Adverse Childhood Experiences and Arrest Patterns in a Sample of Sexual Offenders

Jill S. Levenson[1] and Kelly M. Socia[2]

Abstract

Developmental psychopathology theories suggest that childhood adversity can contribute to antisocial conduct and delinquent activities. The purpose of this study was to explore the influence of adverse childhood experiences (ACE) on arrest patterns in a sample of sexual offenders (*N* = 740). Higher ACE scores were associated with a variety of arrest outcomes, indicating that the accumulation of early trauma increased the likelihood of versatility and persistence of criminal behavior. Rapists of adults had higher ACE scores, lower levels of specialization, and higher levels of persistence than sex offenders with minor victims only. Child sexual abuse, emotional neglect, and domestic violence in the childhood home were significant predictors of a higher number of sex crime arrests. For measures of nonsexual arrests and criminal versatility, it was the household dysfunction factors—substance abuse, unmarried parents, and incarceration of a family member—that were predictive, suggesting that family dysfunction and a chaotic home environment contributed significantly to increased risk of general criminal behavior. Sex offenders inspire little sympathy in our society but may be among those most in need of trauma-informed models of treatment that recognize the influence of early adversity on maladaptive schema and self-regulation deficits related to criminal behavior.

[1]Barry University, Miami, FL, USA
[2]University of Massachusetts, Lowell, USA

Corresponding Author:
Jill S. Levenson, Barry University, 11300 NE 2nd Ave., Miami, FL 33161, USA.
Email: jlevenson@barry.edu

Sexual violence is a serious social problem with far-reaching consequences for victims, their families, and communities, and has even been called a public health crisis (Black et al., 2011; Centers for Disease Control and Prevention [CDC], 2004; Kaufman, 2006; McMahon, 2000; Tabachnick & Klein, 2011). Thus, the etiology of sexually abusive behaviors has been an important topic for researchers, and childhood adversity has been identified as a possible set of contributing factors. The Adverse Childhood Experiences (ACE) study, a collaborative research project between the CDC and Kaiser Permanente, revealed compelling evidence of the prevalence and enduring nature of early trauma among American adults. Indeed, the accumulation of childhood trauma has been associated with a greater risk of psychosocial problems, addictions, and medical ailments (Felitti et al., 1998). Both male and female sex offenders have higher rates of child maltreatment and family dysfunction than the general population (Gannon, Rose, & Ward, 2008; Jespersen, Lalumière, & Seto, 2009; Levenson, Willis, & Prescott, 2014a, 2014b; Reavis, Looman, Franco, & Rojas, 2013; Turner, Miller, & Henderson, 2008; Wijkman, Bijleveld, & Hendriks, 2010). The purpose of the current study was to explore the relationship between ACE and adult arrest patterns in a sample of sexual offenders.

Early Adversity and Developmental Psychopathology

In 1997, the CDC embarked on a study of more than 17,000 patients of the Kaiser Permanente health program to determine rates of childhood trauma in the United States and its relation to adult health. The participants completed the ACE survey, a scale asking 10 dichotomous questions (yes/no) about childhood abuse, neglect, and family dysfunction (Felitti et al., 1998). The ACE study found substantial prevalence rates of *abuse* (emotional = 11%, physical = 28%, and sexual = 21%), *neglect* (emotional = 15%, physical = 10%), and *household dysfunction* (domestic violence = 13%, parents not married = 23%, or the presence of substance abuse (27%), mental illness (19%), or an incarcerated (5%) member of the household). The results confirmed that child maltreatment and suboptimal home environments are common in American families.

One's ACE score reflects the number of different types of ACE endorsed by the individual, with a higher score signifying the accumulation of diverse trauma. Multiple forms of child abuse and household dysfunction often occur simultaneously and having experienced one adverse event significantly increased the odds of reporting other adversities (Dong et al., 2004; Finkelhor, Turner, Hamby, & Ormrod, 2011). Research has clearly and consistently demonstrated the negative impact of childhood trauma on behavioral, medical, and psychosocial well-being in adulthood (Anda, Butchart, Felitti, & Brown, 2010; Briere & Elliot, 2003; Felitti et al., 1998; Maschi, Baer, Morrissey, & Moreno, 2013). As ACE scores increase, so does the risk for a variety of problems in adulthood, including chemical dependency, suicidality, depression, cigarette smoking, heart and pulmonary illnesses, obesity, liver disease, intimate partner violence, early initiation of sexual activity, promiscuity, sexually transmitted diseases, and unintended pregnancies (Felitti et al., 1998).

Developmental psychopathology theorists argue that patterns of behavioral adaptation stem from a dynamic interaction of affective and cognitive processing by which individuals attach meaning to their experiences and ultimately "establish a coherence of functioning as a thinking, feeling human being" (Rutter & Sroufe, 2000, p. 265). Child maltreatment creates a pathogenic relational environment that deprives children of experiences that promote adaptive functioning across the life span (Cicchetti & Banny, 2014; Rutter, Kim-Cohen, & Maughan, 2006). Children who are maltreated in childhood are socialized into relationships characterized by betrayal and invalidation, which exacerbate the impact of child abuse and contribute to maladaptive cognitive schema, disorganized attachment patterns, and emotional dysregulation common in *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*) Cluster B personality traits (Chakhssi, Ruiter, & Bernstein, 2013; Loper, Mahmoodzadegan, & Warren, 2008; Young, Klosko, & Weishaar, 2003). Criminal behavior is but one of the negative sequelae of childhood trauma.

