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Adverse Childhood Experiences in a low-income Black cohort: The importance of context

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Abstract

Adverse Childhood Experiences (ACEs) have been definitively linked with cross-domain life course well-being. While scales measuring the ten “Conventional” ACEs (ACEs-C; intrafamilial experiences of abuse, neglect, and household dysfunction) are parsimonious, use of such scales alone may fail to capture crucial information about adversity, particularly in youth growing up in high-crime areas. Patterns and disparities in Conventional and Expanded (ACEs-E; experiences more common in impoverished and densely populated areas) ACEs were examined in the large, primarily Black Chicago Longitudinal Study cohort. This cohort has been followed from the 1980s to the present. Participants in the present study, comprising over 70% of the original sample, responded to a follow-up survey between 2012 and 2017. ACE information was collected both prospectively and retrospectively. Overall ACE prevalence and differences in ACEs by sex and risk were explored using logistic regression with adjusted and unadjusted odds ratios, and chi-squared tests. Higher sociodemographic risk in early childhood was associated with exposure to higher rates of ACEs-C through adolescence. Males endorsed higher rates of ACEs-E relating to violent crime. Nearly 1/5 of participants reported only ACEs-E, which are not typically measured in ACE assessment. Findings underscore enduring effects of early childhood risk factors on ACE exposure, as well as contributions of community characteristics to childhood adversity. Given strong associations between ACEs, environment, and well-being, enhancing inclusivity in our understanding of childhood adversity is a public health priority.

Keywords

Adverse Childhood Experiences; Community Health; Urban Health; Violence; Early Risk; Black Youth

Introduction

Decades of research demonstrate that Adverse Childhood Experiences (ACEs) exert impacts on adult well-being.^{1,2} Living in impoverished contexts can exacerbate these impacts, in part

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due to diminished internal and external resources.³⁻⁶ Moreover, both poverty and minority status pose discrete contextual risks and challenges above and beyond those associated with traditionally measured ACEs.^{2,7,8,10} Parker, Greer, & Zuckerman¹¹ term this increased risk of both exposure and consequences “double jeopardy,” stating, “Children living in poverty experience double jeopardy. First, they are exposed more frequently to such risks as medical illnesses, family stress, inadequate social support, and parental depression. Second, they experience more serious consequences from those risks than do children from higher socioeconomic status.”

The preponderance of early ACEs research, beginning with a study by Kaiser Permanente and the Centers for Disease Control and Prevention (CDC), was conducted on primarily white, educated, middle class populations.⁷ The indicators, focused on abuse, neglect, and household dysfunction (e.g., caregiver mental illness or substance use) at the household and family levels, were strongly associated with later physical and mental health.¹ However, accumulating evidence suggests that ACEs may look different in minority youth (and particularly Black youth) and underserved communities.^{4,12,13} Research on health disparities between poor and minority populations and wealthier, white populations¹⁴ suggests that additional “unmeasured ACEs”⁷ may also be impacting later well-being. The original cluster of ACE questions that is still widely in use in surveys such as the large nationwide Behavioral Risk Factor Surveillance System; BRFSS¹⁵ does not account for community context, and may be inadequate for populations of color and those living in high-crime and high-poverty areas.

Studies have shown that socially disadvantaged and Black populations often both endorse Conventional ACEs (ACEs-C; assessing abuse, neglect, and household dysfunction consistent with the original measure developed by Kaiser and the CDC¹) like those in the BRFSS at higher rates than more privileged populations⁹ and also experience ACEs more common in impoverished communities at higher rates.⁷ These other types of ACEs are commonly referred to as “Expanded ACEs” (ACEs-E),^{7,16} and include experiences such as witnessing or being the victim of community violence,^{7,8,10,16,17} being in foster care or out of home placement,^{7,16,18} family financial stressors^{8,10,18,19}; death of a loved one,¹⁶ and frequent family conflict.^{16,19,20}

Few studies have examined ACEs-E separately from ACEs-C, and findings raise further questions. In one large representative urban sample, 14% of respondents endorsed only ACEs-E,⁷ and in another study, adversities that occurred in the community correlated more strongly with symptoms of mental health concerns than did ACEs-C.²¹ However, the research populations in these studies have still comprised significant proportions of white and educated participants. More recent studies have investigated rates of ACEs-C by race,^{8,9} and found that Black participants were significantly more likely to experience nearly all ACEs measured, including several ACEs more common in poverty. However, these studies did not compare distinct ACEs-C and ACEs-E scales.

