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Alexis L. Booth
East Tennessee State University

Jill D. Stinson PhD
East Tennessee State University

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Effects of Adverse Childhood Experiences on High Risk Inpatient's Criminal Behavior

Alexis L. Booth[1]

Jill D. Stinson, PhD[1]

[1] East Tennessee State University, Department of Psychology

Abstract

Adverse childhood experiences (ACEs) play a role in the development of chronic mental and physical diseases in adulthood. These experiences include adversities such as: emotional/verbal abuse, sexual abuse, physical abuse, and household dysfunction. In this study, we hypothesize that forensic mental health offenders will have higher ACE scores than community participants. Secondly, we hypothesize that these participants will show higher rates of and earlier incidences of offending, arrest, incarceration, and hospitalization as a result of their ACE scores. Further, we hypothesize that males and females will be affected by ACEs differently. Using archival data from a secure forensic psychiatric facility in the Midwestern US, data were collected from 211 participants, of which 80% were males and 18% females. The ages of the participants ranged from 23 to 72 with a median age of 43. Using SPSS software, we were able to determine frequency of the ten categories of abuse, maltreatment, and familial dysfunction as included in the original ACE research. Correlations were run to determine the relationship between ACEs and criminal behavior. Statistical comparisons were also run to examine the differences between males and females. ACE score significantly correlated with age at first psychiatric admission. Males and females were significantly different with regard to ACE score. However, other variables were not significant and suggest that future research need to more deeply examine these differences, and additional variables that may determine criminal outcomes in high-risk samples.

Effects of Adverse Childhood Experiences on High Risk Inpatient's Criminal Behavior

Introduction

Overview

Developmental adversity includes a range of experiences of childhood abuse (i.e., verbal, physical, sexual, or emotional abuse) and familial dysfunction, such as exposure to domestic violence or caregivers with a mental illness or substance abuse problems (e.g., Felitti, Anda, Nordenberg, Williamson, Spitz, Edwards, Koss, & Marks, 1998). Little was known about the impact of these adversities on long-term adult mental and physical health, until the initiation of the Adverse Childhood Experiences (ACE) study. The ACE study was conducted from 1995 to 1997 by Kaiser Permanente in San Diego (Centers for Disease Control; CDC, 2013). The study included over 17,000 participants and examined the relationships between childhood adversity, health care use, and causes of death. Each participant was given a physical examination as well as a confidential survey designed to assess childhood maltreatment and familial dysfunction (CDC, 2013). From this process, a score indicating cumulative childhood adverse experiences (ACEs) was assigned to each individual, ranging from 0-10; a copy of the ACE survey will be included in the document, please refer to Figure 1 in the appendix. Over two thirds of the participants had an ACE score of at least one, and one out of five participants had a score of three or more (CDC, 2013). Felitti et al. (1998) found that the impact of these adversities on adult mental and physical health is both significant and cumulative. As an individual's ACE score increases, so does the risk for adult health related problems (Felitti et al., 1998).

The ACE study led to a vast body of research that supported these conclusions about adult mental and physical health (Brown, Anda, Edwards, Felitti, Dube, & Giles, 2007; Edwards,

Anda, Felitti, & Dube, 2003; Hillis, Anda, Felitti, & Marchbanks, 2001). This research expands on issues like chronic disease, reproductive health, health risk behaviors, mental health, and continued victimization (CDC, 2013). For example, ACEs have been associated with adult physical health problems such as heart disease, chronic lung disease, cancer, skeletal fractures, and liver disease (Felitti et al., 1998). Along with physical health problems, childhood adversities have been shown to affect adult mental health in that being exposed to these adversities increases the risk of adult psychopathology (Putnam, Harris, & Putnam, 2013). Knowing how these adversities affect adult health can have a major impact on treatment and intervention programs designed to address these problems. For instance, treating a parent who has a mental illness and getting them the medications they need, can greatly reduce the impact on his or her children. Eradicating ACEs as a whole would greatly reduce the risk of the child developing mental illness as an adult (Putnam, Harris, & Putnam, 2013). Additionally, economic interventions like providing jobs to these families can help decrease behavioral risks in affected children (Brent, & Silverstein, 2013). Treatment programs can have a great and lasting impact on these families just by knowing how these adversities affect them.

