Do Social Bonds Buffer the Impact of Adverse Childhood Experiences on Reoffending?

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Abstract

Research from multiple disciplines has reported that exposure to childhood traumatic events, often referred to as adverse childhood experiences (ACEs), increases an individual's chances of experiencing a wide variety of negative consequences such as chronic disease, unemployment, and involvement in serious, violent, and chronic offending. The current study assesses how protective factors from social bonds may moderate the relationship between ACEs and future offending in a sample of high-risk adjudicated youth. While results showed that increased ACE exposure led to a higher likelihood of rearrest and more social bonds lowered the likelihood of rearrest, in contrast to expectations, the analyses revealed that stronger social bonds did not reduce the deleterious effects of exposure to more types of ACEs on recidivism. A discussion of these findings is offered, along with study limitations and future directions.

Keywords

social bonds, childhood trauma, recidivism, adverse childhood experiences

Introduction

It has been well established that childhood victimization and trauma have an array of adverse consequences in different life domains (cf. Felitti et al., 1998; Widom, 1989). Not surprisingly, there has been an increased focus on the effect that these childhood traumatic events, often referred to as adverse childhood experiences (ACEs), have on other outcomes later in life (Baglivio et al., 2014; Baglivio, Wolff, Epps, & Nelson, 2015; Fox, Perez, Cass, Baglivio, & Epps, 2015; Hillis et al., 2004). Recent studies have found that individuals who experience more types of ACEs are also more

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likely to be serious, violent, and chronic offenders (Baglivio, Wolff, Piquero, & Epps, 2015; Fox et al., 2015). Given the similar focus this work shares with developmental and life course perspectives (cf. Cullen, 2011; Farrington, 2003; Moffitt, 1993), the current study extends this line of research by assessing how the relationship between ACEs and future offending may be moderated by protective factors from social bonds (Hirschi, 1969) in a sample of high-risk adjudicated youth. Before presenting the results of the study, we provide a brief summary of existing research focusing on ACEs, social control theory, and how ACEs and the attachment component of the social bond may be related.

Evidentiary Backdrop

ACEs

The foundation for this study relies upon prior research that has assessed the role of ACEs on outcomes later in life (Baglivio et al., 2014; Baglivio, Wolff, Epps, et al., 2015; Baglivio, Wolff, Piquero, et al., 2015; Felitti et al., 1998; Fox et al., 2015; Hillis et al., 2004). ACEs as defined in the original research refer to the following 10 specific experiences: emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, violent treatment toward mother, household substance abuse, household mental illness, parental separation or divorce, and having a household member with a history of incarceration. Using a sample of privately insured, well-educated adults, Felitti and his colleagues (1998) found that those who had been exposed to more ACEs were more likely to be diagnosed with a chronic disease in adulthood. Similarly, other studies have also reported that having higher ACE exposure is associated with a change in brain functioning (Anda, Butchart, Felitti, & Brown, 2010), lower education and higher unemployment (Bellis, Lowey, Leckenby, Hughes, & Harrison, 2013), and a higher prevalence of risk-taking behaviors such as having 50 or more sexual partners, smoking, recent violence, having spent at least one night in jail in the last 12 months, and drinking heavily (Bellis et al., 2013; Hillis et al., 2004).

An individual's ACE score is calculated by summing the total number of different types of ACEs they report experiencing, with each exposure type counting once. Thus, ACE scores range between 0 (*no ACEs experienced*) and 10 (*all ACEs experienced*) for each individual. Even if a respondent had reported being physically abused multiple times as a child, this experience would only count once. This is an important point as research has indicated that ACEs are not only highly correlated and co-occur nonrandomly but that they "have a powerful cumulative effect on human development" (Baglivio et al., 2014, p. 13) that can only be seen by studying the ACEs together as a collective measure as opposed to studying one or two specific exposure types (see also Anda et al., 2010; Dong et al., 2004).

Although the original study by Felitti and colleagues (1998) utilized a sample of well-educated adults, results suggest, not surprisingly, that ACEs are more prevalent among youth involved with the juvenile justice system (Baglivio et al., 2014; Dierkhising et al., 2013). There is a long tradition of research examining childhood abuse and neglect and juvenile antisocial behavior, showing maltreatment is predictive of delinquency, increased recidivism, violent crimes, incarceration, and earlier onset of antisocial behavior (Dembo et al., 1995; Maxfield & Widom, 1996; Rivera & Widom, 1990; Widom, 1989). Extending the work on maltreatment, recent studies have examined the relationship between ACE scores and offending. These studies have found that among justice system-involved youth, those with exposure to more of these adverse and negative events are more likely to be classified as higher risk to reoffend and engage in serious, chronic offending patterns than their counterparts with lower ACE scores (Baglivio et al., 2014; Baglivio, Wolff, Piquero, et al., 2015; Fox et al., 2015). Fox, Perez, Cass, Baglivio, and Epps (2015) recently reported that youth

with higher ACE scores were more likely to be serious, violent, and chronic juvenile offenders than those having lower ACE scores. Further, Baglivio, Wolff, Piquero, and Epps (2015) found that, controlling for related individual and family risk factors, ACE exposure distinguished between offending trajectories such that those with higher exposure were more likely to be chronic offenders than those with fewer ACEs. In the one study examining the ACE score and juvenile recidivism, youth with higher ACE scores were not only more likely to reoffend, but reoffended in less time postcompletion of community-based services such as probation supervision than youth with lower ACE scores (Wolff, Baglivio, & Piquero, 2015).

