measures symptoms of depression

such as sadness, loss of interest in activities, poor appetite, sleep activity, concentration, guilt, fatigue, and agitation. The majority of the 20 items within the CESD-R focus on the frequency of these depressive symptoms within the past week. The adapted version of the CESD-R used for the baseline Project GAIN survey was comprised of 21 questions; 18 from the original CESD-R (two original items were dropped: “I wish I were dead” and “I wanted to hurt myself,” given the severity of these questions and given that the questions were administered as a part of a larger and more time-consuming survey. Three additional questions focused on positive experiences, included to counterbalance the risk-oriented CESD-R items (“You have felt rested,” “You have felt calm and in control,” and “You have been happy and content”). The response options (never, rarely, sometimes, often, or very often) in this version also differ from the traditional CESD-R, which asks about the number of days an individual is experiencing depressive symptoms in the past one-two weeks. For this reason, the CESD-R depression categories (e.g., meets criteria for a major depressive episode) are not applicable. However, the adaptation of the scale still measures depressive symptoms in alignment with the Diagnostic and Statistical Manual, Fifth Edition (DSM-5), with higher scores indicating the presence of more depressive symptoms. The final 21 questions were summed to create a continuous depression scale, with good internal consistency (α=0.92). Scores of the scale ranged from 1–56.

Socio-demographic covariates used in the basic regression models include respondent age, sex, race/ethnicity, respondent education level, and family structure. Race/ethnicity was added as a covariate to account for racial disparities in depression and CPS involvement (Bailey, Mokonogho, & Kumar, 2019; Drake et al., 2011). Considering that there is a strong literature supporting the relationship between ACEs and other poor health outcomes, dichotomous health status measures were added to regression models as a final step to assess the robustness of observed associations between ACEs and adult depressive symptoms, and CCEs and adult depressive symptoms. Specifically, other indicators of poor health may artificially inflate associations between ACEs and depression if not controlled in multivariate models. These health questions were: “How would rate your overall health today?” (with response options of excellent, very good, good, fair, and poor) and “Do you have a chronic health condition or disability that limits your daily activities?” (with response options of yes and no). For the question assessing the overall health of respondents, a dichotomous measure was created for which “1” represented poor or fair health, and “0” represented good, very good, or excellent health.

Analysis

Chi-square and t-tests were used to test for significant differences in demographic characteristics between groups with high and low ACE scores and high and low CCE scores. We then used ordinary least squares (OLS) regression to look at the relationship between the number of ACEs and adult depressive symptoms, and scores on the CCE scale and adult depression. The first model regresses adult depressive symptoms on the ACE count variable. The second model tests this same relationship but includes socio-demographic controls. The third and full model examines this relationship with all covariates of interest, to include other indicators of poor health.

To examine if ACE and CCE items are tapping into the same or similar constructs, we conducted a combined exploratory factor analysis (EFA) with both sets of items. EFAs were performed in Stata, Version 16 with principal factors estimation and oblique promax rotation, to allow for interrelatedness between the factors. We examined factor solutions based on their eigenvalues and alignment with theoretical interpretation. CCE scale items were converted to dichotomous variables in order to be on the same response scale as ACE items. Tetrachoric correlations were then used to account for the dichotomous variable structure. We also examined the correlations between identified factors to determine if the factors were tapping into an overlapping concept.