However, despite the knowledge gained from this vast body of empirical research, there are still areas left unexplored. Past and current studies of childhood adversity examine only the relationship between these events and an adult's mental and physical health outcomes. Little to no research exists describing the potential social and behavioral outcomes for those affected by childhood adversity. Preliminary research in this area has examined relationships between childhood adversity and interpersonal violence, bullying, animal cruelty, and sexual offending (Graham, Kimonis, Wasserman, & Kline, 2012; Roberts, McLaughlin, Conron, & Koenen, 2011; Vaughn, Fu, Beaver, DeLisi, Perron, & Howard, 2011). However, there are gaps in our

knowledge regarding the impact of childhood adversity on an individual's criminal behavior. There are a limited number of studies that examine offenders from backgrounds characterized by adversity, as classified by the ACE survey, and no research on how ACEs impact their offending, whether by increasing it or increasing the severity of it.

First, I will examine the relationships between ACEs and mental and physical disease, as well as the risky behaviors that bridge the gap between ACEs and adult health outcomes. I will then identify the gaps in the current research that this paper will address, followed by the methodology of our data collection as well as characteristics of our sample. I will end the paper with a brief description of the results found, followed by a discussion on the impact of this study, some of the limitations, and implications for future research.

ACE and Chronic Mental and Physical Disease

Research shows that cumulative childhood adversity greatly impacts and increases health risk behaviors. Childhood adversity has contributed to chronic adult health problems including: chronic disease, dangerous reproductive/sexual behavior, and mental health problems (CDC, 2013). As the ACE score increases there is a greater incidence of lung disease, liver disease, heart disease, and premature death (Brown, Anda, Felitti, Edwards, Malarcher, Croft, & Giles, 2010; Dong, Dube, Felitti, Giles, & Anda, 2003; Dong, Giles, Felitti, Dube, Williams, Chapman, & Anda, 2004; Felitti et al., 1998). The increased use of smoking and alcohol among those exposed to childhood adversity has led researchers to examine these effects on liver and lung disease. Persons who report ACEs and who also abuse alcohol have an increased risk of developing liver disease over those who report no ACEs (Dong et al., 2003). Compared to those

who have not experienced ACEs, people with ACEs are 3 times more likely to develop lung

cancer (Brown et al., 2010).

In addition to chronic disease, research has demonstrated the impact of ACEs on sexual

behavior and reproductive health. Women, who are exposed to physical abuse or at least four

other types of abuse, were 1.5 times more likely to have an unintended first pregnancy. One out

of five of these women with unintended pregnancies endorsed childhood ACEs (Dietz, Spitz,

Anda, Williamson, McMahon, Santelli, Nordenberg, Felitti, & Kendrick, 1999). Childhood

sexual abuse, physical abuse, and neglect were additionally associated with youth engaging in

risky sexual behavior and early promiscuity. Findings also indicate that persons with cumulative

childhood adversity are at a higher risk for having sexually transmitted diseases by mid

adulthood, particularly HIV infections (Wilson, & Widom, 2008).

Another significant chronic health problem associated with ACEs is psychopathology.

There is a strong relationship between childhood adversities and increased risk of attempted

suicide throughout adulthood (Dube, Anda, Felitti, Chapman, Williamson, & Giles, 2001).

Despite the specific type of adverse experience, the risk for attempted suicide increased two to

five times in comparison with those who reported no adverse experiences (Dube et al., 2001).

Further, research examining the relationship between ACEs and depression has shown a

significant effect of ACEs on the development of depression and increases in depressed affect,

even decades after experiencing the adversity (Chapman, Whitfield, Felitti, Dube, Edwards, &

Anda, 2004).