In sum, these findings suggest that youth with higher ACE scores that are involved with the juvenile justice system are not only more likely to be serious, chronic offenders but are also more likely to experience other negative life outcomes such as chronic diseases and unemployment. From a policy perspective, it is worthwhile to examine the extent to which some factors may be able to buffer the relationship between ACE scores and reoffending. By identifying these factors, well-tailored programs and strategies that target this group of adolescents can be implemented with the objective of reducing a variety of adverse life outcomes, including subsequent offending. Given its focus on protective factors, we draw upon Hirschi's (1969) social control theory in this article in order to assess some potential mechanisms. Next, we turn to a review of the key arguments and findings surrounding this theory.

Social Control Theory

Hirschi's (1969) social control theory is well suited for the identification of factors that are protective against offending, as it focuses upon the elements that constrain people from acting in their self-interest at the expense of others or the community. The theory's premise states that people are more likely to offend when their bond to society is weak or broken. Hirschi suggests that this bond is composed of four elements: attachment, commitment, involvement, and belief. Attachment is the emotional element of the social bond and refers to the individual's affection for and sensitivity to prosocial others. How much an individual is rationally invested in conventional society is referred to as their commitment to or their stake in conformity (Toby, 1957), while involvement denotes the time and energy they spend engaging in prosocial activities. The final element, belief, represents how much an individual accepts conventional society's norms regarding behavior. Hirschi puts forth this theory as an explanation for delinquency, arguing that youth who were strongly bonded, or in other words more attached, committed, involved, and had a higher belief in conventional norms, rules, and laws, were less likely to be delinquent than those who were less bonded. He also argued that the attachment element is the most important element of the social bond, as it insulates the youth from antisocial influences and motivates the youth to act prosocially in order to avoid disappointing those they care about. It is this attachment element of the social bond that is the focus of the current study.

In general, existing empirical evidence offers mixed support for Hirschi's (1969) theory, with most support emerging for the protective effects of attachment and commitment on offending (Costello & Vowell, 1999; Gottfredson, 2006; Kempf, 1993). Further, scholars using both cross-sectional and longitudinal analyses have found that juveniles who were more tightly bonded to their parents were less likely to be delinquent than those with weaker parental attachment (Bell, 2009; Craig, 2015; Demuth & Brown, 2004; Ingram, Patchin, Huebner, McCluskey, & Bynum, 2007). Scholars have also found nonparental attachments, such as attachment to school (Anderson, Holmes, & Ostresh, 1999) and nonrelative adults (Huebner & Betts, 2002), to be important for reducing delinquency, though these relationships were only significant for females. Recent work examining risk and protective effects and youth violence as part of the longitudinal Seattle Social Development

Project has found school attachment to be an essential factor for decreased violence (Herrenkohl, Lee, & Hawkins, 2012).

The current study is focused on the impact of attachment among juvenile justice–involved youth. Social control theory would suggest that these youth were low in attachment prior to the delinquent act that led to their justice system involvement. This leads to the issue of the relationship between prior delinquent acts on subsequent attachment. A few studies have examined this relationship and reported mixed results. Using the National Youth Survey, Agnew (1991) found that earlier delinquency did not impact later parental attachment, while Jang and Smith (1997) reported that prior delinquency reduced parental attachment among a sample of mid-adolescent youth from an urban area. Thus, it is possible that relative to nondelinquent youth, it is harder for delinquent youth to increase their attachment to conventional others. Additionally, as Thornberry (1987) articulated in his interactional theory of delinquency, perhaps attachment, particularly parental attachment, is more important in early adolescence than in mid- to late adolescence, when peers become more important. It is possible that an adolescent could form a close emotional bond with a conventional other after they have engaged in delinquency or other antisocial acts. It is this premise that many mentoring programs are based upon (Curtis & Bandy, 2015; Tierney, Grossman, & Resch, 2000) and this study seeks to investigate.

ACE Scores and Social Control Theory

Similar to the effects of prior delinquency on an individual's current social bonds, many ACEs seem to be indicative of low parental attachment, particularly if the ACEs the youth were exposed to were perpetrated by a parent or guardian. However, while these youth may initially have had weakened social bonds due to their exposure to these negative events, which Hirschi (1969) would argue is a key reason they committed their first offense, it does not necessarily prevent them from forming social bonds later. In other words, it is possible that juvenile justice–involved youth who have also experienced many negative and traumatic events early in life may be buffered from the negative impacts of these experiences by increasing their attachment to other conventional sources (see Laub & Sampson, 2003; Sampson & Laub, 1993). There is some evidence to support this claim. While many studies have found individuals who were victims of child abuse were more likely to offend later on than those who were not victims (Smith & Thornberry, 1995; Widom, 2003), others have found evidence of possible buffering factors. For example, Teague, Mazerolle, Legosz, and Sanderson (2008) found that victims of childhood physical abuse who reported receiving maternal support were less likely to offend as adults relative to those who did not receive such support.