Results

Table 3 presents the demographic characteristics of the sample. For the full sample, the majority of respondents are between the ages of 25–44, identify as Non-Hispanic Black and as female. Most respondents are single parents and have more than a high school education. The majority of participants also consider themselves to be in good health and do not report any chronic health conditions. The mean level of depressive symptoms for the full sample is 14.23 (Range 1–56). There are significant differences in mean levels of depressive symptoms reported between the low and high ACE groups. Those with a high number of ACEs (i.e., 4 or more) have an average score of 15.89 on the depression scale, whereas those with a low number of ACEs (i.e., 3 or lower) have a score of 13.19 ($p < 0.05$). There are also statistically significant differences between the low and high ACE groups in health status, chronic health conditions, family structure, age, and race/ethnicity. For the high and low CCE groups (i.e., those with CCE scores at or above or below 30), there are significant differences in the mean levels of depressive symptoms. Those who score higher on the CCE scale (i.e., more positive childhood experiences) have a score of 12.46 on the depression scale, whereas individuals who score lower on the CCE scale have an average depression score of 16.37 ($p<0.05$). There are also statistically significant differences between high and low CCE groups in health status, chronic health conditions, family structure, and race/ethnicity.

Table 4 presents the OLS regression results for the models predicting adult depressive symptoms using the ACE score. The count of ACEs is positively associated with depressive symptoms in all of the models. For the simple bivariate model, each additional ACE is associated with a 0.97 unit increase in the depression scale. For the model with demographic covariates, each additional ACE is associated with an increase of 1.02 on the depression score. For the final model, each additional ACE is associated with 0.82 unit change in the depression score. For the full model, individuals with chronic health conditions are associated with a 3.90 unit increase in the depression scale in comparison to individuals without chronic health problems. Not shown, separate analyses using categorical counts of ACEs (1, 2–3, 4 or more; 0 as the reference group) suggest a significant dose-response relationship between the number of ACEs and depressive symptoms that is consistent with prior literature (Chapman et al., 2004).

Table 5 presents the OLS regression results for the model predicting adult depressive symptoms with the CCE scale. The CCE measure is negatively associated with depressive

symptoms in all of the models. For the full model, each additional unit increase in the CCE scale is associated with a decrease of 0.30 units on the depression scale. Individuals who report having a chronic health condition have a 3.58 unit increase on the depression scale in comparison to individuals who do not report chronic health problems. This suggests that having more positive and nurturing caregiving experiences as a child may reduce depressive symptoms in adulthood.

Table 6 presents the final models from Tables 4 and 5 using standardized regression coefficients to allow for easier comparison across the ACE count and CCE scale models. The results from Model 1 suggest that each additional ACE is associated with a 0.20 standard deviation change in depressive symptoms. The results from Model 2 show that each unit increase in the CCE scale is associated with 0.25 standard deviation change in depressive symptoms. Using the adjusted r-squared value, the ACE model explains 15% of the variation in depressive symptoms, whereas the CCE model explains 17% of this variation. The final model includes both ACEs and CCEs with full controls. As shown, the inclusion of the CCE scale significantly reduces the coefficient for the ACE score, rendering it statistically insignificant. These analyses suggest that both the ACE and CCE scales may be tapping into similar constructs and affecting a highly similar subgroup of sample members, a point we revisit below.

Results from the EFA identified a two-factor solution (not shown). The majority of items on the ACE scale loaded onto one factor, and the CCE items on the other factor. However, there was cross-loading between three items. Two of the cross-loaded items were the reverse-coded questions from the CCE scale (“How often did you feel unloved or unwanted by your parents or primary caregivers?” and “How often do you remember feeling scared and alone?”). The remaining cross-loaded item from the CCE scale focused on an indicator of basic needs (“How often was there an adult in your household who tried hard to make sure your basic needs were met? By basic needs we mean food, shelter, clothing, and medical care.”). The correlation between factors was −0.36 (The negative sign reflects the inverse association between the risk-oriented ACE items and the strengths-oriented CCE items). In combination with cross-loading, this factor correlation suggests that the ACE and CCE scale items may be tapping into the same underlying construct of childhood adversity or that the scale items are tapping into two interrelated concepts, potentially driven by a smaller subset of CCE scale items. Results from the EFA should be interpreted with caution, as this analysis was a preliminary exploration concerning the relatedness of scale items in a particularly high-risk population.