Developmental theories of antisocial behavior suggest that inept parenting, harsh or inconsistent discipline, poor supervision, and limited positive parental involvement increase risk for conduct problems and delinquent activities (Cicchetti & Banny, 2014; Kohlberg, Lacrosse, Ricks, & Wolman, 1972; Patterson, DeBaryshe, & Ramsey, 1990; Rutter et al., 2006). This complex biopsychosocial trajectory is further affected by cascade effects (cumulating consequences) by which an early disadvantage in one domain impacts functioning and mastery in other developing areas (Masten & Cicchetti, 2010; Rutter et al., 2006). For instance, negative or traumatic early childhood experiences can lead to behavioral problems which, when carried over into

the school setting, can compromise academic and social competence. Children who elicit negative feedback from teachers and prosocial classmates may be at increased risk for association with delinquent peers, who provide a climate of social acceptance while reinforcing antisocial behavior (Rutter et al., 2006). Early environmental stressors can stimulate the overproduction of stress hormones associated with hyperarousal and anxiety (such as cortisol), inhibiting the growth and connection of neurons and manifesting in affect and behavioral dysregulation, problems with social attachments, and declines in cognitive processing (Alink, Cicchetti, Kim, & Rogosch, 2012; Anda et al., 2006; Anda et al., 2010; Creeden, 2009; National Scientific Council on the Developing Child, 2012; Patterson et al., 1990).

ACE and Criminal Offenders

Childhood adversity is commonly found in the histories of criminal offenders. In a national study of state prison inmates, 14% of males and 38% of females reported childhood physical or sexual abuse (Harlow, 1999). In addition to child abuse, inmates often report violence in their families of origin, and many experienced the death of a family member, parental separation or abandonment, foster care placement, or parental substance abuse (Courtney & Maschi, 2013; Harlow, 1999; Haugebrook, Zgoba, Maschi, Morgen, & Brown, 2010; Maschi, Gibson, Zgoba, & Morgen, 2011). Prospectively collected data from the Chicago Longitudinal Study ($N = 1,539$ low-income minority children) identified child maltreatment as a predictor of criminal behavior for both boys and girls (Mersky, Topitzes, & Reynolds, 2012). Childhood trauma is clearly associated with adult criminality, and among criminal offenders, greater exposure to adverse events is significantly associated with mental health disorders and serious involvement in drugs and crime (Harlow, 1999; Messina, Grella, Burdon, & Prendergast, 2007).

Chronic exposure to deprivational, harsh, or threatening conditions as a child produces anxiety, anger, and depression, along with a sense of helplessness (Cicchetti & Banny, 2014; Creeden, 2009; Felitti, 2002; Felitti et al., 1998; National Scientific Council on the Developing Child, 2012; Whitfield, 1998). Patterson et al. (1990) referred to pathogenic parenting practices as "disruptors" (p. 267) which hamper family functioning and model maladaptive behavior. Examples of such disruptors include criminality, family violence, and capricious punishment or parental irritability, all of which can be exacerbated by impoverished socioeconomic conditions. While individuals vary in their responses to trauma, and many people demonstrate resilience following adverse circumstances, traumagenic environments may be most

disabling to those with negative personality traits and limited intellectual or social resources (Patterson et al., 1990).

ACE and Sex Offenders

Sexual offenders have significantly higher ACE scores than males in the general population (Levenson et al., 2014b; Reavis et al., 2013). A study of adult male sexual offenders ($N = 679$) compared ACE scores with those of males in the CDC sample, finding that sex offenders had more than 3 times the odds of child sexual abuse (CSA), nearly twice the odds of physical abuse, 13 times the odds of verbal abuse, and more than 4 times the odds of emotional neglect or having unmarried parents (Levenson et al., 2014b). Weeks and Widom (1998) also found higher rates of early maltreatments for sex offenders, with 26% revealing CSA, 18% reporting neglect, and two thirds reporting that they were victims of physical abuse. Several studies have confirmed that the prevalence of ACE is also higher for female perpetrators of sexual abuse than nonoffenders (Gannon et al., 2008; Levenson et al., 2014a; Turner et al., 2008; Wijkman et al., 2010).

Child maltreatments typically coexist with other types of household dysfunction, and many sex offenders were raised in disordered social environments by caregivers who were poorly equipped to protect their children from harm (Levenson et al., 2014a, 2014b). For instance, less than 16% of sex offenders reported no adverse experiences and almost half endorsed four or more (Levenson et al., 2014b). In a similar analysis, 48% of male interpersonal violence offenders (child abusers, domestic violence assaulters, sex offenders, and stalkers) reported four or more adverse experiences, compared with 9% of the males in the CDC study, and only 9.3% reported no adverse events in childhood—a striking contrast to 38% of males in the CDC study (Reavis et al., 2013).

Sex offenders have higher rates of CSA than nonsex offenders (Jespersen et al., 2009), and those with a sexual abuse history are more likely to have younger victims and pedophilic interests (Nunes, Hermann, Renee Malcom, & Lavoie, 2013). Rapists of adults are more likely to have physical abuse and parental violence in their backgrounds, though emotional abuse is common among all paraphilic types of offenders (Jespersen et al., 2009). Early meta-analyses (Hanson & Bussiere, 1998; Hanson & Morton-Bourgon, 2005) observed that childhood abuse history was not associated with sexual recidivism, but more refined and recent findings point to a link between CSA and sexual recidivism for high-risk sex offenders (Nunes et al., 2013).

It is unsurprising that early adversity is associated with delinquent behavior. An adverse family environment can create a fertile breeding ground for

maladaptive interpersonal patterns, including general and sexual criminal behavior. Inept parenting over time enables the accumulation of transactions that directly reinforce dysfunctional relational styles and reduces opportunities for exposure to (and rehearsal of) healthier interaction skills (Rutter et al., 2006). A lack of healthy emotional intimacy in a childhood environment can contribute to subsequent impersonal, selfish, or adversarial relationship patterns, as well as tolerant attitudes toward nonconsensual sex (Hanson & Morton-Bourgon, 2005). General criminal conduct and sexually abusive behavior may be among the coping responses that emerge from early traumatic experiences.