Hypothesis

The theoretical and empirical evidence reviewed above leads us to hypothesize that the positive relationship between ACE scores and reoffending will be moderated by a youth's attachment to conventional others. As we describe below, the measure of attachment to conventional others used in the current study is comprised of several components that indicate the presence of close and trusting relationships between the youth and prosocial others, including individuals to whom the youth is and is not related. Given that many of the ACEs the youth was exposed to may have been perpetrated by a family member, our attachment measure takes that into account and allows for the youth to be attached to others outside of the family, such as a mentor or other prosocial adult. For example, a youth who suffered parental neglect may be more likely to be attached to a nonfamily member later in adolescence, so our measure of social bonds allows for this possibility. We investigate these issues within a unique, policy-relevant sample of adjudicated delinquents from a large diverse state in the Southeastern United States.

Method

Sample

This study analyzed data from the Florida Department of Juvenile Justice (DJJ). The sample consisted of a 3-year cohort of all youth who received an official referral (equivalent to an adult arrest) in Florida and subsequently completed a community-based placement (such as probation) between July 1, 2009, and June 30, 2012. All youth referred to DJJ are administered the Positive Achievement Change Tool (PACT) risk/needs assessment. The DJJ uses two versions of the PACT: the Pre-Screen and the Full Assessment. Although both tools provide recidivism likelihood composite scores (low-, moderate-, moderate-high-, or high-risk), the Full Assessment includes data about many additional domains of direct relevance to this study, including the youth's past and current relationships. Several empirical studies have found the PACT to be a valid predictor of continued juvenile justice system involvement (Baglivio, 2009; Baglivio & Jackowski, 2013; Baird et al., 2013; Winokur-Early, Hand, & Blankenship, 2012), with a total N in excess of 130,000. Both the Pre-Screen and Full Assessment are conducted through semi-structured interviews by a trained juvenile probation officer, a review of the youth's case file, and corroboration with available official child abuse and education records from other state agencies.

When youth enter the DJJ system, they are assessed using the Pre-Screen Assessment. If they evidence a moderate-high or high reoffending risk, then they are assessed using the Full Assessment. While under supervision, all low- and moderate-risk youth are reassessed every 180 days, and all moderate-high and high-risk youth every 90 days. In the event a low- or moderate-risk youth becomes higher risk, they are reassessed using the PACT Full Assessment.[1] In order to construct the ACE score and social bonds measures critical to this study, only youth administered a PACT Full Assessment were included, as only the Full Assessment contains the necessary items. As a result, the current study oversampled higher risk juvenile offenders resulting in the final sample of 28,169 youth being 39.1% low-risk, 16.4% moderate-risk, 30.3% moderate-high-risk, and 14.3% high-risk to reoffend. The total number of cases ($N = 28,169$) represents 21.5% of all community-based placement completions over the study period. As the DJJ policy is to screen all youth scoring moderate-high- and high-risk to reoffend with the Full Assessment, all youth excluded from the current study were low or moderate risk to reoffend.[2]

Measures: Dependent Variable

The outcome measure for this study was reoffending, measured as rearrest within 12 months after the youth completed the community-based placement. This measure was coded dichotomously where "1" indicated the youth was arrested at least once and "0" indicated the youth was never arrested during his or her 365-day follow-up period.[3] Forty percent of the youth in our sample were rearrested within 12 months of being released from supervision.

Measures: Key Independent Variables

All independent measures were taken from the PACT Full Assessment closest to the date the youth completed the community-based placement, which establishes the most accurate, up-to-date assessment of the youth's circumstances at the beginning of the follow-up period. This ensures we are predicting rearrest (the intent of the study) and not success of the services delivered during placement, which would require information related to dosage and fidelity of services. Using the exit PACT assures that the study used the profile of the youth after services were completed.

The central independent variable for this analysis was an index composed of 4 items that each measure a form of attachment to conventional others. The first measure reflects whether the youth

had any positive adult, nonfamily relationships at the time they completed their community supervision. This measure was coded such that "0" indicated having no positive adult relationships and "1" indicated having at least one such relationship. The second measure represented the degree to which the youth had prosocial community ties at the time they exited supervision, where "0" indicated the youth had no prosocial ties to the community and "1" indicated they had at least some prosocial ties. The third measure indicated whether the youth had prosocial friends they spent time with at the point they were released. This measure was coded where "0" represented that they did not spend time with any prosocial friends and "1" indicated they did spend time with prosocial friends. The fourth and final indicator represented whether the youth felt close to their prosocial parents or caretakers at the time they were released. This measure was coded where "0" indicated they did not feel close to their prosocial parents/caretakers and "1" indicated they felt close to at least one of their prosocial mother/female caretaker or father/male caretaker. These 4 items were summed in order to create an index ranging from 0 to 4 where "0" indicated no prosocial bonds and "4" indicated they had all four possible bonds. The mean social bonding score was 3.10 on a range from 0 to 4, indicating most of the respondents were fairly well bonded.[4]