Prior research in an earlier wave of data from this sample¹² and research on community dysfunction in general,^{22,23} suggests that males endorse higher rates of adversities relating to violence and unsafe community contexts than do females. Given that males in urban

poverty have higher exposure to community violence, including police violence,^{24,25} this is perhaps not surprising. However, it bears emphasizing that these experiences are occurring in childhood, and is crucial that we measure and understand the impacts of community violence on developing youth just as we do with adverse experiences in the home.

In sum, much remains unknown about ACEs in Black and socially disadvantaged populations. Conjectures about the association between ACEs and adult outcomes based on ACEs-C scales alone may be skewed by the omission of individuals who had adverse experiences that are not being measured.^{7,21} Further investigation of the landscape of ACEs-C and ACEs-E in disadvantaged, primarily Black communities is crucial to a more complete understanding of the incidence and impacts of early adversity.

The most recent wave of data collection in the present sample gathered information on key additional ACEs-C (witnessing domestic violence, mental illness of a parent or caregiver, parent arrest, and self-report of Child Abuse and Neglect (CAN)), allowing for a comparison of patterns of a comprehensive ACEs-C measure and a separate ACEs-E measure overall, by sex, and by sociodemographic risk in a large, longitudinal, primarily Black sample for the first time.

We hypothesized that (1) Both ACEs-C and ACEs-E would occur at higher rates in the portion of this sample identified as “higher risk” in early childhood, (2) Males would endorse both higher rates of ACEs-E than females and higher rates of ACEs-E than ACEs-C (3) A proportion of this sample similar to other ACE studies in community settings⁷ would endorse having experienced only ACEs-E.

Methods

Sample and Design

The Chicago Longitudinal Study (CLS) is a prospective longitudinal investigation of the effects of early education and life experiences on the development of 1,539 children growing up in low-income neighborhoods in Chicago who attended early childhood (preschool or kindergarten) programs in Chicago Public Schools²⁶ between 1983 and 1986. The present study includes 1,100 participants (93.5% black) who completed a 30-year follow-up interview between 2012 and 2017.

The original aim of the Chicago Longitudinal Study was to study the impacts of the Child-Parent Center (CPC) preschool program. Previous studies in this sample using earlier interviews suggested that the CPC intervention had protective effects against abuse, neglect and ACEs more generally,^{12,27,28} though the impacts of this program are not a focus of the present study.

The 30-year retention rate was 71.5%. The 439 participants who were not included in analyses for a variety of reasons (e.g., refused, deceased, did not respond to outreach)²⁹ were more likely to be male and less likely to participate in CPC beyond preschool. They also had higher average scores on risk indices composed of eight dichotomous risk indicators measured from birth to three and again at age eight (Table 1).

Age 35 survey data.—The self-report data utilized in the present study was collected as part of a larger interview conducted between 2012 and 2017 (“the age-35 survey”) in which participants were asked about their educational, occupational, family, and personal experiences. The majority of interviews (81%) were conducted by telephone through Northern Illinois University and the University of Minnesota, with Institutional Review Board approval.

Administrative data.—Administrative records of CAN from Court and Department of Child and Family Services (DCFS) sources were prospectively collected in collaboration with Chapin Hall at the University of Chicago. Records included child welfare cases from birth to age 3, and substantiated physical abuse, sexual abuse, and neglect from age 4 to the participant’s 18th birthday.

Conventional ACEs (ACEs-C).—As part of the age-35 survey, participants indicated whether or not twenty-one major events had occurred in their lives. For each item they endorsed, they were asked when the event had occurred: ages 0–5, 6–10, 11–15, 16–24, or 25 and over. To create the eight-item Conventional ACEs scale used in the present study, we first identified the four of these self-reported life events that were analogous to those asked in the cluster of commonly used ACEs: Parent substance abuse, parent arrest, parent or caregiver mental illness, and witness to domestic abuse of a caregiver. As ACE measures index experiences prior to the age of 18, the items were only included in the present study’s scale if a participant endorsed them in the 0–5, 6–10, or 11–15 time periods. The other four items included in this scale were the administrative records of CAN, measured from birth until participants turned 18. To mitigate underreporting of CAN, a point was added to the ACE score for the 70 participants who responded “yes” to the self-report question, “Were you a victim of child abuse or neglect?” but had no administrative records of maltreatment.

Participants were also asked about parent absence or divorce, a common ACE indicator. However, over 75% of the sample was coded “yes” on the risk index indicator of living in a single-parent household prior to the age of 3. Given concerns for redundancy between the ACE and risk scales, this indicator was not included.