In fact, several studies have noted that criminal versatility is not uncommon among sexual abusers and that patterns of specialization and generalization exist (Francis, Harris, Wallace, Soothill, & Knight, 2013; D. A. Harris, Knight, Smallbone, & Dennison, 2011; D. A. Harris, Mazerolle, & Knight, 2009; D. A. Harris, Smallbone, Dennison, & Knight, 2009; Lussier, LeBlanc, & Proulx, 2005; Miethe, Olson, & Mitchell, 2006). For instance, child molesters have been found to specialize in sex offending while rapists of adults tend to be more versatile across their criminal careers (D. A. Harris et al., 2011; D. A. Harris, Smallbone, et al., 2009; Lussier et al., 2005). Rapists were more likely to have an earlier onset of sexual offending (Francis et al., 2013), and versatile sex offenders were more likely than specialists to possess traits of general antisociality rather than sexual deviance (D. A. Harris, Smallbone, et al., 2009). In general, sexual offenders tend to have diverse criminal histories, though less is known about the influence of early adversity on their offense patterns.

Purpose of the Current Study

The purpose of this study was to explore the influence of ACE on arrest patterns in a sample of sexual offenders. Based on developmental theories of criminal behavior, it was hypothesized that higher ACE scores would be associated with measures of criminal versatility and persistence. A more exploratory research question was to identify the influence of various types of childhood adversity on criminal and sexually abusive behavior.

Method

Participants

A nonrandom convenience sample of sexual offenders was surveyed in outpatient (72%) and civil commitment (28%) treatment programs in the United

States. An invitation was posted on the professional Listserv of the Association for the Treatment of Sexual Abusers to solicit treatment providers who could in turn recruit sex offender client participants. The data collection sites were located in New Jersey, Illinois, Texas, Florida, Georgia, Maryland, Montana, Washington, and Maine. All clients attending treatment at the outpatient or inpatient programs (approximately 1,000) were invited to participate, and a total of 740 sex offenders (response rate = approximately 74%) voluntarily agreed to complete the survey. Outpatient sex offender treatment programs typically serve clients who have been mandated to treatment by the court as part of their parole requirements following a criminal conviction, or as part of a family court case plan related to a child protective services investigation, though in this sample 2.9% reported no arrest history and voluntarily sought treatment. Civilly committed sex offenders are being treated in a secure facility following their incarceration sentence.

The sample for the current study was comprised of 740 male (93.5%) and female (6.5%) adult sex offenders. Sample demographics are displayed in Table 1. Most participants were White (68%) and the majority (71%) were between 31 and 60 years of age, with 20% aged 30 years or younger and 9% older than 60 years of age. Nearly two thirds (62%) of the sample had completed high school or obtained a Graduate Equivalency Diploma (GED) as their highest educational achievement, and one in five identified themselves as college graduates. More than half (59%) earned less than US$30,000 in the last year they earned income. Almost half (46%) of the sex offenders had never been married, with 16% currently married, 35% divorced or separated, and 3% widowed.

Table 2 describes the characteristics of the participants' offenses and victims. Participants answered a series of questions about victim characteristics, taking into account their index offense, any prior arrests, and any undetected offending, and endorsed whether they had ever had a victim in any of the gender, age, or relationship categories listed in Table 2 (totals do not add up to 100% because some endorsed multiple categories). Not shown in the table is that 68% reported that their index (most recent) sex crime arrest involved sexual contact with a minor, 9% reported sexual assault of an adult, and 23% involved a noncontact offense such as child pornography (12%), Internet solicitation (7%), exposure of genitals (3%), or voyeurism (1%).

Although most sex offenses involve perpetrators and victims who are known to each other (Bureau of Justice Statistics, 1997, 2010), in this sample 34% reported a stranger victim, likely because 28% of the participants were civilly committed. When asked if they had ever had a stranger victim, 62% of the civilly committed offenders endorsed "yes" compared with 25% of the outpatients. Consistent with statutory criteria used to determine whether a

Table 1. Sample Demographics.

Demographic Categories	% (N = 740)
Race	
White	68
Minority	32
Gender	
Male	93.5
Female	6.5
Age (years)	
18-30	20
31-40	22
41-50	30
51-60	19
Older than 60	9
Marital status	
Never married	46
Married	16
Divorced/separated	35
Widowed	3
Education	
Not high school graduate	18
High school graduate or GED	62
College graduate or higher	20
Income	
Under US$20,000	41
US$20,000-US$29,999	18
US$30,000-US$49,999	20
US$50,000+	21

Note. GED = Graduate Equivalency Diploma.

person is eligible for civil confinement in the United States, civilly committed sex offenders had a significantly ($p < .05$) higher mean number of sex crime arrests (2.3, $SD = 1.5$) than outpatients (1.2, $SD = .79$).

Most participants (67%) reported that they had been arrested once for a sex crime, 18% reported twice, and approximately 12% reported three or more sex crime arrests (see Table 2). Almost half (45%) said they had no nonsexual arrests, 16% had been arrested once for a nonsexual crime, 10% had been arrested twice, and 29% had three or more arrests. Participants reported a median number of two total sex offense victims, including those they had not been arrested for (mode = 1, $M = 20$, $SD = 169$). Three

Table 2. Offense and Victim Characteristics.

Characteristic	Valid *n*	%/M	SD	Range
Female victim	710	76%		
Male victim	705	28%		
Family victim	706	40%		
Unrelated victim	706	48%		
Stranger victim	710	34%		
Victim younger than 12 years	712	51%		
Teen victim	704	56%		
Adult victim	701	29%		
Ever used force	711	22%		
Ever used weapon	718	8%		
Ever caused injury	715	9%		
Total sex crime arrests	713	1.49	1.1	0-12
Total victims	664	19.5[a]	168.83	0-3,978
Total nonsex arrests	714	1.5	1.61	0-4
Lifetime months in prison	699	83.26	100.32	0-540
Lifetime months on probation	665	45.68	48.64	0-252

Note. Percentages may not add up to 100% because some categories were not mutually exclusive.
[a]The average number of victims was skewed due to a few high-value outliers. The median number of victims was 2 and the mode was 1.

participants disclosed that they had more than 1,000 victims while 83% reported 10 victims or less and 68% reported 3 victims or less. Outliers can skew measures of central tendency and therefore the 5% trimmed mean (excluding the 5% highest and lowest values) was calculated, and the mean number of victims was then found to be 6. The inclusion of noncontact offenders may explain the extreme outlying cases; for instance, exhibitionism is known to be a highly compulsive and repetitive disorder and some men have engaged in the behavior thousands of times (McGrath, 1991; Morin & Levenson, 2008).