Measures: ACE Score

The respondents' composite ACE score measure was constructed through a multipart process. First, if the youth indicated they had ever experienced one of the 10 ACE indicators, they were coded as "1" for that ACE; otherwise, they were coded as "0." Recall the 10 ACEs are emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, violent treatment toward mother, household substance abuse, household mental illness, parental separation or divorce, and having a household member with a history of incarceration. The total number of ACEs each youth experienced was then summed in order to create the overall ACE score, with a range of 0 to 10 where "0" indicated the youth had never experienced any of these events and "10" indicated they had experienced all of them at least once. The average ACE score was 2.64 on a range from 0 to 10 ($\alpha = .62$).[5]

Measures: Control Variables

The current analysis also included several relevant control variables, including the respondents' sex, age, race/ethnicity, socioeconomic status (SES), impulsivity, and antisocial peer associations. The youth's sex was controlled for, where "0" indicated female and "1" indicated male. Seventy-seven percent of the analysis sample was male. In order to control for age, the age the youth was when completing the community-based placement was also included in the analysis (mean = 17). The race/ethnicity variable was composed of two measures, each a dichotomous measure that indicated whether the youth was Black or Hispanic, with White as the reference group. Forty-six percent of the sample was Black, 15% of the sample was Hispanic, and the remaining 39% of the sample was White or of other race/ethnicity.[6] The youth's SES was derived through a measure of neighborhood disadvantage. The level of disadvantage present in the neighborhood in which each youth resided was based on the socioeconomic conditions present in the youth's census tract. American Community Survey data were used to measure concentrated disadvantage using six variables of (1) proportion of families living below the poverty line, (2) median family income (logged and reverse coded), (3) proportion of female-headed households, (4) unemployment rate, (5) proportion with a high school degree (reverse coded), and (6) proportion of households receiving public assistance. Confirmatory factor analysis indicated these measures loaded on a single factor. As such, they were standardized and combined to form an additive index of concentrated disadvantage ($\alpha = .879$). These items have been used in other work (Baumer, Messner, & Felson, 1998; Kubrin & Stewart, 2006), including examining ACE scores and Florida juvenile offenders (Baglivio, Wolff, Epps,

et al., 2015). The mean concentrated disadvantage score was .39 on a scale from −2.30 to 3.90, indicating that a slightly larger proportion of youth in the analysis sample live in areas characterized by marginally higher than average levels of disadvantage.

Two theoretically relevant individual-level risk factors were also included: impulsivity (Gottfredson & Hirschi, 1990) and antisocial peer associations (Burgess & Akers, 1966). The impulsivity measure indicated whether the youth was impulsive and acted before thinking. This was scored on a scale from 0 to 3, where "0" indicated they were not impulsive and "3" indicated they were highly impulsive. The mean impulsivity score was 1.00 on a range from 0 to 3, indicating most of the respondents scored low on this scale. In order to control for the influence of antisocial peers, we used an item that gauged whether at the time the youth completed their supervision they spent time with either antisocial peers and/or gang "members. If they indicated they had spent time with such peers, they" were coded as "1" and if they did not spend time with such peers they were coded as "0." Forty-seven percent of the sample indicated they had at least one antisocial or gang-affiliated friend.

Analysis Plan

After highlighting the bivariate relationships between the variables of interest, several logistic regressions were estimated in order to examine the potential for social bonds to moderate the relationship between ACEs and future reoffending. The first model represents our baseline model and included the control variables predicting the juveniles' rearrest. Next, the index for the respondents' social bonds was included in order to assess the independent effects of social bonds and ACEs on rearrest. The third and fourth models represent our moderation analyses and rely upon split samples in order to assess the role of ACEs on reoffending among those with lower social bonds and those with higher social bonds. This approach has the benefit of providing a specific regression estimate for each group and a method by which to calculate whether the regression coefficients are significantly different between groups (cf. Paternoster, Brame, Mazerolle, & Piquero, 1998). Based upon the distribution of the social bonds index, the sample was split such that the respondents scoring 2 or below on the index were coded as having weaker bonds (the bottom 25% of the distribution) and those scoring 3 or 4 were coded as having stronger bonds (the remaining 75% of the distribution).[7] Prior to estimating the logistic regressions and as an initial investigation for possible group differences, a *t*-test was conducted to assess the mean difference of ACE scores between those with stronger social bonds and those with weaker bonds. Next, the third logistic regression model estimated the effects of ACEs along with the other control variables on rearrest among those with stronger bonds. The fourth model also estimated the effects of these same variables on rearrest, but among those with weaker social bonds. Given that prior research has found discernable race and gender differences in social bonding (Craig, 2014; Huebner & Betts, 2002; Piquero, MacDonald, & Parker, 2002) and offending (Sampson & Wilson, 1995; Steffensmeier & Allen, 1996), all of the substantive models were also reestimated across split-sample analyses for race and gender.

Results

Bivariate Correlations

The bivariate correlations between all of the variables in the current study are presented in Table 1.[8] Of note is the small but negative significant relationship between social bonds and rearrest. The respondents' ACE score also has a small but positive significant relationship with rearrest. There is also a small and negative significant correlation between social bonds and ACE scores. Finally, multicollinearity does not appear to be an issue, as no correlation was greater than $r = .5$, and all postanalyses variance inflation factors were less than 1.19.

Table 1. Bivariate Correlations Between All Variables.