Expanded ACEs (ACEs-E).—An additional five self-report items from the original twenty-one were selected as “Expanded ACEs” based on prior research on adverse or traumatic childhood experiences common in high-risk or minority contexts,^{7,8,16,21} and with the aim of capturing a more complete picture of high-risk participants’ early experiences in their larger ecological system. Literature on Expanded ACEs, which itself draws from literature on adverse or traumatic events,^{7,17,19,20,30} was used to generate the “Expanded ACEs” count variable, which included the following self-report items: Frequent family conflict; Family financial problems; Victim of a violent crime; Witness to a shooting or stabbing; and Death of a parent, sibling/close relative, or friend. A dichotomized indicator of foster care or out of home placement from birth to 18 was drawn from administrative records. Importantly, while the majority of participants in the sample were considered low-income (e.g., >80% qualified for free or reduced-price lunch), the self-report measure of family financial problems did not appear to be redundant with objective measures of income. This makes conceptual sense, as the home environment is not identical across impoverished

families. Family factors can mediate the impacts of poverty on youth³¹ and awareness of economic disadvantage has been uniquely associated with stress and psychological consequences.³⁰ As such, consistent with a growing precedent in ACE studies,^{8,10,18} this item was retained to assess subjective perception of hardship associated with low income.

Demographic variables (Table 1).

Sex.: Participants were coded 1 if female and 0 if male.

Demographic risk.: The risk index comprises eight dichotomous indicators measured from birth to age 3 (Table 1). Given that approximately 50% of the sample had a score of 4 on the index and approximately 50% had a score of 5, the index was dichotomized to a score of 4 (coded as 0) vs 5 (coded as 1) when examining group differences between participants with higher and lower early childhood risk scores.³²

Data plan.—Each of the four self-report ACEs-C and five self-report ACEs-E were coded 1 if a participant endorsed the ACE in the 0–5, 6–10, or 11–15 time period, and 0 if they did not. The administrative records of child welfare involvement, physical abuse, sexual abuse, neglect, and out of home placement were also each dichotomized to indicate presence or absence of the event from birth through age three (for child welfare involvement) and for age four to 18 for specific categories of abuse or neglect.

Count variables, cut at 0, 1, 2, 3, and 4, were created for ACEs-C and ACEs-E. Frequencies of each individual ACE indicator and overall ACE scores were calculated for the total sample, by sex, and by risk. For each level of ACE score, and for each individual ACE, separate bivariate logistic regressions were conducted examining differences by sex and risk level. This yielded unadjusted odds ratios for each outcome by sex and risk. The reference group was designated as male for the sex analyses and lower risk for the risk analyses. Multiple logistic regression was then conducted for each outcome, controlling for covariates (race, intervention status, and risk index when sex was the focal category; and race, intervention status, and sex when risk was the focal category), yielding adjusted odds ratios.

When examining group differences in reporting of only ACEs-C or ACEs-E, chi-square tests were conducted. The phi coefficient of association, a standard measure of effect size for chi-square tests (.1 = small, .3 = medium, and .5 = large), was calculated for enhanced interpretability.

Results

Correlations.—Independent ACE variables were assessed for multicollinearity (Table 2). None of the ACEs were found to be prohibitively highly intercorrelated ($r < 0.7$).³³ Several individual ACEs showed small to moderate associations with each other. As would be expected, neglect and out of home placement highly correlated ($r = .61$).

Prevalence of Adverse Childhood Experiences from birth to 18

Overall ACE scores.—Overall, approximately 51.2% of participants had at least 1 ACEs-C, and 57.2% had at least 1 ACEs-E. See Table 3 for more detailed frequencies.

Individual indicators.—The ACE indicator most often endorsed was parent substance abuse; followed by death of a parent, relative, or close friend; family financial problems; parent arrest; and witnessing domestic violence (Table 3). Having a caregiver with a mental illness and being the victim of a violent crime had the lowest prevalence of the self-report items. For maltreatment, physical abuse and sexual abuse were least prevalent, while neglect was most prevalent.

Inconsistency.—While the self-report responses at age 35 served as the basis for the ACE scores in the present study due to the addition of crucial items, broader questions about the validity of self-report of ACEs in general warrant examination of consistency for the 889 participants who responded to the eight ACE items asked at both the 22–24-year-old and 35-year-old survey timepoints. Over 80% of the sample answered consistently to six or more items out of the eight (see Appendix Tables A1 & A2). About 8% of the sample answered inconsistently on 4 items. Regression results were unchanged when accounting for inconsistency.