Instrumentation

A survey tool was developed for the purpose of collecting data about the prevalence of early trauma and adult outcomes. The first section of the survey consisted of the ACE scale (CDC, 2013), a 10-item dichotomous (yes/no)

scale in which participants endorse whether or not they had experiences prior to 18 years of age that included *abuse* (emotional, physical, and sexual), *neglect* (emotional and physical), and *household dysfunction* (domestic violence, unmarried parents, and the presence of a substance-abusing, mentally ill, or incarcerated member of the household). One's total ACE score is the sum of the number of items endorsed by that individual (range = 0-10).

The ACE categories were originally developed by adapting items from instruments that demonstrated validity and reliability in earlier studies: the Conflict Tactics Scale (Straus, Gelles, & Smith, 1990), the Child Trauma Questionnaire (Bernstein et al., 1994), and questions from a survey about sexual abuse (Wyatt, 1985). The test–retest reliability of the ACE scale was assessed by administering the survey twice to more than 600 participants and Kappa coefficients were found to range from good to excellent, indicating that retrospective reports of early abuse and household dysfunction were generally stable over time (Dube, Williamson, Thompson, Felitti, & Anda, 2004). Though no validity data are available on the ACE scale itself, a review of 40 studies assessing the validity of retrospective reports of ACE found that while underreporting of child maltreatments was common, false positives were rare (Hardt & Rutter, 2004). The authors concluded that this bias should not invalidate well-defined retrospective reports of childhood adversity. Finkelhor, Shattuck, Turner, and Hamby (2013) made attempts to improve the ACE scale by modifying some items and adding additional domains (e.g., peer victimization, community violence, illnesses and injuries, socioeconomic status) utilizing nationally representative samples. They found that these modifications led to more robust effects when measuring distress by trauma scores but confirmed that the child maltreatment items in the original ACE scale remained important contributors to the cumulative stress of childhood adversity (Finkelhor et al., 2013).

The second section of the survey collected information about 40 different adult health, mental health, and behavioral outcomes. Participants were asked to endorse dichotomous (yes/no) items. Findings reported here include only the criminal history questions, which asked about various types of arrests and can be seen in Table 4.

The third section of the survey used forced-choice categorical responses to ensure anonymity and asked questions about the characteristics of the sex offenses committed, such as victim age, gender, and relationship, as well as questions about the number of prior arrests. No information that could potentially identify offenders or victims was sought.

Data Collection

Federal guidelines for human subject protection were followed and the project was approved by an Institutional Review Board. Clients were

invited to complete the anonymous survey during regularly scheduled group therapy sessions at participating data collection sites. Clients were instructed not to write their names on the survey and to place the completed survey in a sealed box with a slot opening. Informed consent was provided in writing and explained verbally. To further ensure anonymity, participants were not required to sign a consent document. Completion of the survey was considered to imply informed consent to participate in the project.

Variables

Dependent variables. The primary purpose of the study was to explore the influence of ACE on arrest patterns, and four dependent variables were created for this purpose. The *arrest scale score* (possible range = 0-8) was comprised of eight dichotomous (yes/no) items asking whether or not the client had ever been arrested for different types of crimes (Table 4). The scale was intended to capture criminal versatility, with a higher score (endorsement of multiple crime categories) indicating engagement in a wider variety of criminal activities over the life span. Three other variables were intended to capture the persistence of criminal behavior as measured by the *number of sex crime arrests*, the *number of nonsex crime arrests*, and the *total number of arrests* (sex crime arrests + nonsex arrests). All of these variables were obtained via self-report in the survey.

Independent variables. The independent variables included the 10 dichotomous *ACE items* (yes/no; see Table 3) and the *total ACE score*, by which a higher score reflects a wider scope of childhood maltreatment and exposure to household dysfunction. As well, some demographic factors known to be related to criminal behavior were included as covariates: age (ordinal), gender (0 = *male*, 1 = *female*), marital status (0 = *married, divorced, separated,* or *widowed*, 1 = *never married*), and race (0 = *White*, 1 = *minority*). In the research literature, it is established that younger age and unmarried status are risk factors for criminal recidivism (Hanson & Morton-Bourgon, 2005) and that males and minorities are more likely to be arrested, providing a theoretical basis for inclusion of these factors.

Analyses

Descriptive statistics are reported for each of the survey items. Group comparisons and bivariate correlations were used to examine relationships between variables. Logistic regression was used to explore the influence of ACE score on arrest outcomes, and multivariate regression was used to

Table 3. ACE Item Endorsement and Score Distribution (Valid *n* = 689).

	Total (*n* = 681)	Male (*n* = 635)	Female (*n* = 46)	
ACE Item Endorsement				
Childhood Experience (<18)With . . .		% Responding "Yes"		χ^2
Verbal abuse	52	53	38	3.982*
Physical abuse	42	42	34	1.209
Child sexual abuse	38	38	50	2.847
Emotional neglect	37	38	40	0.150
Physical neglect	16	16	11	0.942
Parents not married	54	54	47	1.003
DV in home	24	24	23	0.010
Substance abuse in home	46	47	40	0.706
Mental illness in home	26	26	21	0.486
Incarcerated family member	23	23	17	0.804
Distribution of ACE Scores				
Total ACE Score		% With ACE Score		χ^2
0	15.7	16	20	*ns*
1	13.8	14	11	*ns*
2	12.8	13	15	*ns*
3	12.5	12	13	*ns*
4+	45.3	45	41	*ns*
M ACE score (*SD*)	3.51 (2.71)	3.54 (2.7)	3.2 (2.6)	*t* = .816

Note. ACE scores ranged from 0 to 10. ACE = adverse childhood experiences; DV = domestic violence.
*p < .05.

identify factors predicting diversity of criminal behavior and the number of total, sexual, and nonsexual arrests.