Discussion

The count of ACEs is associated with depressive symptoms in all models, even after adding demographic and health indicator controls that may be associated with depression. These results are consistent with the literature suggesting that the more ACEs an individual has, the greater the risk for adverse health outcomes later in life, an association that appears to hold true in a sample at high risk for child maltreatment. It is worth noting that 38.4% of the study participants reported four or more ACEs, whereas data from the annual Wisconsin Behavioral Risk Factor Surveys (a state-specific version of the Center for Disease Control

and Prevention's Behavioral Risk Factor Surveillance System) from 2011 to 2015 show that in the general population of Milwaukee County, 18% of residents reported having four or more ACEs (unpublished data). This discrepancy suggests that the population of parents reported to CPS may have experienced much higher levels of childhood adversity and trauma than the general population, making it especially important to identify more sensitive ways of assessing for childhood adversities in child maltreatment prevention contexts.

CCEs have an inverse association with depressive symptoms in all models. CCEs may have a protective influence on depressive symptoms, in contrast to ACEs. One question, though, is whether higher scores on the ACE and lower scores on the CCE scale reflect the same underlying construct, and thus capture a largely similar subset of sample members. The correlation coefficient for the ACE-CCE association is −0.7, suggesting that the two measures may be strongly and inversely related. Results from the standardized regression analysis also show that the ACE and CCE scales may be tapping into similar constructs in that they are both predictive of adult depressive symptoms to a similar degree and that adding the CCE and ACE measures simultaneously to the model does not result in independent effects; rather, the inclusion of the CCE measure to the ACE model virtually eliminates the association between ACEs and depression. We also conducted an EFA to explore the factor structure of the ACE and CCE scales. Preliminary results suggest that some of the scale items may be tapping into a similar underlying construct of child adversity. Given these findings, we believe that the CCE scale has the potential to be used in place of the ACE scale as a more strengths-oriented approach to assessing for adverse childhood experiences in the family caregiving context for parents at risk for child maltreatment. Additional work is needed to further confirm the factor structure of the CCE scale and to validate its utility in research and in practice with a broader range of populations with maltreatment risk.

The findings from this study are in alignment with emerging literature related to the creation of scales that measure positive childhood experiences. Bethell et al. (2019) used data from the Wisconsin Behavioral Risk Factor Survey to examine the relationship between positive childhood experiences and adult mental and relational health. Having more positive experiences in childhood was associated with decreased odds of depression and poor mental health (Bethell et al., 2019). Other researchers have created slightly different scales that tap into positive childhood experiences, such as Benevolent Childhood Experiences scale, validated in a sample of low-income pregnant women and homeless parents (Merrick, Narayan, DePasquale, & Masten, 2019; Narayan et al., 2018). However, these scales do not solely emphasize the family caregiving context, and thus are not necessarily tapping into the same underlying construct as the ACE measure. Considering the limitations of the ACE measure as an assessment tool, service providers and clients may be more comfortable with a strengths-based approach to assessing childhood adversities in voluntary settings. Future research is needed to explore the promise of the CCE scale as an alternative to asking ACE questions, and to validate the scale using a broader range of outcomes, and with attention to the relative weights that might be attributed to each scale item.

There are several limitations to this study. The question items comprising our ACE count measure are not identical to the questions used in the original ACE study. There was no

direct question about parental divorce; rather, a proxy indicator was used, and other original ACE items were collapsed into a single question. With regard to the depression measure, the version used for this study omitted some of the original CESD-R questions to avoid asking about thoughts of suicide, death, or self-harm, and other items were added to counterbalance the risk- or deficit-oriented questions that characterize the CESD-R measure. The adjusted r-squared values across each model are low, indicating that the models are limited in explaining the variation in depressive symptoms. There are also limitations related to sample composition. There is well-established bias in who is referred for ongoing child protective services, leading to stark racial disproportionalities in system involvement; thus, this sample may not be representative of all individuals at-risk of abusing their children (Drake et al., 2011; Putnam-Hornstein, Needell, King, & Johnson-Motoyama, 2013). Findings from this sample may also lack generalizability, even to similar high-risk groups, given potential language barriers to participation and the fact that the study was confined to a single county within one state. The descriptive nature of the study and reliance on retrospective reports of childhood experiences (with both the ACE and CCE measures) does not afford inferences of causality. However, these results show that it is possible to explore the relationship between childhood experiences and adult health, specifically depressive symptoms, using a more strengths-oriented approach. Given the increasing integration of the ACE measure in assessment practices of parents, despite the limitations for doing so, the ability to offer an alternative, less intrusive approach for assessing the occurrence of childhood adversities in voluntary settings may be a welcome development, particularly in agencies and settings that serve vulnerable and high-risk populations.