Chronic disease, reproductive health, and mental health research reveal that ACEs have a significant impact on adult's mental and physical health. The research has identified a link between ACEs and chronic health problems in adulthood: health risk behaviors.

Childhood Adversity and Health Risks

Following the initial results of the ACE study, a vast body of research has examined the health risks associated with childhood adversity trauma. The ACE study concluded that as the number of adversities increased, so do the health related problems in adulthood (CDC, 2013). Subsequent research has focused on specific health risks associated with cumulative incidents of abuse and household dysfunction. These health risks include, but are not limited to: smoking, intravenous drug use, alcoholism, obesity, and risky sexual behavior (CDC, 2013). Smoking has an earlier onset and a more gradually increasing intensity in those who have experienced five or more types of childhood adversity (Anda, Croft, Felitti, Nordenberg, Giles, Williamson, & Giovino, 1999). Along with smoking, drug use has been attributed to childhood adversity. Compared to individuals who do not experience childhood adversity, people with an ACE score of 5 or more show an increase of drug use problems, drug addiction, and parenteral (injected) drug use (Dube, Felitti, Dong, Chapman, Giles, & Anda, 2003).

Similar findings have been noted with regard to alcohol use among those who have experienced multiple traumas or familial dysfunction. A number of studies demonstrate that youth who grow up with alcohol abusing parents, later abused alcohol themselves as adults, and youth who grew up in alcohol dependent households begin drinking earlier (e. g. early to mid-adolescence) than those who did not, and drink more (Dube, Miller, Brown, Giles, Felitti, Dong, & Anda, 2006; Anda, Whitfield, Felitti, Chapman, Edwards, Dube, & Williamson, 2002; Dube,

Anda, Felitti, Croft, Edwards, & Giles, 2001). Obesity is an additional health risk associated with childhood adversity and the ACE study. Adults who reported sexual, verbal, and physical abuse as children were on average, 0.6-4.0kg heavier than those who did not report abuse (Williamson, Thompson, Anda, Dietz, & Felitti, 2002). It was hypothesized that obesity in adulthood among those with such background experiences may be due to the imbalance of hormones, behavioral changes related to eating, and coping mechanisms employed to deal with early adversity (Williamson et al., 2002).

The risk of ischemic heart disease is greater for those who have experienced ACEs, and is mediated by traditional health risk factors (e. g., obesity), as well as psychological factors (Dong et al., 2004). This may be due to the coping mechanisms employed by individuals who have experienced childhood adversity. Nevertheless, despite this vast body of research, the overall effect of childhood adversity on an individual's life outcomes is only partly understood. We lack empirical evidence regarding some of the social and behavioral outcomes affected by ACEs, creating gaps in the research that need to be further explored.

Gaps in the ACE Survey Research

Much of the research examining the effects of childhood adversity on adult life addresses mental and physical health outcomes. Little research explores the effects of childhood adversity on an adult's social and interpersonal behavior, particularly with regard to criminal activity. As of yet, ACE research has examined intimate partner violence (IPV), animal cruelty, bullying, and sexual offending, with the bulk of the research emphasizing IPV. Roberts, McLaughlin, Conron, and Koenen (2011) investigated the relationship between ACEs, IPV, and stress sensitization and found an increased sensitization effect in individuals who experience ACEs. This suggests that

following exposure to childhood abuse or dysfunction, individuals become hyper-reactive to later

stressors, thus increasing the risk for IPV in later life. Additionally, sexual, physical, and

emotional abuses were significant predictors for intimate partner violence enactment (Roberts,

McLaughlin, Conron, & Koenen, 2011).