Results

Table 3 displays the proportion of participants endorsing "yes" to each ACE item and comparisons between males and females. Child maltreatment and household dysfunction were common, with both male and female sex offenders reporting higher rates than in the general population. The distribution of

Table 4. Arrest Scale Items.

Arrest Item Endorsement		
As an Adult, *Since You've Turned 18,* Which of the Following Have You Ever Experienced at Any Time?	%"Yes"	Valid *n*
Arrested for a driving crime	20	687
Arrested for DUI	16	688
Arrested for drug-related crime	20	687
Arrested for sexual crime	92	688
Arrested for nonsexual assault or battery crime	26	686
Arrested for a property crime	25	685
Arrested for a nonperson, nonproperty crime	17	678
Arrested for a prostitution crime	2	685

Distribution of Arrest Scores		
Total Arrest Score	% With Arrest Score	*n* With Arrest Score
0	5	38[a]
1	42	300
2	18	131
3	15	105
4+	20	140
M arrest score	2.15	714

Note. Total arrest score ranged from 0 to 7. DUI = driving under the influence.
[a]We do know that some of these respondents sought treatment voluntarily and some were referred by child protective services, and it is possible that some of the remainder with a score of zero may have pleaded down to a nonsexual crime that was not listed in the survey items (e.g., child abuse) and therefore they did not make an endorsement.

ACE scores revealed that fewer than 16% said that they experienced zero ACE (compared with 36% of the general population), and more than 45% endorsed four or more (compared with 12.5% of the general population). The only significant difference between males and females was found for verbal abuse with males having higher rates. The mean ACE score was 3.5 (median = 3, $SD = 2.71$).

Table 4 shows the proportion of sex offenders who endorsed a variety of criminal arrests. One in five had been arrested for a drug-related or driving
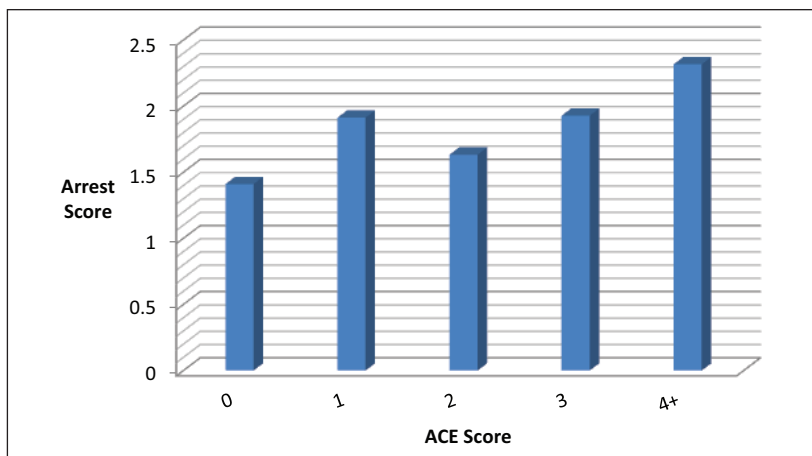
Figure 1. Average arrest scale score by ACE score.
Note. Scores above 4 on both scales were collapsed into a score of 4+.
ACE = adverse childhood experiences.
Pearson correlation = .28, $p < .01$.

under the influence (DUI) crime and more than a quarter had a history of nonsexual assault. When the items were tallied into a scale (Cronbach's $\alpha = .63$), 20% had endorsed four or more of the eight items, and the mean score was 2.15.

ACE scores were significantly correlated with arrest scores ($r = .28$, $p < .01$). There was an incremental increase in the mean arrest score as more ACE items were reported (see Figure 1). In other words, as ACE scores increased, so did the number of arrest items endorsed. The exception to this pattern was that those with an ACE score of 1 had a higher arrest score than those with a score of 2.

The ACE score was significantly associated with a higher level of criminal persistence, as measured by the number of nonsex arrests ($r = .27$, $p < .01$), sex crime arrests ($r = .20$, $p < .01$), and total arrests ($r = .31$, $p < .01$). A higher ACE score was also significantly associated with a higher arrest score, which was a measure of criminal versatility ($r = .28$, $p < .01$). Because rapists of adults have been found to be more versatile offenders than child molesters, group comparisons were conducted to discover whether those with adult victims were different from those with minor victims. Sex offenders with adult victims were more persistent and versatile, with a significantly higher mean number of nonsexual arrests (2.15 vs. 1.16, $t = 7.551$, $p < .001$) and total arrests (4.13 vs. 2.44, $t = 9.828$, $p < .001$), and a higher arrest score (2.85 vs.

1.88, $t = 7.826$, $p < .001$). Those with adult victims also had significantly higher ACE scores (4.34 vs. 3.22, $t = 4.854$, $p < .001$), indicating that they had endured a wider scope of childhood trauma. A variable was created to designate specialists as those for whom sexual offenses constituted more than half of their total number of arrests (D. A. Harris et al., 2011), and 51% of the sample met this criteria. When those with adult victims were compared with those with only minor victims, the minor-only offenders were significantly more likely to be specialists than rapists of adults ($\chi^2 = 16.883$, 1, $p < .001$).

Regression techniques were used to further examine the influence of childhood adversity on arrest patterns. Missing data reduced the sample size in all models by casewise (listwise) deletion; however, power analysis determined that to detect a medium effect size with 14 predictors, a sample size of 194 would be sufficient (Faul, Erdfelder, Lang, & Buchner, 2007). All regression analyses included more than 600 participants after casewise deletion. Preliminary analyses were conducted to check for normality, outliers, and collinearity. Residuals were observed in the probability plots and revealed no major deviations. Standardized residuals were checked and seven cases had values above 3.0 or below −3.0, indicating outlying values in the number of arrests. As these cases amounted to only about 1% of the cases, and the range of the number of arrests reported in these cases was 8 to 13, the decision was made to include them in the analyses. The maximum Cook's Distance was .051, indicating that outliers were not a significant problem. The variance inflation factors were all well below 10, and tolerance was well above .10, indicating that multicollinearity was not problematic.