Conclusions

In child maltreatment prevention settings, the ACE measure has been used to identify families in which a parent or caregiver may have had childhood experiences that affect their current wellbeing, since this can be a point of intervention in a prevention context. But given concerns about using the ACE tool as an assessment, as well as concerns about its risk-oriented nature, prevention workers need a better way to ask about such childhood experiences in voluntary settings. The CCE measure provides an alternative, strengths-based approach to needs assessment related to parental childhood adversities which may warrant intervention in a prevention setting.

This research explores the relationships between ACEs and depression, and between a new strengths-oriented approach to measuring childhood adversities and depression, in a sample of families at risk for child maltreatment. Results suggest that ACEs are positively associated with depressive symptoms, whereas positive assessments of one’s childhood caregiving environment (CCE) are negatively associated with depressive symptoms. Correlational analyses, comparisons of standardized regressions incorporating each measure separately and together, and exploratory factor analyses results suggest that the scales may reflect similar underlying constructs and capture largely the same group of people. These findings hold promise for programs and services that need to assess risks in families in order to prioritize and tailor service delivery. In the future, service providers could consider using more strengths-oriented, trauma-informed approaches, like the CCE measure, in place of the ACE scale to assess for parental adversities from childhood in voluntary settings, although

more replication studies are encouraged to ensure that the measure is valid and reliable across different populations and settings.

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Table 1

Adverse Childhood Experiences (ACEs) Questions

ACE	Measure
Emotional abuse	How often did a parent or adult in your home ever call you names, insult you, or put you down?
Physical abuse	How often did a parent or adult your home ever hit, beat, kick or physically hurt you in any way?
Sexual abuse	Before you were 18, how often did an adult age 18 or older touch you sexually against your will, or force you to have sex?
Intimate partner violence	How often did your parents or adults in your home ever slap, hit, beat, kick or physically hurt each other?
Mental illness	Did you live with anyone who was depressed, mentally ill, or suicidal?
Substance use	Did you live with anyone who was a problem alcohol drinker or drug user?
Incarceration	Did one of your parents or primary caregivers serve time in a prison, jail or other correctional facility?
Divorce/separation	Did your parents live together for your entire childhood from birth to age 18?*

Note:

*Question is a proxy for parental divorce or separation. Response options: Yes, no.

Table 2

Childhood Caregiving Environment (CCE) Questions

1) How often did you feel unloved or unwanted by your parents or primary caregivers? *
2) How often did people in your family yell and scream at each other? *
3) How often do you remember feeling happy?
4) How often do you remember feeling scared and alone? *
5) How often did you feel your home life was calm and predictable?
6) How often was there an adult in your household who tried hard to make sure your basic needs were met? By “basic needs” we mean food, shelter, clothing, and medical care.
7) How often was there an adult in your household who made you feel safe and protected?
8) How often did your family laugh together?

Note:

* Questions 1, 2, and 4 were reverse-coded to reflect positive experiences. Response options: Never, rarely, sometimes, often, very often.