Vaughn, Fu, Beaver, DeLisi, Perron, and Howard (2011provided an empirical link

between childhood adversity and bullying and animal cruelty, with a greater effect on bullying

than on cruelty to animals. Bullying was significantly predicted by physical abuse, while cruelty

to animals was predicted by sexual abuse (Vaughn et al., 2011). Similar findings have been

obtained in samples of sexual offenders (e.g. Graham, Kimonis, Wasserman, & Kline, 2011)

where it was discovered that sexual offenders with more ACEs scored higher on the Psychopathy

Checklist- Revised (PCL-R) lifestyle subscale, and those with a history of abuse and neglect

additionally scored higher on the PCL-R. These results indicate that ACEs could potentially

influence the development of psychopathy in adulthood (Graham, Kimonis, Wasserman, &

Kline, 2011).

Research is limited on how childhood adversity affects offenders and the intensity of the

offenses. Meaning how severe the crime is, how often they commit crimes, and how early they

commit crimes as opposed to non-offenders with ACEs. Current research shows that childhood

abuse and household dysfunction are common among criminal offenders (Levenson, 2013). Over

50% of male offenders in the US have reported physical abuse during childhood, and roughly

30% of offenders reported sexual abuse of some kind (Levenson, 2013). Sexual offenders

specifically have higher ACE scores than non-offenders in the community (Levenson, 2013). In

a study of 679 sexual offenders, 42% reported physical abuse and 38% reported sexual abuse as

children (Levenson, 2013).   A study conducted by Weeks and Widom (1998) revealed that 68%

of the 301 convicted male felons they studied had some form of early childhood adversity.

34.9% and 14.3% of the sample reported physical and sexual abuse respectively as children.

Lastly, the researchers found that the only difference between violent and non-violent offenders

was that violent offenders reported a greater history of neglect as children than non-violent

offenders (Weeks, & Widom, 1998).

Studies of juvenile offenders are even rarer with regard to ACEs and criminality.

However, Baglivio, Epps, Swartz, Hug, Sheer, and Hardt (2014) conducted a study using 64,329

Florida youth to compare the effect of ACEs on criminal behavior in this population. They

found that female youth reported more ACEs than males, and participants who reported at least

one adverse experience reported more than just one. There was also only a small proportion of

males (3.1%) and females (1.8%) who reported no ACEs. Additionally, they found that the

reporting of ACE's corresponded with an increase in chances of involvement with the juvenile

justice system, as well as an increased risk to reoffend (Baglivio, et. al, 2014).

Other studies confirm that offenders have higher rates of adversity than the general

population, and are more pronounced in offenders (Messina, Grella, Burdon, & Prendergast,

2007). However, though it is known that adversities are greater and may more differentially

impact offenders, it is not known just how severe that impact is. Our current knowledge reflects

the rates of adversity among offenders, rather than how ACEs impact the rate of offending,

violence of the offense, or the rate of incarceration. This gap in the offender research should be

addressed.

Further within this limited research examining the impact of ACEs on criminal outcomes,

gender differences are rarely considered. The few studies involving offenders or criminal

behavior that include gender differences are descriptive only and largely inconclusive. Most find

no significant differences between males and females, with ACEs affecting both equally

throughout adulthood (Rosenman, & Rodgers, 2006). This is inconsistent with non-offender

ACE research. Other studies find some differences between males and females, but these

differences do not reach significance (Huang, Trapido, Fleming, Arheart, Crandall, French,

Malcolm, & Prado, 2010; Messina, Grella, Burdon, & Prendergast, 2007).

Study Goals and Hypotheses

This study aims to examine the relationships between childhood adversity, gender, and

variables associated with criminality among persons involved with the forensic mental health

system.

1. I hypothesize that when compared to the community participants used in the original

ACE study, the participants in this study will have higher rates of adversity, as demonstrated by a

higher rate of individual types of adversity and a higher proportion of the sample with

cumulative adversity.

2. Secondly, I hypothesize that as the ACE score increases, so will the effect on

criminality seen in: number of arrests, earlier age of first arrest, reason for arrest, earlier age of

first incarceration, history of incarceration, length of incarceration, earlier age of first

hospitalization, length of hospitalization, and reason for the hospitalization.

