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Examining the Prevalence of Adverse Childhood Experiences among Juvenile Offenders

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While prior research has examined trauma and maltreatment rates among juvenile offenders, there has been limited research using an ACE risk assessment to measure the ACE prevalence among juvenile offenders. Further use and examination of these risk assessments are needed, as these assessments provide screening results to target interventions and prevent reoffending. The purpose of this study was to examine the prevalence of adverse childhood experiences among a sample of juvenile offenders (n=391) to examine whether the type of ACE experienced varied by recidivism, gender, or racial/ethnic differences. Our study findings demonstrate that juvenile offenders have higher prevalence rates of parental separation/divorce, parental incarceration, and household violence than adolescents nationally, and confirm previous findings that parental separation/divorce is significantly associated with recidivism. Our study also found significant differences in ACE exposure, by sex, among juvenile detention offenders. Implications and limitations are discussed. Keywords: Juveniles, adverse childhood experiences, delinquency, recidivism

EXAMINING THE PREVALENCE OF ADVERSE CHILDHOOD EXPERIENCES AMONG JUVENILE OFFENDERS

Adverse childhood experiences (ACEs) are events that occur in a child's life before the age of 18 and encompass household dysfunction (e.g., domestic violence, incarceration, mental illness, parental separation/divorce, substance use/misuse), neglect, or abuse (Felitti et al., 1998). ACEs are often intergenerational, with parents who have been exposed to ACEs being more likely to expose their own children to ACEs (Felitti et al., 1998; Larkin, Shields, & Anda, 2012; Letourneau et al., 2019). Exposure to ACEs may have long-term effects, as prior research has demonstrated poorer mental, physical, and behavioral outcomes in adulthood (Felitti et al., 1998; Anda et al., 2006; Crouch, Strompolis, Bennett, Morse, & Radcliff, 2017). For example, there is a higher likelihood of chronic conditions such as diabetes, heart disease, cancer, and depression among those with exposure to ACEs (Brown et al., 2010; Brown et al., 2009; Brown, Thacker, & Cohen, 2013; Chapman et al., 2013; Chapman et al., 2004; Ford et al., 2011; Anda et al., 2008). Additionally, ACEs have been linked to risky health behaviors in adolescence and adulthood, increasing the likelihood of substance use, multiple sexual partners, domestic violence, and suicide (Felitti et al., 1998; Brown et al., 2010; Chapman et al., 2004; Anda et al., 2008; Crouch, Radcliff, Strompolis, & Wilson, 2018a; Crouch, Radcliff, Strompolis, & Wilson, 2018b; Cannon, Anderson, Rivara, & Thompson, 2010; Chapman et al., 2011; Danese et al., 2009; Horwitz, Widom, McLaughlin, & White, 2001; Brown, Perera, Masho, Mezuk, & Cohen, 2015; Brown et al., 2017). A dose-response relationship has also been established with ACEs, with higher counts of ACEs associated with a stronger likelihood of poorer adult health (Felitti et al., 1998). The relationship between ACEs and health has been explained by the release of stress-related hormones in the brain. Repeated exposure and release of these hormones may lead to toxic stress and the disruption of healthy brain development in children and adolescents (Shonkoff et al., 2012; Shonkoff, 2016).

Beyond increased likelihood of risky health behaviors and poorer health in adulthood, more recent research has begun to examine the relationship between ACEs and criminal activity, with high prevalence rates of childhood trauma and neglect reported among juvenile offenders (Baglivio et al., 2014). Confirming the prior established dose-response relationship between ACEs and risky behaviors, multiple types of trauma and maltreatment are reported at higher rates among juvenile offenders (Abram et al., 2004; Dierkhising et al., 2013). Among offenders, exposure to abuse and maltreatment is associated with increased rates of offending and total, violent, and property crimes (Teague, Mazerolle, Legosz, & Sanderson, 2008).