Logistic regression is used to examine the influence of an independent variable on a dichotomous dependent variable, and in this case was used to explore the influence of the ACE score on each arrest scale item. The Wald statistic is calculated for each independent variable to determine the statistical significance of the value of β, the correlation coefficient that measures the strength of the relationship (Pampel, 2000). The square of the ratio of β to the standard error (*SE*) equals the Wald statistic. The Wald Statistic indicates whether the variable is a significant ($p < .05$) predictor and contributes to the model more than would be expected by chance. Exp(*B*) is the proportional change in the odds of the outcome occurring for each unit increase in the independent variable (ACE score). When the odds ratio is greater than 1, increasing values of the independent variable increase the odds of the dependent variable's occurrence. The variance explained by the model is indicated by the Nagelkerke R^2, and the difference in explained variance as each subsequent block is entered is called the R^2 change ($R^2\Delta$). It should be noted that logistic regression does not conform to the assumptions of ordinary least squares models because the errors of nonparametric variables cannot be

Table 5. Logistic Regression: ACE Score Predicting Arrest Scale Items.

	β	Wald	Exp(B)	Significance	R2	Valid n
Driving crime	.120	12.043	1.128	.001	.028	687
DUI	.040	1.123	1.041	.289	.003	688
Drug-related crime	.092	6.864	1.096	.009	.016	687
Sexual crime	.107	3.919	1.112	.048	.013	688
Nonsexual assault or battery	.234	48.118	1.263	<.001	.107	686
Property crime	.199	35.398	1.221	<.001	.078	685
Nonperson, nonproperty crime	.169	19.696	1.184	<.001	.049	678
Prostitution	.246	7.003	1.279	.008	.054	685

normally distributed and cannot have constant variance (Fox, 1997). Therefore, the R^2 is somewhat artificial and, in hierarchical models, can best be interpreted as demonstrating the relative importance or meaningfulness of the contribution of each block of variables.

Table 5 illustrates that the ACE score significantly predicted all crimes except DUI. As the ACE score increased by 1 point, the likelihood of a driving crime in adulthood increased by 12.8%; a drug-related crime by 9%; a sexual crime by 11%; a nonsexual assault by 26%; a property crime by 22%; a nonperson, nonproperty crime (e.g., trespassing) by 18%; and a prostitution crime by 27%. However, it is apparent that the ACE score explained little variance in these outcomes, with the highest $R^2 = .11$ for nonsexual assault or battery.

Hierarchical multiple regression was used to assess the ability of individual ACE items to predict arrest score and total arrests as the dependent variables while controlling for the influence of known risk factors: age, gender, marital status, and race. First, age, gender, race, and marital status were entered in Step 1, and explained only 2% of the variance in criminal versatility, as measured by the arrest score. Only gender (female) contributed significantly (and inversely) to the model. ACE items were entered in Step 2, improving the model and explaining 12.8% of the variance in the dependent variable. This change was significant, $F(14, 637) = 6.683$, $p < .001$. Within the final model, age, gender (inverse), substance abuse in the home, and an incarcerated family member were significant ($p < .05$) predictors of increased criminal versatility.

To assess the influence of these variables on the total number of arrests, age, gender, race, and marital status were entered in Step 1, and explained 3% of the variance in the dependent variable. Age, gender (inverse), and minority

race contributed significantly to the model. ACE items were entered in Step 2, significantly improving the model and explaining 17% of the variance in the dependent variable, $F(14, 642) = 9.235, p < .001$. Within the final model, age, gender (inverse), parents not married, substance abuse in the home, and an incarcerated family member were significant predictors of an increased total number of arrests (Table 6).

The same variables were entered into a hierarchical multiple regression to predict the number of sexual and nonsexual arrests while controlling for known risk factors. Age, gender, race, and marital status were entered in Step 1, and explained 3% of the variance in the number of sex crime arrests, with age and never married contributing significantly to the model. ACE items were entered in Step 2, improving the model and explaining 10% of the variance in the dependent variable. This change was significant, $F(14, 640) = 4.951, p < .001$. Within the final model, age, never married, CSA, emotional neglect, domestic violence in the home, and an incarcerated family member were significant predictors of an increased number of sex crime arrests.

To assess the influence of these variables on the number of nonsexual arrests, age, gender, race, and marital status were entered in Step 1 and explained 2% of the variance in the number of sex crime arrests. Gender and minority race contributed significantly to the model. ACE items were entered in Step 2, improving the model and explaining 15% of the variance in the dependent variable. This change was significant, $F(14, 642) = 8.021, p < .001$. Within the final model, gender (inverse), unmarried parents, substance abuse in the home, and an incarcerated family member were significant predictors of an increased number of nonsex crime arrests (Table 7).

Discussion

The results indicate that childhood adversity increases the risk for criminal behavior problems in adulthood for sex offenders. These offenders had higher rates of early adversity in all categories compared with the general population, indicating that they were exposed to a multitude of childhood maltreatments and chaotic households. Higher ACE scores were associated with a greater assortment of arrest items, suggesting that the accumulation of early trauma increased the likelihood of versatility of criminal behavior. A substantial number of these sex offenders reported a history of multiple types of arrests; on average they had been arrested for two different crimes, with 20% of them endorsing at least four different types of arrests.

When looking at the influence of ACE score on each arrest scale item, we see that the largest effect is for nonsexual assault, suggesting that the accumulation of childhood adversity is a risk factor for future violent behavior.

Table 6. Variables Predicting Arrest Score and Total Arrests.