3. Lastly, I hypothesize that women and men will be affected by ACEs differently, as

seen in differing rates of arrest, incarceration, and hospitalization as well as number of ACEs

reported.

Methods

Participants

Participants included 211 maximum and intermediate security inpatients at Fulton State Hospital in Missouri. Participants ranged in age from 23 to 72 years, with a median age of 43 (M=42.55, SD=12.96). Males comprised 80.7% (*n*= 171) of the participants, whereas females comprised 18.9% (*n*= 40). The majority of participants were Caucasians who made up 46.9% (*n*= 99) of the sample followed by African Americans at 34.6% (*n*= 73). The rest of the participant's ethnicities were unknown at 14.7% (*n*=31). The participants were chosen based on criteria and availability of archival records.   Inclusion criteria included that participants' current or most recent legal status be voluntary by guardian civil commitment. Additionally, participants must have had a length of admission of at least 13 months and have more than 50% of the medical record available. The cases were coded by three research assistants who were trained by the principal investigator and the co-investigator of the larger study from which these data were drawn. Two of the research assistants were undergrads while the other was a graduate student; all come from a psychology or social work background.

Materials

SPSS was used to analyze the relationship between ACEs and criminality. Additionally, Microsoft Excel was used to calculate the percentages of ACEs among these participants using means and standard deviations. The data were then compared to the community data collected by the original ACE study.

Procedure

All procedures used in this study were approved by the Campus Institutional Review Board, at East Tennessee State University, and this thesis project is part of a larger study. Research assistants collected archival data from Fulton State Hospital which was then coded. The independent variables included adverse childhood experiences such as verbal, physical, sexual abuse, and neglect. Household dysfunction was also examined in the form of experiencing domestic or interpersonal violence, and the presence of a mentally ill, substance abusing, or incarcerated caregiver prior to the participant's age of 18. Gender was additionally included as an independent variable to examine the effects of ACEs on male vs female participants. The dependent variables include: number of arrests, age at first arrest, reason for arrest, age of first incarceration, history of incarceration, length of incarceration, age of first hospitalization, length of hospitalization, and reason for hospitalization.

Sexual, verbal, and emotional abuse were coded by either a yes or a no; no=0 whereas yes=1. Familial dysfunction in the form of interpersonal violence was coded by either a yes or a no; no=0 whereas yes=1. Gender was coded so that females=0 and males=1. Number of arrests, age at first arrest, age of first incarceration, number of incarcerations, length of incarcerations, age of first hospitalization, and length of hospitalization were all entered numerically based on information retrieved from the participant's case file. Reason for arrest, or arrest type was coded so that violent arrest=1, sexual=2, drug or alcohol=3, status offense=4, property=5, other=6, and multiple=7. Reason for first psychiatric admission was coded so that suicide attempt=1, symptoms of psychosis=2, drug or alcohol abuse=3, mental health evaluation=4, behavior problem=5, and unknown=6.

To verify Hypothesis 1 the coded variables were analyzed in a Microsoft Excel spreadsheet to calculate the percentages of ACE rates in these high risk inpatients. Descriptive

statistics were used to calculate means and standard deviations to reveal the adverse backgrounds in these individuals. These percentages were then compared to the community percentages found in the original ACE study. Descriptive statistics were also used to show higher arrest rates, incarceration rates, and hospitalization rates for these participants than in the community sample, which helped to verify Hypothesis 2. Hypothesis 2 examined the relationship between increasing ACE scores and the effect it had on increases in incarceration, arrest, and hospitalization. In order to support this hypothesis, correlation equations were run in SPSS to examine the relationship between these variables. Then, these results were compared to the community sample to further authenticate the impact of ACEs on high risk impatient criminality. Hypothesis 3 dealt with the impact of ACEs on gender. Therefore, a cross tabs comparison was calculated with SPSS to validate this hypothesis, and findings were once again compared to the community sample to demonstrate the differences in this population.