Variable	1	2	3	4	5	6	7	8	9	10
Rearrest	1.00									
Social bonds	−0.04*	1.00								
ACE score	0.04*	−0.26*	1.00							
Gender	0.14*	0.04*	−0.19*	1.00						
Age	0.04*	−0.06*	−0.04*	0.06*	1.00					
Black	0.10*	−0.01*	−0.05*	−0.02*	0.01*	1.00				
Hispanic	−0.02*	−0.01	−0.10*	0.05*	0.02*	−0.39*	1.00			
Impulsivity	0.04*	−0.25*	0.26*	−0.02*	−0.13*	0.02*	−0.04*	1.00		
Antisocial peers	0.02*	−0.07*	0.10*	−0.00	−0.03*	0.04*	−0.01	0.23*	1.00	
Concentrated disadvantage	0.07*	−0.05*	0.01	−0.01	0.02*	0.41*	−0.03*	0.03*	0.02*	1.00

Note. ACE = adverse childhood experience.
*p < .05.

Table 2. Logistic Regressions Predicting Rearrest.

Variable	Model 1		Model 2		Model 3 (Strongly Bonded)		Model 4 (Weakly Bonded)	
	OR	SE	OR	SE	OR	SE	OR	SE
Social bonds	—	—	.98[†]	.01	—	—	—	—
ACE score	1.09***	.01	1.08***	.01	1.10***	.01	1.05**	.01
Gender	2.31***	.03	2.31***	.03	2.42***	.04	2.05***	.06
Age	1.06***	.01	1.06***	.01	1.06***	.01	1.03[†]	.02
Black	1.52***	.03	1.51***	.03	1.53***	.04	1.47***	.06
Hispanic	1.16***	.04	1.16***	.04	1.12*	.05	1.28**	.08
Impulsivity	1.09***	.02	1.08***	.02	1.09***	.02	1.08*	.03
Antisocial peers	1.05[†]	.03	1.05[†]	.03	1.08*	.03	0.97	.05
Concentrated disadvantage	1.08***	.02	1.08***	.02	1.07***	.02	1.11**	.03
Constant	0.08***	.14	0.09***	.16	0.06***	.16	0.16***	.30
McKelvey and Zavoina's R^2	.056		.056		.061		.042	
n	25,461		25,461		19,114		6,347	

Note. ACE = adverse childhood experience.
***p < .001. **p < .01. *p < .05. [†]p < .10 (two-tailed).

Effects of Control Variables on Rearrest

Model 1 in Table 2 presents the results of our baseline logistic regression for rearrest. This model suggests the respondent's ACE score, gender, age at release, race/ethnicity, impulsivity, and residing in a disadvantaged environment significantly increase the likelihood of rearrest. The presence of antisocial peers is a positive, marginally significant predictor of rearrest. Holding all else constant, each additional type of ACE exposure results in a 9% higher odds of being rearrested. Black respondents had 52% higher odds of being rearrested than non-Blacks and those who were more impulsive had 9% higher odds of being rearrested than those who were less impulsive.

Effects of Social Bonds on Rearrest

The second model in Table 2 adds the measure of social bonds to the baseline model. These results show that while having more ACEs had a positive and significant effect on rearrest (odds ratio
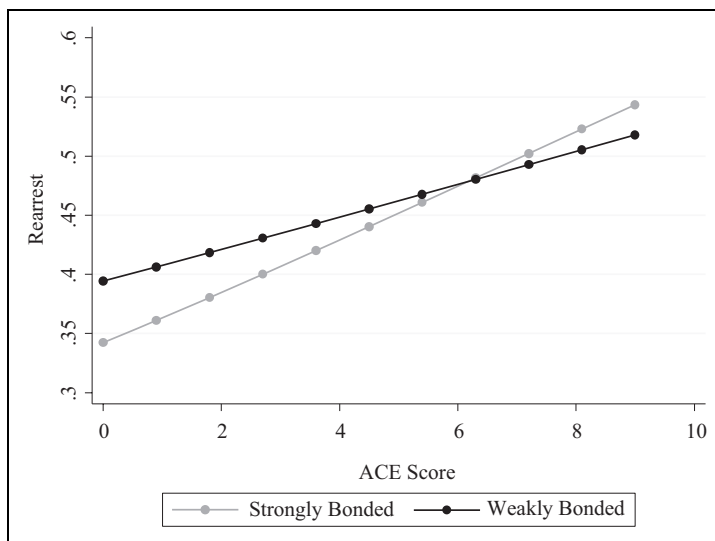
Figure 1. Predicted probabilities of rearrest by social bonds and ACE scores. ACE = adverse childhood experience.

$[OR] = 1.08$, $p < .001$), the respondent's social bonds had a negative, but marginally significant effect on rearrest ($OR = .98$, $p < .10$). Similar to Model 1, all of the other control variables were positive, significant, or marginally significant predictors of rearrest.

Moderating Effects of Social Bonds on the Relationship Between ACEs and Rearrest

A means differences test indicates that those with weaker social bonds have significantly more ACEs than those with stronger social bonds (3.28 vs. 2.43, $p < .05$). With that in mind, we now move on to the analyses that test our central hypothesis that prosocial bonds moderate the effect of ACEs on rearrest. Models 3 and 4 in Table 2 present the results from the moderating analyses. Model 3 includes the results for the effects of ACEs and the other control variables on rearrest among those with stronger social bonds. Among respondents who are more strongly bonded, each additional ACE was found to significantly increase the odds of rearrest by 10%, holding all of the other measures equal. As found in the prior two analyses, the other control variables also emerged as positive, significant predictors of rearrest.