Table 3

Demographic Characteristics of the Sample

	Full Sample (n=618)	Low ACEs (n=381)	High ACEs (n=2)	Sig Diff	Low CCEs (n=280)	High CCEs (n=338)	Sig Diff
Depressive Symptoms	14.23	13.19	15.89	*	16.37	12.46	*
Mean (SD)	(8.37)	(7.83)	(8.94)		(9.02)	(7.35)	
Age				*			
18–24	14.56	15.75	12.66		13.93	15.09	
25–34	42.72	40.42	46.41		45.36	40.53	
35–44	28.96	26.25	33.33		30.71	27.51	
45–64	12.94	16.27	7.59		9.29	15.98	
65+	0.81	1.31	0.00		0.71	0.89	
Race/Ethnicity							
Non-Hispanic White	20.87	20.21	21.94		23.57	18.64	
Non-Hispanic Black	56.63	59.84	51.48	*	51.43	60.95	*
Hispanic/Latinx	11.49	11.29	11.81		11.79	11.24	
Multi-Racial	7.12	4.99	10.55	*	8.57	5.92	
Other	3.88	3.67	4.22		4.64	3.25	
Sex							
Male	5.66	6.30	4.64		5.00	6.21	
Female	94.34	93.70	95.36		95.00	93.79	
Family Structure				*			*
Married Couple	15.37	17.32	12.24		13.93	16.57	
Co-Habitating Couple	19.74	13.39	29.96		25.00	15.38	
Single Parent	64.89	69.29	57.81		61.07	68.05	
Education Level							
Less than High School	21.84	20.73	23.63		25.71	18.64	
High School	33.33	32.81	33.18		33.21	33.43	
Greater than High School	44.82	46.46	42.19		41.07	47.93	
Health Status				*			*
Good	73.14	80.84	60.76		63.21	81.36	
Poor	26.86	19.16	39.24		36.79	18.64	
Chronic Condition				*			*
Yes	26.05	21.52	33.33		35.36	18.34	
No	73.95	78.48	66.67		64.64	81.66	

Note: Results are presented as percents (and may not add up to 100% due to rounding), unless otherwise specified. Tests for significance between the High and Low ACE and High and Low CCE groups included: T-tests for continuous variables, and chi-squared tests for categorical variables.

Significance at * $p<0.05$.

Table 4

OLS Regression Models of the Relationship Between Adverse Childhood Experiences (Continuous) and Adult Depressive Symptoms (n=618)

	Model 1 (Without Controls)	Model 2 (Demographic Controls)	Model 3 (With Full Controls)
ACEs	0.97*** (0.16)	1.02*** (0.17)	0.82*** (0.17)
18–24		2.91* (1.14)	3.37* (1.11)
35–44		1.68* (0.74)	1.04 (0.72)
45–64		1.75 (1.09)	0.83 (1.01)
65+		−0.52 (1.68)	−0.95 (1.29)
Male		−3.18* (1.07)	−2.63* (1.01)
Non-Hispanic White		0.06 (0.84)	−0.08 (0.80)
Hispanic/Latinx		−1.68 (1.02)	−1.45 (1.01)
Other		0.76 (1.71)	0.42 (1.52)
Multi-Racial		−0.31 (1.27)	−0.39 (1.26)
Married Couple		−0.65 (0.92)	−0.42 (0.90)
Co-Habiting Couple		−0.50 (0.90)	−0.14 (0.88)
Less than High School		0.75 (0.88)	0.28 (0.85)
High School Graduate		0.17 (0.74)	0.07 (0.72)
Poor Health Status			1.61 (0.83)
Chronic Condition			3.90*** (0.88)
Constant	11.28*** (0.51)	10.38*** (0.79)	9.79*** (0.78)
Adjusted R^2	0.06	0.09	0.15

Note: Results presented as β (SE). Reference groups for Age: 25–34, Race/Ethnicity: Non-Hispanic Black, Sex; Female, Family Structure: Single Parent, Education Level: More than High School, Health Status: Good, Chronic Health Condition: No. Significance * p<0.05, ** p<0.01, *** p<0.001.