The type of ACE, as well as the total ACE score (the count of ACEs that have occurred), have been shown to matter for juvenile delinquency. Parental divorce has been shown to be significantly associated with juvenile delinquency (Amato, 2001; D'Onofrio et al., 2005; Burt, Barnes, McGue, & Iacono, 2008). As well, parental incarceration has been associated with adolescent delinquency (Geller, Garfinkel, Cooper, & Mincy, 2009; Murray & Farrington, 2008; Parke & Clarke-Stewart, 2002; Murray & Farrington, 2005). There is also a significant relationship between exposure to household violence and increased referrals to juvenile court, as adolescents exposed to violence may struggle with behavior management (Evans, Davies, & DiLillo, 2008; Moylan et al., 2010).

While prior research has examined trauma and maltreatment rates among juvenile offenders, there has been limited research using an ACE risk assessment to measure the ACE prevalence among juvenile offenders (Grevstad, 2010; Baglivio et al., 2014; Baglivio, Wolff, Piquero, & Epps, 2015; Fox, Perez, Cass, Baglivio, & Epps, 2015). These studies were based on data from the states of Washington and Florida. Further use and examination of these risk assessments are needed, as these assessments provide behavioral counselors, public defenders, lawyers, judges, and caseworkers with immediate screening results, which can help to target interventions and prevent reoffending. In the context of the juvenile justice system, this can lead to judges and probation officers making more informed decisions regarding juvenile cases. Consequently, a juvenile with identified ACEs may be connected with necessary community resources as opposed to a sentence of continued secure confinement.

The purpose of this study was to examine the prevalence of adverse childhood experiences among juvenile offenders in Greenville County, South Carolina and to examine whether the type of ACE experienced varied by recidivism, gender, or racial/ethnic differences. Greenville County, South Carolina is demographically different from the states where ACE prevalence rates among juvenile offenders were studied previously, as well as being demographically different from the rest of the nation. Compared to the national average, Greenville County has higher rates of African-American residents under the age of 18 (21.4% versus 13.7%, $p < 0.01$) and higher rates of teens age 16-19 not enrolled in school and not a high school graduate (4.6% versus 4.0%) (Kids Count Data Center, 2017). These characteristics are shared by the rest of South Carolina, as well as many other Southern states, making this sample, while small, informative. We hypothesized that categories of ACEs will vary by recidivism, sex, and race/ethnicity. The findings from this study will advise and assist those working within the juvenile justice system, as well as parents, children, and families, on prevention and intervention strategies for adolescents.

METHODS

This study used 2017-2018 data collected by The Phoenix Center on all Greenville County juvenile offenders entering the Greenville County Juvenile Detention Facility (GCJDF). The Phoenix Center, a substance use and mental health agency in Greenville, South Carolina, has been collecting data on ACEs from juvenile detention offenders since 2017, with funding from a statewide foundation, as part of a multi-component pilot project. First, the pilot project supported the hiring of a behavioral health counselor to conduct bio-psycho-social assessments and administration of the ACE survey on juveniles coming into the Greenville County Juvenile Detention Facility. Upon completion of the assessment and ACE survey, a summary report of assessment information and treatment recommendations would be compiled to then be shared with the youth's legal representatives and the judge when considering legal and social service recommendations. Second, the project supported the provision of trauma-informed care training to all Greenville County Juvenile Detention Facility employees, including correctional officers. Additionally, the project supported ongoing training for new employees hired within the detention system. Third, the pilot project was used to enhance and expand current referral networks for community providers and initiate the juvenile's treatment upon release from

detainment. Finally, the project supported group counseling and transition services to juveniles who were incarcerated. Group counseling encompassed topics such as anger management, decision making, mental health processes, and substance use/abuse education. Transition services included weekly consultation with parents, guardians, and referral sources to ensure successful integration into community-based services. The total number of juvenile detention offenders included in this data set was 391.