Subgroup differences.

Early Childhood Risk.: Consistent with Hypothesis 1, the participants identified as “higher risk” based on the early childhood risk index were more likely to have one, two, and three ACEs-C when compared to the lower risk group (Table 4). However, there did not appear to be an association between risk and ACE score for ACEs-E.

When examining specific ACEs (Table 4), the higher risk group endorsed three of the four self-report ACEs-C (parent substance abuse, parent arrest, and witnessing domestic violence) at higher rates than both those in the lower risk group and those in recent BRFSS data.⁹ Specifically, 40.4% of the higher risk group endorsed parent substance abuse (compared to 27.7% of the lower risk sample and 27.6% of the BRFSS sample), 27.9% endorsed parent arrest (compared to 16.8% of the lower risk sample and 7.9% of the BRFSS sample*), and 24.3% endorsed witnessing domestic violence (compared to 15.8% of the lower risk sample and 17.5% of the BRFSS sample).

The higher risk subgroup was also significantly more likely to have both self-reported and substantiated CAN history. When self-report and administrative records were combined into a binary indicator of CAN from either source, the rate in the higher risk group was nearly twice that of the lower risk group.

Sex differences.: Consistent with Hypothesis 2, males were more likely than females to have any ACEs-E, more likely to have ACEs-E than ACEs-C, and more likely to have high

* *Note:* The BRFSS survey asked if the participant had an incarcerated household member, whereas the present survey asked if the participant had had a parent or caregiver who was arrested⁹

(3 or 4) ACEs-E (Table 3). Males also endorsed higher rates of witnessing a violent crime; being the victim of a violent crime; and death of a close friend than females (Table 3).

Participants Reporting One Type of ACE

Nearly 20% of the sample endorsed only ACEs-E (Table 5). This is a higher rate than hypothesized, nearly six percentage points higher than Cronholm & colleagues' previous findings in a diverse metropolitan area.⁷ There were significant subgroup differences in frequencies of those reporting experiences of just one type of ACE, with males more likely than females to report only ACEs-E. The lower risk group was also more likely to report only ACEs-E. The higher risk group was more likely to report only ACEs-C.

Discussion

This study sheds light on the prevalence of different types of childhood adversities in a primarily Black, low-income longitudinal sample. The prevalence of overall ACEs-C reported in this sample is lower than the national averages reported in aggregate BRFSS data⁹ and in comparable prior studies.^{7,8} However, rates of individual ACEs-C were higher than reported in more privileged samples, with over 1/3 of participants reporting parent substance abuse, and over 1/5 reporting parent arrest and witnessing domestic violence.^{1,15} This is consistent with data demonstrating that non-white populations endorse certain ACEs-C at higher rates.⁷⁻⁹ Relatively low rates of overall ACEs-C may be in part driven by the low frequencies of ACEs derived from administrative records, which likely reflects significant underreporting documented in child welfare.³⁴ This is evident in the 6% of our participants in the current sample who self-reported a CAN history but had no official child welfare history, especially when considering that participants in that group comprise 35% of the total participants with CAN from any source. Further, due to the survey structure, self-report ACEs were only able to be collected through age 16, likely suppressing overall ACE scores.

As expected, nearly all ACEs-C were more common in the higher risk subgroup. While "risk" level was only measured from birth to age three, ACEs-C encompassed the child and adolescent period. This, along with the fact that composite risk measured again at age eight was highly correlated (.83) with the early risk composite, suggests that these within-family early childhood risk factors were stable and continued to have repercussions beyond early childhood, and underscores both the pervasive effects of early childhood risk above and beyond markers of income alone, and the importance of enhancing supports for parents of young children.

The overall similar rates of ACEs-E in the higher and lower risk subgroups may be attributable to the intervention context. While intrafamilial sociodemographic risk varied widely, all participants lived in low-income neighborhoods in Chicago, and several ACEs-E relate to community violence. As such, while participants in the "lower-risk" group had fewer intrafamilial early childhood risk factors at birth, they were likely living in areas with some level of neighborhood dysfunction and violence. This may also help to explain the higher frequency of reporting ACEs-E alone among the lower intrafamilial-risk group.