Table 5

OLS Regression Models of the Relationship Between the Childhood Caregiving Environment and Adult Depressive Symptoms (n=618)

	Model 1 (Without Controls)	Model 2 (Demographic Controls)	Model 3 (With Full Controls)
CCEs	−0.36*** (0.05)	−0.36*** (0.05)	−0.30*** (0.05)
18–24		2.62* (1.12)	3.08* (1.10)
35–44		1.59* (0.72)	1.04 (0.71)
45–64		1.91 (1.04)	1.05 (0.98)
65+		−0.90 (1.77)	−1.27 (1.37)
Male		−3.07* (0.99)	−2.61* (0.96)
Non-Hispanic White		0.15 (0.81)	0.01 (0.78)
Hispanic/Latinx		−1.90 (1.05)	−1.66 (1.04)
Other		0.50 (1.62)	0.25 (1.47)
Multi-Racial		0.26 (1.26)	0.09 (1.25)
Married Couple		−0.66 (0.86)	−0.45 (0.86)
Co-Habiting Couple		−0.08 (0.86)	0.18 (0.84)
Less than High School		0.29 (0.88)	−0.02 (0.86)
High School Graduate		0.17 (0.73)	0.09 (0.71)
Poor Health Status			1.31 (0.81)
Chronic Condition			3.58*** (0.89)
Constant	24.98*** (1.64)	24.33*** (1.74)	21.21*** (1.84)
Adjusted R^2	0.09	0.13	0.17

Note: Results presented as β (SE). Reference groups for Age: 25–34, Race/Ethnicity: Non-Hispanic Black, Sex; Female, Family Structure: Single Parent, Education Level: More than High School, Health Status: Good, Chronic Health Condition: No. Significance * p<0.05, ** p<0.01, *** p<0.001.

Table 6

Standardized OLS Regression Models (n=618)

	Model 1 (Without Controls)	Model 2 (Demographic Controls)	Model 3 (With Full Controls)
ACEs	0.20*** (0.04)		0.07 (0.05)
CCEs		−0.25*** (0.04)	−0.20*** (0.05)
18–24	0.40* (0.13)	0.37* (0.13)	0.38* (0.13)
35–44	0.12 (0.09)	0.12 (0.08)	0.13 (0.08)
45–64	0.10 (0.12)	0.13 (0.12)	0.13 (0.12)
65+	−0.11 (0.15)	−0.15 (0.16)	−0.14 (0.16)
Male	−0.32* (0.12)	−0.31* (0.11)	−0.31* (0.12)
Non-Hispanic White	−0.01 (0.10)	0.00 (0.09)	−0.01 (0.09)
Hispanic/Latinx	−0.18 (0.12)	−0.20 (0.12)	−0.20 (0.12)
Other	0.05 (0.18)	0.03 (0.18)	0.03 (0.18)
Multi-Racial	−0.05 (0.15)	0.01 (0.15)	−0.02 (0.15)
Married Couple	−0.05 (0.11)	−0.05 (0.10)	−0.05 (0.10)
Co-Habiting Couple	−0.02 (0.11)	0.02 (0.10)	0.00 (0.10)
Less than High School	0.03 (0.10)	0.00 (0.10)	0.00 (0.10)
High School Graduate	0.01 (0.09)	0.01 (0.09)	0.01 (0.08)
Poor Health Status	0.19 (0.10)	0.16 (0.10)	0.15 (0.10)
Chronic Condition	0.47*** (0.11)	0.43*** (0.11)	0.43*** (0.11)
Constant	−0.24* (0.08)	−0.23* (0.08)	−0.22* (0.08)
Adjusted R^2	0.15	0.17	0.17

Note: Results presented as β (SE). Reference groups for Age: 25–34, Race/Ethnicity: Non-Hispanic Black, Sex; Female, Family Structure: Single Parent, Education Level: More than High School, Health Status: Good, Chronic Health Condition: No. Significance * p<0.05, ** p<0.01, *** p<0.001.