The ACE survey used was from the National Council of Juvenile and Family Court Judges' Adverse Childhood Experience (ACE) Questionnaire, Finding Your ACE Score (<https://www.ncjfcj.org/sites/default/files/Finding%20Your%20ACE%20Score.pdf>). The ten ACE questions asked of juvenile detention offenders are included in Table 2, with the prevalence described by type of ACE, as well as whether the offender recidivated. Recidivism, as defined in the pilot project, was any juvenile that returned to the detention facility with new charges within the same calendar year. Table 1 provides the counts of ACEs (the survey does not capture intensity or frequency of ACE exposure), using methodology employed by the Centers for Disease Control and Prevention for ACE data in the Behavioral Risk Factor Surveillance System (BRFSS). If the juvenile detention offender reported an ACE at least once, then the ACE was coded as a yes. The ACE count variables were categorized into those experiencing less than four ACEs and four or more ACEs. Four or more ACEs was used as prior research has demonstrated that individuals with four or more ACEs are more likely to be at high risk of chronic health conditions and overall poor physical and mental health (Dong et al., 2004; Felitti et al., 1998).

Demographic characteristics included in the analysis were sex, age, race/ethnicity, and classification of charge. Age of the adolescent was divided into two categories: 12–13 and 14–17. Race/ethnicity of the adolescent included three groups: Non-Hispanic White, Non-Hispanic Black, and Hispanic. Adolescent's classification of charge was categorized into the following: drug and alcohol misdemeanor, person offense, property offense, status offense, and weapon offense. A drug and alcohol misdemeanor was the possession of a controlled substance or drug paraphernalia, distribution, or public intoxication. Person offense included assault and battery, disturbing the schools, criminal sexual conduct, resisting arrest, and threats. Property offense encompassed larceny, burglary, vandalism, breaking and entering, malicious damage, destruction of property, and forgery. Status offense included any juvenile charge or minor offense — runaway, truancy, probation violation, violation of house arrest, or incorrigibility. Weapon offense was the possession of gun/knife in act, unlawful carrying of weapon, weapon on school ground, and armed robbery.

Descriptive and bivariate analyses were conducted utilizing chi-square tests to examine differences in ACE type by recidivism, sex, and race/ethnicity. Analyses were conducted using statistical software (SAS, version 9.3; SAS Institute, Inc.). The alpha value was set at 0.05. This study was approved by the [name concealed for review] institutional review board as exempt.

RESULTS

The majority of our sample was male (69.8%), 14 to 17 years of age (89.8%), and Non-Hispanic Black (54.0%, Table 1). Over forty percent of offenders had a person offense (41.4%), followed

by a status offense (31.2%), and property offense (15.6%). Nearly a quarter of offenders (23.5%) had reoffended. There were no statistically significant relationships between ACE counts, demographics, classification of charge, and whether or not the adolescent reoffended.

Table 1. *Characteristics of juvenile detention offenders at The Phoenix Center, Greenville, SC (N=391)*

Characteristic	(%)
Sex	
Male	69.8
Female	30.2
Age (in years)	
12-13	10.2
14-17	89.8
Race/Ethnicity	
Non-Hispanic White	40.4
Non-Hispanic Black	54.0
Hispanic	5.6
Classification of Charge	
Drug and Alcohol Misdemeanor	7.9
Person Offense	41.4
Property Offense	15.6
Status Offense	31.2
Weapon Offense	3.8

Just less than half (44.3%) of offenders had experienced less than four ACEs (Table 2). The most prevalent types of ACEs experienced by offenders were parental separation/divorce (78.3%), household incarceration (52.2%), lack of social support (36.8%), and household mental illness (36.6%, Table 2). Over one third of offenders also experienced verbal abuse (34.8%) and household substance abuse (34.5%). All ACE types had a prevalence rate of over ten percent, with 28.4% of offenders exposed to household violence, 23.5% of offenders exposed to physical abuse, 11.8% of offenders exposed to sexual abuse, and 10.5% of offenders not having their basic needs met. In bivariate analysis, we found differences in exposure to parental separation/divorce, by recidivism ($p=0.004$) and differences in exposure to lack of social support, by recidivism ($p=0.03$). No other bivariate analyses conducted showed statistically significant differences by ACE type and recidivism.