The stark sex differences in frequencies of ACEs-E were driven by items related to violent crime, with nearly 1/3 of males reporting experiencing the death of a close friend prior to the age of 16. An affirmative response to “death of a close friend” was also significantly associated with witnessing a violent crime. Violent crime has been an unfortunately common occurrence in the male participants in this sample, with around 1/3 arrested for violent crime themselves by age 24.²⁴ From a developmental perspective, it would be difficult to argue that experiences like witnessing or being the victim of community violence, or death of a close friend, would not be highly impactful, stressful, and possibly traumatic for a child or adolescent. And yet, such violence is often treated as an unfortunate fact of life for Black youth and not routinely measured in ACE indices, perhaps due to the damaging Western tendency to see this group as older and less vulnerable than non-Black youth.³⁵ These experiences and their potential adverse impacts on development should not be ignored or overlooked, particularly given that 1/5 of the sample reported only ACEs-E. This rate was significantly higher than reported in a prior investigation of ACEs-E in a representative urban sample.⁷

These results suggest that conventional measures of ACEs may fail to gather information on the full spectrum of adverse experiences. This is particularly true in contexts where individuals are more likely to be exposed to the contextual disadvantage captured in ACEs-E due to historical, social, and economic inequity, or social forces such as gangs.

Major strengths of this investigation include use of prospectively collected longitudinal data from a variety of sources, a large sample size, and data spanning over 30 years with a retention rate of >70%. Large-scale investigations comparing ACEs-C to ACEs-E in minority populations are scarce, and this study expands our understanding of ACEs across contexts.

Several limitations, however, are evident. The homogeneous nature of this sample limits generalizability. Self-report time periods did not allow for examination of those ACEs through age 18, and as such, information on such ACEs in the later adolescent period was not collected. Further, while the measurement of CAN in this sample was prospectively collected, verified by administrative records, and augmented with self-report data, it remains highly likely that CAN is being underreported. Moreover, as the CAN self-report item was general, ACE scores may be somewhat suppressed for those who self-reported CAN in the absence of administrative records, as it was not possible to account for polyvictimization. Finally, ACE data may have been impacted by differential loss to follow-up, as the participants for whom ACE data was unavailable tended to be higher-risk than the subsample used in the present investigation.

Conclusion

Overall, results indicate higher rates of ACEs-C over the course of childhood and adolescence in children who are born into more sociodemographically disadvantaged homes, and higher rates of ACEs-E related to neighborhood violence experienced by young males.

These findings have some implications for ACE screening. Universal screening, a current topic of debate, is complex issue that requires thoughtful consideration of the scalability of trauma responsive practices as well as ACE-specific procedures and protocols. As such, it cannot be given due diligence here. However, the results of the present study do contribute to a body of literature calling for an expansion of the ACE scales to encompass experiences in children's broader ecological contexts when screening is being done. ACEs can have enduring impacts, but it is difficult to illuminate prevention and intervention strategies if adversity is not accurately assessed. Findings support the need for novel, comprehensive tools for measurement of adversity, particularly in impoverished settings.

Future Directions.

Future ACE research would be strengthened by including more measures of context-specific ACEs. To this point, the field would benefit from moving beyond binary (yes/no) retrospective self-report measures of ACEs, collecting richer and more nuanced data about experiences via collection methods such as interviews, and also collecting outcome data on multiple levels (e.g., physiological data). Moreover, viewing ACEs and their impacts through a more narrative, holistic, and multifaceted lens may help to clarify ACEs as a construct, allow for more precise explication of mechanisms of transmission of ACE effects to public health on a population level, and ultimately lead to improved community-level public health interventions for adversity.

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Appendix A

Table A1.

Inconsistency analyses: Items answered by participants at both age 24 and 35

	N 24/35	% Yes at 24	% Yes at 35	% Yes at 24 No at 35	% No at 24 Yes at 35	% Agreement
Death of a parent	886	9.14	9.59	2.03	2.48	95.49
Death of a brother or sister	888	5.74	6.53	1.91	2.70	95.38
Victim of a violent crime	887	6.09	8.00	3.27	5.19	91.54
Witness to a violent crime	886	13.21	17.83	5.87	10.50	83.63
Frequent family conflict	884	16.29	18.44	10.63	12.78	76.58
Death of a close friend	883	20.84	21.40	13.25	13.82	73.93
Family financial problems	870	17.70	23.45	10.46	16.20	73.33
Parent substance abuse	888	10.59	33.00	2.48	24.89	72.64

Table A2.