Results

Characteristics of the Sample

Over half of the sample (63%) had an ACE score of one or higher (n=133). Please refer to Table 1 for additional details regarding ACE scores for the sample. ACE scores were higher for this sample population than has been previously reported in the community literature, with roughly 24% of the sample having a score of 4 or more (n=52). An ACE score of 7 was the highest score, which characterized 5.7% of the sample (n=12).

Abuse in this sample was rather high, with physical abuse (29.2%) being the most prominent type (n=62); please refer to Table 2. Familial dysfunction was additionally high for these participants, with parental divorce/separation being the highest category of familial

dysfunction at 25.9% (*n*=55). There was significant overlap of abuse within this sample, and the likelihood of a participant experiencing more than one type of adversity was to be expected.

ACE Score and Criminality

Arrest, incarceration, and hospitalization rates among this sample were high. Almost half of the sample had a history of at least one arrest (47.4%), with 69 being the highest number of arrests for any one individual (M=2.39, SD=6.31); please refer to Tables 3 and 4. The majority of these arrests were for violent offenses (*n*=76). Almost a quarter of the sample (24.8%) had a history of incarceration, with the longest period of incarceration lasting 20 years (M=0.52, SD=2.14). The ages for first psychiatric admission ranged from 4-49 with an average age of 16 years old (M=16.50, SD=9.44). The most common reasons for these admissions included mental health evaluations (26%), followed closely by behavioral problems (20.3%).

The correlation between ACE score and age at first psychiatric admission was significantly significant at the 0.01 level (*r*=-0.322, *p*<.01). The higher the ACE score, the lower the age at which the person was first psychiatrically hospitalized. Surprisingly, this was the only variable reflective of criminality or uncontrolled aggression that the ACE score significantly correlated with. Other factors, such as age at first incarceration, significantly correlated with history of incarceration (*r*= 0.744, *p*<.01). In fact, factors that seemed to correlate significantly were other criminality factors, rather than the ACE score (see Tables 5 and 6).

ACE Score and Gender

Males and females significantly differed with regard to ACE score (χ^2= 23.97, *df*= 7, *p*<.001), as seen in Tables 7 and 8. Half of the males 62% had an ACE score of one or higher (*n*= 106), whereas 67.5% of females had an ACE score of one or higher (*n*=27). Gender

significantly differentiated rates of ACEs in 5 categories including emotional and verbal abuse (χ^2= 10.51, *df*= 1, *p*<.001), physical abuse (χ^2= 9.35, *df*= 1, *p*<.01), neglect (χ^2= 7.3, *df*= 1, *p*<.01), interpersonal violence (χ^2= 4.36, *df*= 1, *p*<.05), and sexual abuse (χ^2= 12.03, *df*= 1, *p*<.001). Surprisingly, there were no gender differences with regard to any of the criminality factors.

Discussion

Original ACE Study and High Risk Inpatients

In the original ACE study, over two-thirds of the participants had an ACE score of at least one, and one out of every five had a score of three or more (Centers for Disease Control and Prevention; CDC, 2014). Compared to the current sample, there were fewer individuals with an ACE score of at least one (16%), though there were more who with an ACE score of three or more (33.6%). This indicates greater severity and accumulation of ACEs among this high risk inpatient population in comparison with the general community. In fact, the rates of abuse in the original study were already high with 10.6%, 28.3%, and 20.7% of the sample experiencing some form of emotional, physical, or sexual abuse, respectively (CDC, 2014). The rates of abuse for the current sample were higher than these (i.e., 18.9%, 29.2%, and 27.9%) when examining the same variables.

Rates of reported neglect were higher in the community (24.7%) than in the current sample (14.2%), though indicators of household dysfunction were higher for the inpatients than for the community sample. This includes multiple variables, such as: caregiver mental illness, parental incarceration, parental substance abuse, interpersonal violence, and parental separation or divorce. The highest percentage of household dysfunction for the community sample came in

the form of parental substance abuse (26.9%) (CDC, 2014), whereas for the current sample the

highest percentage of household dysfunction was for parental divorce or separation (25.9%).