Female offenders were more likely than male offenders to experience the majority of ACE categories: household mental illness (47.5% versus 31.5%, $p=0.0026$), household violence (39.0% versus 23.8%, $p=0.0023$), physical abuse (34.8% versus 18.9%; $p=0.0006$), verbal abuse (53.4% versus 26.7%, $p<0.0001$), sexual abuse (27.1% versus 5.1%; $p<0.0001$), lack of social support (54.2% versus 29.3%; $p<0.0001$), and basic needs not met (17.8% versus 7.3%, $p=0.0019$, Table 3). Compared to Non-Hispanic black offenders, Non-Hispanic white offenders reported higher rates of household mental illness (51.9% versus 26.6%, $p<0.0001$), household substance abuse (53.2% versus 20.9%, $p<0.0001$), physical abuse (31.7% versus 19.0%, $p=0.0046$), and verbal abuse (44.9% versus 28.9%, $p=0.0015$). Non-Hispanic black offenders

were more likely to report exposure to sexual abuse (15.2%) than non-Hispanic white offenders (8.9%, $p=0.04$).

Table 2. ACE questions included in the National Council of Juvenile and Family Court Judges' Adverse Childhood Experience (ACE) Questionnaire, Finding Your ACE Score among juvenile detention offenders at The Phoenix Center, Greenville, SC (N=391), by recidivism.

Childhood experience		Prevalence	Recidivism		P-value
		%	Recidivism Yes (23.5%), %	Recidivism No (76.5%), %	
ACES experience					0.06
	Less than four ACEs	55.8	27.1	72.9	
	4 or more ACEs	44.3	19.1	80.9	

Survey question(s): While you were growing up, during your first 18 years of life:

Household mental illness	1. Was a household member depressed or mentally ill or did a household member attempt suicide?	36.6	21.1	78.9	0.40
Household substance use	2. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?	34.5	20.0	80.0	0.23
Household incarceration	3. Did a household member go to prison?	52.2	24.5	75.5	0.63
Parental separation/divorce	4. Were your parents ever separated or divorced?	78.3	20.3	79.7	0.004
Witnessing household violence	5. Was your mother or stepmother: Often pushed, grabbed, slapped, or had something thrown at her? or Sometimes or often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?	28.4	18.0	82.0	0.11
Experiencing physical abuse	6. Did a parent or other adult in the household often ... Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured?	23.5	19.6	80.4	0.31
Experiencing verbal abuse	7. Did a parent or other adult in the household often ... Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt?	34.8	19.9	80.2	0.21

Sexual abuse	8. Did an adult or person at least 5 years older than you ever... Touch or fondle you or have you touch their body in a sexual way? or Try to or actually have oral, anal, or vaginal sex with you?	11.8	13.0	87.0	0.07
Lack of social support	9. Did you often feel that ... No one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other?	36.8	17.4	82.6	0.03
Basic Needs not met	10. Did you often feel that ... You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?	10.5	14.6	85.4	0.16

ACE, adverse childhood experience

Significance bolded; significance was determined if $p < 0.05$.

Table 3. ACE questions included in the National Council of Juvenile and Family Court Judges' Adverse Childhood Experience (ACE) Questionnaire, Finding Your ACE Score among juvenile detention offenders at The Phoenix Center, Greenville, SC (N=391), by sex and race/ethnicity

Childhood experience	Prevalence	Sex		P-value	Race/Ethnicity			P-value
	%	Female %	Male %		Non-Hispanic Black %	Hispanic %	Non-Hispanic White %	
Household mental illness	36.6	47.5	31.5	0.0026	26.6	*	51.9	<0.0001
Household substance use	34.5	39.8	32.2	0.1470	20.9	*	53.2	<0.0001
Household incarceration	52.2	54.2	51.3	0.5913	56.4	*	49.4	0.0590
Parental separation/divorce	78.3	79.7	77.7	0.6590	82.0	63.6	75.3	0.0708
Witnessing household violence	28.4	39.0	23.8	0.0023	26.1	*	31.7	0.4972
Experiencing physical abuse	23.5	34.8	18.9	0.0006	19.0	*	31.7	0.0046
Experiencing verbal abuse	34.8	53.4	26.7	<0.0001	28.9	*	44.9	0.0015
Sexual abuse	11.8	27.1	5.1	<0.0001	15.2	*	8.9	0.04
Lack of social support	36.8	54.2	29.3	<0.0001	35.1	*	38.6	0.7216
Basic Needs not met	10.5	17.8	7.3	0.0019	8.5	*	13.9	0.1591

ACE, adverse childhood experience.