Inconsistency from age 24–35

Number inconsistent	N	Percent	Cumulative Percent
0	289	32.52	32.52
1	247	27.78	60.30
2	179	20.13	80.43
3	106	11.92	92.35
4	68	7.65	100

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Table 1.

Chicago Longitudinal Study (CLS) Age 35 Follow-up and Attrition Sample on Child and Family Background Attributes

	Attrition sample (<i>n</i> = 439)		Study sample (<i>n</i> = 1100)		<i>t</i>	95% confidence interval of difference	
	<i>N</i>	Proportion	<i>N</i>	Proportion		Lower	Upper
Female	169	0.39	599	0.55	5.41	0.10	0.21
Black	394	0.91	1029	0.94	1.46	-0.01	0.05
Participation in the CPC program in preschool	266	0.61	723	0.66	1.90	0.00	0.10
Participation in CPC program beyond preschool	224	0.51	626	0.57	2.09	0.00	0.11
Individual risk index indicators (ages 0–3)							
Mother under age 18 years at child's birth	83	0.19	166	0.15	-1.83	-0.08	0.00
Mother did not complete high school	257	0.59	578	0.53	-2.13	-0.12	0.00
Child in single-parent household	348	0.79	829	0.75	-1.63	-0.09	0.01
Four or more children in household	71	0.16	185	0.17	-31	-0.03	0.05
Participation in public aid (AFDC)	294	0.67	672	0.61	-2.16	-0.11	-0.01
Child eligible for subsidized meals	375	0.85	914	0.83	-1.12	-0.06	0.02
Mother not employed full- or part-time	299	0.68	722	0.66	-0.92	-0.08	0.03
60% or greater poverty in school attendance area at child's birth	339	0.77	830	0.75	-0.73	-0.07	0.03
Overall risk index, 0–3: Mean (SD)	--	4.70 (1.69)	--	4.45 (1.68)	-2.69	-0.44	-0.07
Overall risk index, 0–8: Mean (SD)	--	4.49 (1.77)	--	4.16 (1.79)	-3.27	-0.53	-0.13

Table 2.

Bivariate Correlations Among Individual ACE Indicators

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Child Abuse and Neglect																
1. Child welfare involvement (0–3)																
2. Physical abuse 4 to 18	.03															
3. Sexual abuse 4–18	.05	.10														
4. Neglect 4–18	.15	.25	.20													
5. CAN self-report only	–.05	–.04	–.04	–.07												
Household Dysfunction																
6. Parent substance abuse 0–15	.04	.01	.07	.17	.21											
7. Parent arrest 0–15	.06	.09	.04	.19	.14	.38										
8. Witness domestic violence 0–15	.00	.06	.06	.10	.21	.35	.30									
9. Caregiver mental illness 0–15	.10	–.01	.06	.06	.15	.18	.21	.18								
Expanded ACEs																
10. Family financial problems	–.05	–.03	.05	.02	.16	.25	.16	.16	.12							
11. Frequent family conflict	.04	.02	.05	.05	.19	.31	.23	.36	.21	.28						
12. Witness to a violent crime	.00	.05	.04	.06	.13	.19	.19	.21	.12	.17	.25					
13. Victim of a violent crime	.04	.06	.03	.04	.17	.18	.18	.26	.11	.19	.23	.30				
14. Close death	.07	–.01	.00	.03	.13	.18	.15	.19	.11	.17	.23	.26	.07			
15. Out of home placement	.32	.20	.25	.61	–.03	.18	.13	.09	.11	.00	.06	.06	.06	.07		
Sociodemographic Risk																
16. Composite risk, birth to age 3	.07	.10	.06	.10	.07	.12	.15	.11	.03	.05	.01	.01	.00	.02	.08	
17. Composite risk, birth to age 8	.06	.07	.09	.13	.08	.10	.15	.10	.05	.06	.02	.01	.01	.03	.08	.83

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Table 3.

Prevalence of Overall ACE scores and Individual ACE Indicators Overall and by Sex