However, the rates of parental substance abuse for both samples were nearly the same (i.e.,

26.9%, and 24.5%). Furthermore, even though the types of adversities were not always higher

for the current population, the accumulation of these adversities were. In other words, the

current sample always had higher rates of combined adversities in comparison to the general

community participants.

Even though the ACE score did not significantly predict increases in criminality among

the current participants, a study published last year found similar results. Jung, Herrenkohl,

Klika, Lee, and Brown (2014) found that ACEs do significantly affect an increase in criminality

factors such as arrests and offending, though when certain variables are controlled, such as

marital status, SES, gender, age, and education level, ACE score is no longer significant as a

predictor of offending (Jung, et. al, 2014). Thus, other variables are more likely affecting

criminality than the ACE score alone, particularly in samples with overrepresentation of

cumulative childhood adversity.

Gender differences in the community sample were relatively the same for men and

women (CDC, 2014). This is not the case in the current sample, with results suggesting

significant gender differences in persons with greater accumulation of early developmental

adversity. In summation, this sample population experienced higher rates of adversity, ACE

scores, and significant gender differences when compared to the original ACE study community

population.

Limitations

The current study was limited by a relatively small sample size. Therefore, the differences examined between the two studies could actually be greater if an increase in participants was achieved. A larger sample might also allow for increased examination of individual variables. Additionally, there was a significant amount of missing data. Lastly, correlations were run to determine the results and significance of the data, which indicates no causality.

Despite these limitations, the current study showed that ACEs are very high in this select subpopulation of offenders, and that these rates are higher than those from the community-based research. This study also demonstrated that there are gender differences within the current sample. Therefore, future research needs to examine why the abuse rates are higher for this sample than the community, as well as focus on the gender differences within these high risk populations.

As research finds that the ACE score alone is less predictive of criminality, further exploration is needed to examine this new finding. If enough research is conducted and the link between adversity and high risk populations discovered, then prevention methods could be created and implicated to help stop these populations from becoming high risk.

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Appendix

Table 1. ACE Score for Sample

Ace Score	Percentage
0	36.8% (*n=78*)
1	16% (*n=34*)
2	13.2% (*n=28*)
3	9% (*n=13*)
4	5.2% (*n=11*)
5	6.6% (*n=14*)
6	7.1% (*n=15*)
7	5.7% (*n=12*)

Table 2. Percent of Abuse in Sample

Abuse Type	Percent
Emotional/Verbal Abuse	18.9% (*n=40*)
Physical Abuse	29.2% (*n=62*)
Sexual Abuse	26.9% (*n=57*)
Neglect	14.2% (*n=30*)
IPV	16% (*n=34*)
Parental Divorce/Separation	25.9% (*n=55*)
Caregiver Mental Illness	21.2% (*n=45*)
Caregiver Drug/Alcohol Abuse	24.5% (*n=52*)
Parental Suicide	1.9% (*n=4*)
Parental Incarceration	4.2% (*n=9*)

Table 3 and 4. Frequency of Arrests, Incarcerations, and Hospitalizations

Arrest Type	Total Number (n)	Percent	Mean/Standard Deviation
Violent Arrests	76	36%	M=.74, SD=1.28
Sexual Arrests	30	14.2%	M=.22, SD=.61
Drug/Alcohol	27	12.8%	M=.26, SD=.86
Other	61	28.9%	M=.73, SD=1.55

Reason for 1st Psychiatric Admission	Percent
Suicide Attempt	2.4% (*n*=5)
Symptoms of Psychosis	7.1% (*n*=15)
Drug/Alcohol Abuse	15.6% (*n*=33)
Mental Health Evaluation	25.9% (*n*=55)
Behavior Problems	20.3% (*n*=43)
Unknown	0.5% (*n*=1)