*indicates n less than ten and is not reported

DISCUSSION

This study examined the prevalence of ACEs among a sample of juvenile offenders in Greenville County, South Carolina, which is demographically representative of other counties in the South and demographically different from national means. Previous ACE prevalence rates from risk assessments among juvenile offenders were limited to the states of Washington and Florida (Grevstad, 2010; Baglivio et al., 2014; Baglivio et al., 2015; Fox et al., 2015). Our study findings demonstrate that juvenile offenders in a county in the South have higher prevalence rates of parental separation/divorce (78.3% versus 21.9%; $p < 0.0001$), parental incarceration (52.2% versus 7.0%), and household violence (28.4% versus 5.0%) than adolescents nationally (Crouch, Probst, Radcliff, Bennett, & Hunt-McKinney, in press). These results are consistent with previous findings that juvenile offenders experience high rates of ACEs (Baglivio et al., 2014; Baglivio et al., 2015; Fox et al., 2015). These findings have implications for the screening and addressing of ACEs in juvenile offenders.

Our results confirm previous findings that parental separation/divorce is significantly associated with recidivism and that juvenile offenders have high rates of exposure to parental separation/divorce (Amato, 2001; D'Onofrio et al., 2005; Burt et al., 2008). Our study also found significant differences in ACE exposure, by sex, among juvenile detention offenders. These findings confirm previous research among juveniles involved in the justice system, with female juveniles reporting higher rates of sexual abuse and interpersonal ACEs, such as physical and verbal abuse, than their male counterparts (Cauffman, Feldman, Watherman, & Steiner, 1998; Ford, Chapman, Hawke, & Albert, 2007). Prior research found that females had higher rates of nearly every ACE category, and our study confirmed these findings (Baglivio et al., 2014). The demonstration of sex differences in ACE exposure is important for the development and targeting of interventions, as females are more likely to engage solely in domestic violence, compared to males who are more likely to commit violent crime (Herrera & McCloskey, 2001). This suggests that the females interpret ACE differently from males; so they perceive household mental illness, physical abuse, verbal abuse, lack of social support, and basic needs differently (more sensitive or higher) than boys — but it does not mean they actually experience more of this as once again they are in the same types of households. Additionally, our study noted differences in ACE exposure by race/ethnicity. While targeted prevention and intervention supports and services are also important for youth of color, said supports and services and the systems in which they are provided cannot ignore that differences in ACE exposure may be due to variation in the experiences of different stressors, for example, such as those that occur on the basis of race or ethnicity (Strompolis, Tucker, Crouch, & Radcliff, 2019).

The ACE assessments may provide an important opportunity for targeted services and supports, directly related to the youth's experiences. Findings from this study demonstrate the need for programming to improve the delivery of trauma informed care among juvenile offenders, as well as the need to engage in primary prevention efforts in schools to prevent entry into the juvenile justice system. Trauma informed treatment within the system can help reduce the likelihood of recidivism by helping youth learn coping strategies and behavioral modifications after experiencing trauma (Griffin, Germain, & Wilkerson, 2012). As a result of the assessments and ACE surveys conducted by a program counselor, juveniles who have identified a past trauma

history have been connected with local agencies which provide evidence-based trauma therapy interventions (i.e. Trauma-Focused CBT and EMDR).