Model		*B*	*SE*	β	Significance
DV: Arrest score					
1	Age	.093	.050	.082	.062
	Gender (female)	−.632	.246	−.102	.010
	Race (minority)	.194	.129	.059	.133
	Never married	.033	.136	.011	.811
2	Age	.099	.048	.088	.039
	Gender (female)	−.542	.236	−.087	.022
	Race (minority)	.126	.129	.038	.327
	Never married	.009	.131	.003	.945
	Verbal abuse	.165	.161	.053	.307
	Physical abuse	.110	.164	.035	.504
	Child sexual abuse	−.096	.132	−.030	.467
	Emotional neglect	.044	.141	.014	.753
	Physical neglect	−.106	.187	−.024	.572
	Parents not married	.164	.127	.053	.197
	DV in home	.079	.160	.022	.621
	Substance abuse in home	.567	.134	.183	.000
	Mental illness in home	.221	.148	.062	.136
	Incarceration of a family member	.450	.149	.121	.003
DV: Total arrests					
1	Age	0.145	.070	.090	.037
	Gender (female)	−0.851	.339	−.099	.012
	Race (minority)	0.438	.182	.094	.016
	Never married	0.200	.191	.046	.294
2	Age	0.157	.066	.098	.018
	Gender (female)	−0.777	.319	−.090	.015
	Race (minority)	0.210	.179	.045	.239
	Never married	0.149	.180	.034	.409
	Verbal abuse	0.167	.222	.038	.452
	Physical abuse	−0.059	.226	−.013	.795
	Child sexual abuse	0.124	.181	.028	.494
	Emotional neglect	0.296	.196	.066	.131
	Physical neglect	−0.140	.257	−.023	.585
	Parents not married	0.347	.174	.080	.047
	DV in home	0.297	.219	.058	.176
	Substance abuse in home	0.418	.185	.096	.024
	Mental illness in home	0.241	.202	.049	.234
	Incarceration of a family member	1.166	.205	.224	.000

Note. DV = domestic violence.

Table 7. Variables Predicting Number of Sexual and Nonsexual Arrests.

Model		B	SE	β	Significance
DV: Total sex crime arrests					
1	Age	.114	.036	.140	.001
	Gender (female)	−.261	.173	−.059	.132
	Race (minority)	.142	.093	.059	.128
	Never married	.194	.098	.087	.047
2	Age	.116	.035	.142	.001
	Gender (female)	−.308	.170	−.070	.070
	Race (minority)	.085	.095	.035	.373
	Never married	.199	.096	.089	.038
	Verbal abuse	−.118	.119	−.053	.324
	Physical abuse	−.017	.121	−.008	.886
	Child sexual abuse	.207	.096	.090	.032
	Emotional neglect	.305	.104	.132	.004
	Physical neglect	−.170	.136	−.055	.214
	Parents not married	−.036	.093	−.016	.695
	DV in home	.287	.116	.110	.014
	Substance abuse in home	.091	.098	.041	.354
	Mental illness in home	.006	.108	.003	.952
	Incarceration of a family member	.344	.109	.129	.002
DV: Total nonsex arrests					
1	Age	.039	.051	.033	.451
	Gender (female)	−.605	.250	−.095	.016
	Race (minority)	.302	.134	.088	.025
	Never married	.024	.141	.008	.864
2	Age	.046	.049	.039	.348
	Gender (female)	−.487	.238	−.077	.041
	Race (minority)	.141	.133	.041	.290
	Never married	−.034	.134	−.011	.801
	Verbal abuse	.306	.165	.095	.065
	Physical abuse	−.051	.168	−.016	.761
	Child sexual abuse	−.071	.134	−.022	.596
	Emotional neglect	.007	.146	.002	.960
	Physical neglect	.027	.191	.006	.887
	Parents not married	.352	.130	.110	.007
	DV in home	.021	.163	.006	.897
	Substance abuse in home	.344	.137	.107	.013
	Mental illness in home	.229	.151	.063	.130
	Incarceration of a family member	.800	.152	.209	.000

Note. DV = domestic violence.

Other types of self-regulation deficits were also apparent in the findings: Higher ACE scores were associated with an increased likelihood of property crime, nonperson nonproperty crime, driving crimes, and prostitution crimes, all of which point to general self-management difficulties. Indeed, offending patterns may be viewed as behavioral and emotional deficiencies in the capacity to modulate interactions with others and to employ a flexible repertoire of coping strategies intended to ameliorate distress (Patterson et al., 1990; Rutter & Sroufe, 2000; Singer, 2013). Sex offenders with adult victims had higher ACE scores and, consistent with prior research on sex offender specialization and generalization, higher measures of criminal versatility and persistence (Francis et al., 2013; D. A. Harris et al., 2011; D. A. Harris, Smallbone, et al., 2009; Lussier et al., 2005).

Another notable finding is that CSA, emotional neglect, and domestic violence in the childhood home were all significant predictors of the total number of sex crime arrests but not for nonsex arrests, total arrests, or criminal versatility. Prior research has found that CSA rarely occurs in isolation and often overlaps with other negative childhood experiences, taking place in a disordered social environment that provides inadequate protection against such incidents (Dong, Anda, Dube, Giles, & Felitti, 2003). Developmental psychopathology theories postulate that traumagenic households lacking appropriate models of emotional and behavioral regulation encourage adoption of maladaptive coping behaviors and reinforce distorted schema about relationships (Bloom & Farragher, 2013; Cicchetti & Banny, 2014; Patterson et al., 1990; Rutter & Sroufe, 2000; Young et al., 2003). Sexualized coping may be a way of soothing distress and/or meeting needs for intimacy, affection, attention, and control, and this may be especially true for sex offenders with a childhood history of molestation.

It is interesting that none of the child maltreatment items were significant in any of the other arrest models. In other words, it was the household dysfunction items—substance abuse in the childhood home, unmarried parents, and incarceration of a family member—that were predictive of a higher number of arrests. This suggests that family dysfunction and a chaotic home environment contribute to an increased risk of general criminal behavior. Though older age is a predictor of desistance among sexual offenders (Barbaree & Blanchard, 2008; Hanson, 2006; Hanson & Morton-Bourgon, 2005), in these models older age predicted the accumulation over the life span of a greater number of arrests of all sorts.