Model 4 shows the results of the effects of ACEs and the other variables on rearrest among those that have weaker social bonds. Among this subsample, each additional ACE exposure increased the odds of rearrest by 5%, holding all else equal. Further, although it had been significant or marginally significant in the prior three analyses, the measure indicating the presence of antisocial friends was no longer significant. The remaining variables of gender, age at release, race/ethnicity, impulsivity, and concentrated disadvantage were positive and significant predictors of rearrest. A visual representation of these findings can be seen in Figure 1, which presents the predicted probabilities of the effects of ACE scores on rearrest among individuals with stronger social bonds and those with weaker social bonds. As can be seen, relative to those with weaker bonds, those with stronger social bonds are protected from rearrest when they have experienced approximately five or fewer ACEs. However, this protective effect no longer holds after they have experienced six or more ACEs. Further, having an increased number of ACEs still increases the odds of rearrest, regardless of the value of the social bonds index.[9]

Racial and Ethnic Differences

Table 3 presents the logistic regression results examining the effects of social bonds and ACE scores on rearrest by the three racial/ethnic groups included in the current study. Model 1 indicates that, among Blacks, Hispanics, and Whites, those with more ACEs were more likely to be rearrested than those with fewer such experiences ($OR = 1.07, p < .001; OR = 1.08, p < .001; OR = 1.10, p < .001$, respectively). Hispanics with stronger social bonds were marginally less likely to be rearrested than Hispanics with weaker social bonds ($OR = .94, p < .10$). However, this same result did not hold for Black or White respondents. Gender, age, and impulsivity were consistently significant predictors across the three race/ethnicities, while concentrated disadvantage was a significant predictor of rearrests only among Blacks.

The effects of ACEs among those with stronger bonds by racial/ethnic group are indicated in Model 2. Similar to the results in the full sample, among those with stronger social bonds, having a higher ACE exposure increases the odds of rearrest among Blacks by 9%, Hispanics by 6%, and Whites by 11%. Gender and age emerge as significant predictors of rearrest among all three groups, and impulsivity is a significant predictor of rearrests among Blacks and Hispanics. Antisocial peers and concentrated disadvantage predict rearrests among Blacks.

Model 3 presents the results of the logistic regressions among those with weak social bonds. While Hispanics ($OR = 1.13, p < .01$) and Whites ($OR = 1.04, p < .10$) with higher ACE scores are more likely to be rearrested than those with lower ACE scores, the same result does not hold for Blacks. In other words, having an increased ACE exposure increases the odds of rearrest among Hispanic and White youth who are weakly bonded. Black youth with weak bonds do not appear to evidence this effect of ACEs on rearrests. Similar to the prior analyses, gender is a significant predictor of rearrest among all racial/ethnic groups, as is impulsivity for Blacks and concentrated disadvantage for Blacks and Hispanics.

Gender Differences

As can be seen in Table 4, there were very few gender differences in how ACEs and social bonds predicted rearrests. Model 1 indicates that while social bonds decrease rearrests among both males and females, social bonds are only significant among females ($OR = .94, p < .05$). Similar to the full sample, having a higher ACE exposure increases rearrest odds by 8% for both male and female youth. Among males, age, being Black, being Hispanic, impulsivity, antisocial peers, and concentrated disadvantage significantly predict rearrest. Among females, however, only race and impulsivity are significantly predictive of rearrest.

Model 2 indicates that regardless of gender, strongly bonded males and females with higher ACE exposure are more likely to be rearrested than those without such experiences ($OR = 1.09, p < .001$ and $OR = 1.12, p < .001$, respectively). All of the control variables emerge as significant predictors of rearrests for males, while only impulsivity and being Hispanic significantly predict rearrests among females.

As can be seen in Model 3, having a higher ACE score significantly increases the odds of rearrest among weakly bonded males by 7%. However, the significance of the ACE effect does not hold for females. Age, concentrated disadvantage, being Black, and being Hispanic are significant predictors of rearrests for weakly bonded males while age, impulsivity, and being Black are significant predictors of rearrests among weakly bonded females.

Discussion and Conclusion

Prior research has established that individuals who experience multiple ACEs such as physical, emotional, or sexual abuse are more likely to experience many negative and diverse outcomes at

Table 3. Logistic Regressions Predicting Rearrest by Race and Ethnicity.