	N	Full sample prevalence %	Females prevalence %	Males prevalence %	OR (95% CI)	AOR (95%CI) [‡]
Overall Scores						
ACEs-C[§]	1098					
0 ACEs-C	536	48.8	48.3	49.5	.95 (.75–1.21)	1.01 (.79–1.29)
1 ACEs-C	237	21.6	20.7	22.7	.89 (.67–1.19)	.86 (.64–1.15)
2 ACEs-C	170	15.5	16.8	13.8	1.26 (.91–1.76)	1.21 (.87–1.70)
3 ACEs-C	92	8.4	8.5	8.2	1.04 (.68–1.60)	1.00 (.65–1.54)
4 ACEs-C	63	5.7	5.7	5.8	.98 (.59–1.62)	.98 (.58–1.64)
ACEs-E	1100					
0 ACEs-E	472	42.8	48.6	36.0	1.67 (1.31–2.13)	1.70 (1.33–2.18)
1 ACEs-E	293	26.5	27.2	26.0	1.06 (.82–1.40)	1.07 (.82–1.41)
2 ACEs-E	180	16.3	14.5	18.6	.75 (.54–1.03)	.73 (.53–1.01)
3 ACEs-E	99	9.0	6.7	11.8	.54 (.35–.82)	.52 (.34–.80)
4 ACEs-E	56	5.0	3.0	7.6	.38 (.21–.67)	.38 (.21–.68)
Individual indicators						
ACEs-C						
Child welfare involvement 0–3	1098	3.5	3.7	3.2	1.16 (.60–2.23)	1.12 (.58–2.18)
Physical abuse	1098	2.6	2.7	2.6	1.03 (.49–2.16)	.96 (.45–2.02)
Sexual abuse	1098	1.9	3.0	0.6	5.14 (1.51–17.56)	5.27 (1.53–18.15)
Neglect	1098	6.5	7.2	5.8	1.26 (.77–2.05)	1.25 (.76–2.05)
Parent substance abuse	1097	34.3	35.6	32.7	1.14 (.89–1.47)	1.11 (.86–1.43)
Parent arrest	1092	22.6	21.6	23.7	.87 (.66–1.16)	.82 (.61–1.09)
Witness domestic violence	1092	20.2	21.0	19.3	1.11 (.83–1.50)	1.10 (.81–1.49)
Caregiver mental illness	1097	4.8	5.2	4.4	1.19 (.68–2.07)	1.15 (.65–2.03)
CAN data						
CAN, self-report	1094	10.2	10.1	10.2	.98 (.66–1.45)	.95 (.64–1.42)
CAN, administrative records	1098	11.6	12.9	10.2	1.30 (.89–1.89)	1.27 (.86–1.86)
CAN from either self-report OR administrative records	1100	18.0	18.4	17.6	1.06 (.77–1.44)	1.02 (.74–1.40)
ACEs-E						
Family financial problems	1092	24.1	22.4	26.2	.81 (.62–1.07)	.80 (.61–1.06)
Frequent family conflict	1094	18.8	17.6	20.3	.84 (.62–1.14)	.84 (.62–1.15)
Witness to a violent crime	1095	19.1	10.7	29.1	.29 (.21–.40)	.28 (.20–.39)
Victim of a violent crime	1096	7.7	5.2	10.6	.46 (.29–.73)	.47 (.30–.76)
Death of a parent, relative, or close friend	1097	33.6	28.8	39.5	.62 (.48–.80)	.61 (.48–.79)
Death of a parent	1096	10.5	10.1	9.6	1.10 (.74–1.64)	1.12 (.75–1.67)
Death of a sibling/close relative	1097	6.4	6.4	6.4	.99 (.61–1.61)	.96 (.58–1.57)
Death of a close friend	1090	18.2	23.6	30.1	.51 (.39–.68)	.51 (.38–.68)
Out of home placement	1100	5.6	5.7	5.6	1.02 (.61–1.70)	.97 (.58–1.64)

[§] ACEs-C score augmented with self-report of abuse/neglect

[¶] Adjusted for race, intervention status, and early childhood risk index

Note: The questions about death of a parent, relative, or close friend were collapsed into one dichotomized indicator when creating ACE counts

ACEs-C = Conventional ACEs, ACEs-E = Expanded ACEs, OR = Odds Ratio, AOR= Adjusted Odds Ratio

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Table 4.

Prevalence of Overall ACE scores and Individual ACE Indicators Overall and by Risk