Implications for Practice and Policy

These findings have implications for sex offender treatment as well as for policies that seek to interrupt the cycle of interpersonal violence for

maltreated children. First, the results underscore the need for sex offender clinicians to assess the existence of early adversity and to understand the unique ways in which childhood trauma potentially contributes to maladaptive and repetitive criminal adult behavior. Exploring the role of traumatic events in the development of high-risk behaviors should be part of the therapeutic process for sex offender clients; research indicates that posttraumatic growth can be enhanced when individuals develop an understanding of the personal meaning attached to abuse and its impact on one's life (Easton, Coohey, Rhodes, & Moorthy, 2013). Opportunities to examine the possible connections between early trauma and adult functioning can promote emotional growth and behavioral change (Easton et al., 2013; Young et al., 2003). Sex offenders' perceptions of the maltreatment events early in their lives have been shown to influence their styles of coping with psychosocial stressors and associated affect (Abbiati et al., 2014). Thus, helping sex offender clients examine the impact of traumatic childhood experiences on their adult functioning might lead to improved therapeutic outcomes for sex offenders (Abbiati et al., 2014; Levenson, 2014), including reduction of anxious and insecure attachment styles (Grady, Swett, & Shields, 2014).

Sex offenders inspire little sympathy in our society but may be among those most in need of trauma-informed models of therapy that acknowledge the influence of early adversity on maladaptive schema and self-regulation deficits (Abbiati et al., 2014; Chakhssi et al., 2013; Grady et al., 2014; Levenson, 2014; Levenson et al., 2014b; Reavis et al., 2013; Singer, 2013). Trauma-informed practice recognizes the prevalence and impact of violence and victimization on psychosocial development and coping strategies while emphasizing strengths over pathology and skills building over symptom reduction (Elliott, Bjelajac, Fallot, Markoff, & Reed, 2005; M. E. Harris & Fallot, 2001). Some scholars have already begun to encourage the use of sex offender treatment methods that model compassion and respect, and which strive to promote an atmosphere of accountability without overt confrontation, which can replicate disempowering family dynamics (Levenson, 2014; Marshall, 2005; Marshall, Burton, & Marshall, 2013; Yates, Prescott, & Ward, 2010).

In terms of policy, it is well-established that ACEs are associated with increased risk for adult psychopathology and criminal behavior. The cumulative stress of childhood adversity leads to social, emotional, and cognitive impairment, facilitates the adoption of high-risk behaviors as coping strategies, and culminates in vulnerability to psychosocial problems at rates higher than in the general population (Felitti et al., 1998). In fact, childhood adversity has been referred to as a public health issue (Anda et al., 2010; Felitti, 2002), and the CDC has called for prioritizing prevention and early

intervention programs to benefit youngsters growing up in disadvantaged environments. Such policies would be cost-effective for society over the long-term, and early intervention is crucial in halting the cycle of intergenerational victimization.

American social policies have historically responded to the problem of child maltreatment by emphasizing the roles of offender punishment and child placement instead of primary prevention. Children who experience early adversity are at increased risk for polyvictimization and thus for more persistent trauma symptoms (Finkelhor et al., 2011). Numerous studies have established that today's children who endure maltreatment and family dysfunction are more likely than nonabused youngsters to become the criminal offenders of tomorrow (DeHart, 2009; Harlow, 1999; Mersky et al., 2012; Topitzes, Mersky, & Reynolds, 2012; Widom & Maxfield, 2001). Legislatures typically offer little opposition to funding criminal justice initiatives, whereas prevention programs and social services are often among the casualties of budgetary cutbacks. Consequently, victims of child abuse may go without treatment, child protective services and foster care programs are inadequately funded, and parenting enhancement programs are utilized much less frequently than punitive criminal justice responses. Investing in a panoply of prevention services for maltreated children and at-risk families is an important step in disrupting the cycle of interpersonal violence and crime in our communities (Felitti, 2002; National Scientific Council on the Developing Child, 2012; Tough, 2011).

Limitations

There are four main limitations to this study. First, all information was provided by offender self-report, and the design of the study did not allow for review of official documentation to confirm the veracity of responses. The respondents may have provided biased information due to impression management, a desire to hide embarrassing behaviors or experiences, or exaggeration of early trauma experiences in a ploy to gain sympathy or excuse behavior. However, it is possible that some offenders may not readily recognize early adverse experiences as pertaining to themselves, perhaps underreporting child maltreatment. Second, we did not ask the participants to distinguish between felony and misdemeanor arrests, which might have been informative. Third, the participants were all in treatment programs and therefore the findings might not generalize to the full population of sexual offenders. Finally, given the retrospective and cross-sectional nature of the research design, statements of causal influence cannot be made. The exploratory analyses do suggest, however, that a relationship exists between early

adversity and adult arrest patterns. Further research is planned to better understand the intermediate effects in the pathway from early trauma to adult criminal behavior.

Conclusion

A substantial number of these sex offenders reported a variety of criminal behaviors, and ACEs were associated with increased versatility and persistence in offending. Sex offender treatment providers should recognize the prevalence and role of early trauma in the lives of clients. Because self-regulation problems can represent dynamic risk factors for reoffending, sex offender treatment models should integrate interventions that respond to specific criminogenic needs and implement trauma-informed methods that enhance responsivity (Andrews & Bonta, 2010; Hanson, Bourgon, Helmus, & Hodgson, 2009; Levenson, 2014). Because prevention is the best cure, early interventions for at-risk families and maltreated youth may disrupt their trajectory toward criminal behavior in adulthood, including sexual violence.

Declaration of Conflicting Interests

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Author Biographies

Jill S. Levenson is currently an Associate Professor of Social Work at Barry University in Miami, FL. She is also a licensed clinical social worker with over 25 years of practice experience treating victims, survivors, and family members of child maltreatment and sexual abuse. Dr. Levenson researches the impact and effectiveness of social policies and therapeutic interventions designed for sexual offenders.

Kelly M. Socia is an assistant professor in the School of Criminology and Justice Studies at the University of Massachusetts, Lowell. His research interests include offender reentry and recidivism, registered sex offenders, public policymaking, geographic information systems, and spatial analyses.