Table 5 and 6. Correlations between ACE score and Criminality

ACE Correlations	Pearson's r	P Value	Mean/Standard Deviation
Age at 1st Psychiatric Admission	*r*=-.322**	*p*<.01	M=16.5, SD=9.44
Reason for 1st Psychiatric Admission	*r*=-.045	*p*<.01	M=3.64, SD=1.36
History of Incarceration	*r*=.129	*p*<.01	M=.29, SD=.46
Longest Period of Incarceration	*r*=.058	*p*<.01	M=.52, SD= 2.14
Total Number of Arrests	*r*=.001	*p*<.01	M=2.39, SD=6.31
Violent Arrests	*r*=.129	*p*<.01	M=.74, SD=1.28
Sexual Arrests	*r*=.001	*p*<.01	M=.22, SD=.61
Drug/Alcohol Arrests	*r*=.055	*p*<.01	M=.26, SD=.86
Other Arrests	*r*=.056	*p*<.01	M=.73, SD=1.55

Other Significant Correlations	Pearson's r	P Value
Age at 1st Incarceration* History of Incarceration	r=.744**	p<.01
Age at 1st Arrest* Violent Arrests	r=.265**	p<.01
Age at 1st Arrest* Sexual Arrests	r=.275**	p<.01
Total Number of Arrests* Drug/Alcohol Arrests	r=.458**	p<.01
Total Number of Arrests* Other Arrests	r=.567**	p<.01

Table 7 and 8. ACE Score and Gender

ACE Score	Males (Percent)	Females (Percent)
0	38% (n=65)	32.5% (n=13)
1	19.3% (n=33)	2.5% (n=1)
2	14.6% (n=25)	7.5% (n=3)
3	7.6% (n=13)	15% (n=6)
4	4.7% (n=8)	7.5% (n=3)
5	7.02% (n=12)	5% (n=2)
6	5.8% (n=10)	12.5% (n=5)
7	2.9% (n=5)	17.5% (n=7)

ACE and Gender Correlations	Chi-Square Value	Degrees of Freedom	P Value
Emotional/Verbal Abuse* Gender	χ^2=10.507	df=1	p=.001**
Sexual Abuse* Gender	χ^2=12.025	df=1	p=.001**
Physical Abuse* Gender	χ^2=9.346	df=1	p=.002**
Neglect* Gender	χ^2=7.291	df=1	p=.007**
IPV* Gender	χ^2=4.355	df=1	p=.037**
Caregiver Mental Illness* Gender	χ^2=2.07	df=1	p=.150
Parental Alcohol/Drug Abuse* Gender	χ^2=2.044	df=1	p=.153
Parental Suicide* Gender	χ^2=2.510	df=1	p=.113
Parental Incarceration* Gender	χ^2=.074	df=1	p=.785
Parental Divorce/Separation* Gender	χ^2=.188	df=2	p=.910

Figure 1. ACE Score Survey

Finding Your ACE Score

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **often or very 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? Yes No If yes enter 1 _____

2. Did a parent or other adult in the household **often or very often**… Push,
    grab, slap, or throw something at you?
        or
    Ever hit you so hard that you had marks or were injured?
        Yes No If yes enter 1 _____

3. 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
    Attempt or actually have oral, anal, or vaginal intercourse with you? Yes No If yes enter 1 _____

4. Did you **often or very 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? Yes No If
        yes enter 1 _____

5. Did you **often or very 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?
        Yes No If yes enter 1 _____

6. Were your parents **ever** separated or divorced? Yes No If yes enter 1 _____

7. Was your mother or stepmother: **Often or very often** pushed, grabbed, slapped, or had something thrown at her?
or Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? **or**

Ever repeatedly hit at least a few minutes or threatened with a gun or knife? Yes No If yes enter 1 _____

8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs? Yes No If yes enter 1
    _____

9. Was a household member depressed or mentally ill, or did a household member attempt suicide? Yes No If yes
    enter 1 _____

10. Did a household member go to prison? Yes No If yes enter 1 _____

Now add up your "Yes" answers: _____ This is your ACE Score.

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