| | Model 1 | | | | | | Model 2 (Strongly Bonded) | | | | | | Model 3 (Weakly Bonded) | | | | | |
| | Black | | Hispanic | | White | | Black | | Hispanic | | White | | Black | | Hispanic | | White | |
Variable	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Social bonds	0.97	.02	0.04†	.03	1.00	.02	—	—	—	—	—	—	—	—	—	—	—	—
ACE score	1.07***	.01	1.08***	.02	1.10***	.01	1.09***	.01	1.06*	.03	1.11***	.01	1.03	.02	1.13**	.04	1.04†	.02
Gender	2.67***	.05	2.59***	.10	1.84***	.05	2.80***	.06	2.89***	.12	1.90***	.06	2.35***	.09	2.13***	.18	1.68***	.11
Age	1.05***	.01	1.10***	.02	1.05**	.01	1.05***	.01	1.13***	.03	1.05***	.01	1.03	.02	1.05	.04	1.02	.03
Impulsivity	1.10***	.03	1.11*	.05	1.05†	.03	1.11***	.03	1.17**	.06	1.04	.03	1.10*	.05	0.98	.09	1.09	.05
Antisocial peers	1.05	.04	1.03	.07	1.05	.04	1.08†	.04	1.13	.08	1.05	.05	0.95	.07	0.79†	.14	1.06	.09
Concentrated disadvantage	1.11***	.02	1.06	.05	1.03	.03	1.11***	.03	1.02	.05	1.02	.04	1.12**	.04	1.20*	.09	1.04	.06
Constant	0.13***	.22	0.05***	.43	0.11***	.26	0.10***	.22	0.02***	.47	0.09***	.28	0.21***	.43	0.14*	.80	0.22**	.51
McKelvey and Zavoina's R^2	.058		.052		.028		.062		.062		.031		.045		.040		.018	
n	11,884		3,839		9,738		8,864		2,855		7,395		3,020		984		2,343	

Note. ACE = adverse childhood experience.
***p < .001. **p < .01. *p < .05. †p < .10 (two-tailed).

Table 4. Logistic Regressions Predicting Re-arrest by Gender.

| | Model 1 | | | | Model 2 (Strongly Bonded) | | | | Model 3 (Weakly Bonded) | | | |
| | Male | | Female | | Male | | Female | | Male | | Female | |
Variable	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
Social bonds	0.98	.01	0.94*	.03	—	—	—	—	—	—	—	—
ACE score	1.08***	.01	1.08***	.02	1.09***	.01	1.12***	.02	1.07***	.02	1.02	.03
Age	1.07***	.01	0.97	.02	1.08***	.01	0.98	.02	1.06**	.02	0.93*	.04
Black	1.61***	.03	1.17*	.07	1.64***	.04	1.13	.08	1.53***	.07	1.28†	.13
Hispanic	1.22***	.04	0.88	.10	1.20***	.05	0.78*	.13	1.31**	.09	1.19	.18
Impulsivity	1.06**	.02	1.19***	.04	1.07**	.02	1.15**	.05	1.02	.04	1.29***	.07
Antisocial peers	1.05†	.03	1.02	.06	1.07*	.03	1.08	.07	0.98	.06	0.90	.11
Concentrated disadvantage	1.10***	.02	1.01	.04	1.08**	.02	1.05	.05	1.16***	.04	0.93	.07
Constant	0.14***	.17	0.44*	.36	0.12***	.18	0.25***	.39	0.21***	.34	1.01	.65
McKelvey and Zavoina's R^2	.031		.025		.032		.026		.027		.022	
n	19,647		5,814		14,847		4,267		4,800		1,547	

Note. ACE = adverse childhood experience.
***p < .001. **p < .01. *p < .05. †p < .10 (two-tailed).

later stages in life (Baglivio et al., 2014; Baglivio, Wolff, Epps, et al., 2015; Baglivio, Wolff, Piquero, et al., 2015; Felitti et al., 1998; Fox et al., 2015; Hillis et al., 2004; Wolff et al., 2015). These outcomes range from increased chronic disease diagnoses to higher unemployment to exhibiting more risk-taking behaviors (Bellis et al., 2013). These findings highlight the importance of intervening with these individuals early in life in order to not only improve their future health and life outcomes but also decrease delinquent or criminal behavior. This study sought to examine the independent effects of both ACEs and social bonds on the likelihood of reoffending, as well as the potential moderating effect of social bonds on the relationship between ACEs and reoffending among a sample of adjudicated, high-risk youth. While results showed that higher ACE scores led to a higher likelihood of rearrest and more social bonds lowered the likelihood of rearrest, in contrast to our expectations, the analyses revealed that having a higher ACE score significantly increased the chances of rearrest among those with both weaker and stronger social bonds. In other words, ACEs were found to increase a youth's chance of rearrest, regardless of the strength of attachment they had to conventional others such as prosocial parents or community members.

Still, the moderating effects may be more nuanced. For example, among youth with zero to approximately five ACEs, those who are strongly bonded are less likely to be rearrested than those with weak bonds. However, once the youth have been exposed to six or more ACEs, this relationship no longer holds and those with stronger social bonds are more likely to be arrested than those with weaker bonds. Youth who are strongly bonded are more protected with fewer ACE exposures. However, once a strongly bonded youth surpasses a certain number of ACEs, then the protective effect of bonds is not strong enough to counteract the deleterious effect of ACEs. Additionally, those with weak bonds do not evidence the protective effect of social bonds contributing to a higher likelihood of rearrest. Further, as those with weak bonds have more ACEs, each additional event further increases the probability of recidivism.

It is important to note as well that these general effects held across racial/ethnic and gender subsample analyses. The majority of results from the subsample analyses mirrored the results from the full sample. For example, among the strongly bonded youth in the full sample, having a higher exposure to ACEs significantly increased the odds of rearrest. This same significant relationship held across the three racial/ethnic groups as well as both genders. Additionally, while having a higher exposure to ACEs did not significantly increase rearrests among weakly bonded Blacks and weakly bonded females, the direction of both ORs were in the expected, positive direction. The consistency of the results across these subgroup analyses indicate that ACEs, social bonds, and the relationship between the two have stable effects, regardless of an individual's racial/ethnic background or gender.