For primary prevention efforts, two points of contact can be made for school age children through adolescence: pediatric care and schools. Current recommendations by the American Academy of Pediatrics, as well as Bright Futures guidelines, recommend pediatricians to screen for ACEs (Kerker et al., 2016; AAP Council, 2016; Garner et al., 2012; Dowd et al., 2014). Visits to the pediatrician are both an opportunity for screening, prevention, and intervention, and a time to inquire about household living situations, such as whether the household is experiencing substance use/misuse, economic hardship, and/or exposure to violence (Silverstein, Grossman, Koepsell, & Rivara, 2003). Under the Bright Futures guidelines, health insurance plans are required to pay for the recommended screenings. These recommended screenings, assessments, and examinations must be paid for by health insurance plans under the Affordable Care Act and promote the use of pediatricians and social workers in providing care and addressing trauma (Ghandour, Perry, Kogan, & Strickland, 2011). These screenings can then be used to connect vulnerable families to support services, linking them to social service providers with the help of programs such as *Help Me Grow* (Bogin, 2006).

The education system is another place to reach children and adolescents for trauma-informed welfare practice and services (Fraser et al., 2014). Recently, mindfulness activities have been introduced in school settings to assist with neurological repair from trauma (Chafouleas, Johnson, Overstreet, & Santos, 2016), as well as school-based service delivery mechanisms, such as the School-Wide Positive Behavior Interventions and Supports framework (www.pbis.org) (Rolfesnes & Idsoe, 2011). These programs have been shown to change how children and adolescents behave after they have been exposed to traumatic stress experiences (National Association of School Psychologists, 2016). Finally, early detection of ACEs can be cost-effective for the education, justice, and health system (Vos et al., 2010).

Inherent in both of these settings, pediatric care and schools, is an opportunity to employ two-generational primary prevention approaches. Two-generation approaches, or whole family approaches, identify opportunities for partnerships that focus equally on children and parents or other adults in their lives (Ascend, 2019). While there are many effective child- and youth-centered strategies that can prevent or mitigate adversity, two-generation strategies have the potential for broader impact by building parental and family wellness and resilience.

Strengths and Weaknesses

The small and nonrepresentative nature of the sample limits the generalizability of the findings and includes bias. A larger sample size may be more representative and would provide more robust results. Due to our small sample size, standard errors were relatively large and thus limited our ability to conduct further analysis. The data set was limited in the number of cofounders that were available to be included, such as school failure, mental health problems, and various other factors.

However, prior research using an ACE risk assessment tool was limited to the states of Washington and Florida. This is the first study to examine the prevalence of ACEs in a county in

South Carolina, a representative southern state. As this study relies on youth to respond about their own ACE exposure, the findings are not biased based on adults remembering their ACE exposure retrospectively, such as in the original Kaiser Permanente ACE study or the Centers for Disease Control Behavioral Risk Factor Surveillance Study (Felitti et al., 1998; Crouch et al., 2017). The results are also not biased by underreporting of parents, such as the case with reports of ACE prevalence in the National Survey of Children's Health (Crouch et al., in press).

This study also used the ACE survey from the National Council of Juvenile and Family Court Judges' Adverse Childhood Experience (ACE) Questionnaire, Finding Your ACE Score. The ACE survey does not include all types of adversity or traumatic events that a youth might experience such as community or neighborhood violence, extreme poverty, or homelessness. The findings may be limited, however, given the validation of the instrument and extensive use of the survey in many study populations, the survey provided useful comparisons.

Applications and Conclusions

ACEs can activate a biological toxic stress response in critical periods of life, disrupting development and shifting life-long opportunities, including education, employment, and income (Johnson, Riley, Granger, & Riis, 2013; Metzler, Merrick, Klevens, Ports, & Ford, 2017; Shonkoff, Boyce, & McEwen, 2009; Shonkoff et al., 2012). ACE data among juvenile justice involved youth is a special population rarely studied in the ACE literature and our study further reinforces the high prevalence rate of ACEs among this population (Grevstad, 2010; Baglivio et al., 2014; Baglivio et al., 2015; Fox et al., 2015). Our study findings may be of particular importance for policymakers as they develop secondary interventions to mitigate the effects of ACEs among case workers, behavioral counselors, and practitioners who care for justice involved youth. Funding for referral services and care coordination services for justice involved youth is needed to implement secondary interventions. Study findings may also help with establishing a need for expansion of this pilot program to other juvenile detention centers in states in the Southeast.

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