	N	Full sample prevalence %	Higher risk prevalence %	Lower risk prevalence %	OR (95% CI)	AOR (95%CI) [‡]
Overall Scores						
ACEs-C[§]	1098					
0 ACEs-C	536	48.8	38.5	60.0	.42 (.33–.53)	.42 (.33–.53)
1 ACEs-C	237	21.6	24.1	18.9	1.38 (1.03–1.84)	1.39 (1.03–1.87)
2 ACEs-C	170	15.5	20.0	10.6	2.09 (1.49–2.96)	2.18 (1.53–3.09)
3 ACEs-C	92	8.4	10.7	5.9	1.91 (1.22–3.00)	1.80 (1.15–2.84)
4 ACEs-C	63	5.7	6.7	4.7	1.43 (.85–2.40)	1.45 (.86–2.45)
ACEs-E	1100					
0 ACEs-E	472	42.8	40.5	45.6	.81 (.64–1.03)	.79 (.62–1.01)
1 ACEs-E	293	26.5	26.8	26.5	1.02 (.78–1.33)	1.00 (.76–1.31)
2 ACEs-E	180	16.3	18.2	14.4	1.33 (.96–1.83)	1.35 (.98–1.88)
3 ACEs-E	99	9.0	10.2	7.8	1.35 (.89–2.05)	1.37 (.90–2.10)
4 ACEs-E	56	5.0	4.4	5.9	.74 (.43–1.26)	.78 (.45–1.36)
Individual indicators						
ACEs-C						
Child welfare involvement 0–3	1098	3.5	4.2	2.7	1.61 (.83–3.15)	1.58 (.80–3.11)
Physical abuse	1098	2.6	4.2	1.0	4.60 (1.74–12.14)	4.49 (1.69–11.91)
Sexual abuse	1098	1.9	2.6	1.1	2.35 (.91–6.10)	2.02 (.78–5.29)
Neglect	1098	6.5	8.9	4.0	2.37 (1.41–4.00)	2.21 (1.30–3.74)
Parent substance abuse	1097	34.3	40.4	27.7	1.77 (1.37–2.28)	1.74 (1.35–2.56)
Parent arrest	1092	22.6	27.9	16.8	1.89 (1.41–2.54)	1.93 (1.43–2.59)
Witness domestic violence	1092	20.2	24.3	15.8	1.71 (1.26–2.31)	1.76 (1.29–2.39)
Caregiver mental illness	1097	4.8	5.1	4.6	1.12 (.64–1.95)	1.08 (.62–1.88)
CAN data						
CAN, self-report	1094	10.2	12.5	7.6	1.74 (1.16–2.62)	1.77 (1.17–2.66)
CAN, administrative records	1098	11.6	15.6	7.4	2.32 (1.56–3.45)	2.19 (1.47–3.26)
CAN from either self-report OR administrative records	1100	18.0	23.5	12.1	2.22 (1.61–3.08)	2.21 (1.59–3.06)
ACEs-E						
Family financial problems	1092	24.1	25.4	22.6	1.17 (.88–1.54)	1.18 (.89–1.56)
Frequent family conflict	1094	18.8	19.2	18.5	1.04 (.77–1.42)	1.05 (.78–1.43)
Witness to a violent crime	1095	19.1	19.5	18.6	1.06 (.79–1.44)	1.17 (.86–1.61)
Victim of a violent crime	1096	7.7	7.4	8.0	.92 (.59–1.44)	.96 (.61–1.51)
Death of a parent, relative, or close friend	1097	33.6	34.5	32.7	1.08 (.84–1.39)	1.10 (.85–1.42)
Death of a parent	1096	10.5	9.5	10.8	.86 (.58–1.28)	.82 (.55–1.22)
Death of a sibling/close relative	1097	6.4	7.0	5.7	1.11 (.84–1.48)	1.25 (.76–2.05)
Death of a close friend	1090	18.2	24.5	22.6	1.25 (.76–2.03)	1.15 (.87–1.54)
Out of home placement	1100	5.6	7.4	3.8	2.02 (1.17–3.49)	1.93 (1.11–3.34)

[§] ACEs-C score augmented if participant self-reported abuse/neglect in the absence of administrative court/DCFS records

[¶] Adjusted for race, intervention status, and sex

Note: The questions about death of a parent, relative, or close friend were collapsed into one dichotomized indicator when creating ACE counts

ACEs-C = Conventional ACEs, ACEs-E = Expanded ACEs, OR = Odds Ratio, AOR= Adjusted Odds Ratio

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Table 5.

Breakdown by Type of ACE

ACE Type	N	Overall %	Only, % of total sample	Only, % of Males	Only, % of Females	$\chi^2(1)$	φ	Only, % of Higher risk	Only, % of Lower risk	$\chi^2(1)$	φ
ACEs-C [§]	1098	51.4	12.9	8.8	16.4	13.76	.11	16.6	8.9%	14.50	.11
ACEs-E	1100	57.1	18.8	22.2	16.0	6.71	-.08	14.7	23.3%	13.11	-.11

[§]Augmented with self-report of abuse/neglect

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