Limitations and Future Directions

Several limitations should be acknowledged. First, the data were collected for the purposes of risk assessment, and only measures collected as part of the Full PACT Assessment could be used to generate an ACE score. Although the original conceptualization of ACE scores proposed the exposures be summed in a binary fashion, other child neglect and abuse scholars have argued that factors such as timing, duration, and severity of exposure are important (Smith & Thornberry, 1995). While these measures were not available in the current data, future studies should aim to include these concepts in order to assess whether there are differences in how they interact with social bonds. Relatedly, as only one item was available to measure each of these constructs, the full battery of items to assess impulsivity and antisocial peer associations was not available. Future studies should incorporate more thorough measures of these constructs that might capture additional nuances that the available measures are unable to show.

A second limitation includes the possibility that some youth may have underreported ACEs such as sexual abuse or neglect. As many in the sample were not evaluated until they were adolescents, they may have forgotten, concealed, or otherwise blocked out such early childhood experiences. While the caseworker conducting the structured interview is trained to identify possible cues of abuse and this professional has access to the state's child abuse registry database in order to corroborate any possible reports, these behaviors may still be underreported. Nevertheless, unless there is systematic underreporting of abuse, this would not impact our results. A third and related limitation is that many of the variables were skewed, indicating many of the youth were positively adjusted. This again might reflect possible underreporting or minimizing of undesired traits such as antisocial peers. Fourth, the generalizability of the sample might be limited as the sample contained only adjudicated Florida Department of Juvenile Justice–involved youth who received the Full PACT assessment and are generally considered to be more serious offenders. Further, the sample only consisted of the youth who received a placement to a form of community correction such as juvenile probation, as opposed to all youth, regardless of their disposition outcome. However, over 50% (55.5%) of the sample was assessed as either low- or moderate-risk to reoffend, which, while lower than the 87% of all youth assessed with the PACT (Pre-Screen plus Full), allows for over-sampling of the most policy-relevant youth: those at higher risk to reoffend and ethnic minorities. To be sure, given the large sample size and largely significant effects, caution should be used when interpreting the substantive effects that emerged. While the resulting ORs from the multivariate models provide support for substantive effects, future research should corroborate our study and its findings across a range of sampling frames.

Fifth, the study relied upon an official recidivism measure of rearrest as opposed to self-reported delinquency. Although 40% of the youth were rearrested within 1 year of completing their community-based sanction, this probably is not inclusive of all juveniles who reoffended. Future studies should aim to address these limitations with self-reported delinquency measures. Additionally, while this study did not find its attachment measure buffered the relationship between ACEs and rearrest as would be predicted from social control theory, other measures of attachment or social bonds may be relevant. For instance, as the literature has demonstrated that mentoring programs can be effective in reducing recidivism among juvenile justice–involved youth (Lipsey, 2009; Lipsey, Howell, Kelly, Chapman, & Carver, 2010), perhaps the individual the youth is attached to matters (e.g., a mentor as opposed to a prosocial parent, for instance), or the strength of that attachment matters more. Further, as ACEs have been shown to lead to several negative life outcomes along with their effects on delinquency (Felitti et al., 1998; Hillis et al., 2004), more attention should be paid to other social control variables that may buffer this effect, such as involvement in prosocial activities and having prosocial beliefs (Hirschi, 1969).

Policy Implications

This study underscores the importance of targeted interventions for children who are at risk for or have already experienced ACEs. However, for justice-involved youth who have experienced many traumatizing and abusive events, such interventions aimed specifically at enhancing attachment and increasing social bonds may not be as effective, though this possibility should be empirically assessed in future research. This suggests efforts should be made toward preventing ACEs and intervening in cases where they are experienced as early as possible and before the individual is involved with the justice system. For instance, school counselors, pediatricians, and other practitioners in contact with children could use ACE scores as an early screening tool and then direct these children and their families toward programs such as Functional Family Therapy and Multisystemic Therapy, both crime prevention programs that have been found to be cost effective and reduce crime (Lee et al., 2012). Focusing efforts on these individuals early in life would serve to not only reduce

crime but also help these individuals avoid other negative outcomes in physical and mental health domains as well and reduce the social and financial burdens taken on society by the most chronic offenders (cf. Cohen & Piquero, 2009).

In sum, the current study has a number of theoretical and policy strengths. First, it extended our knowledge of criminological theory by evaluating the extent to which social bonds exert some degree of protective role among a sample of deep-end juvenile offenders. Second, we examined the extent to which attachment to prosocial others moderated the relationship between adverse childhood experiences and reoffending. This particular feature of our work demonstrated the deleterious persistence of traumatic childhood events, highlighting the need for both prevention and early intervention.

Declaration of Conflicting Interests

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Notes

1. A low- or moderate-risk youth might become higher risk due to referral for a new offense or through exposure to social history risk factors such as initiation of substance use, truancy, or antisocial peer associations.
2. In comparison with the current sample, the full sample of all community-based completions was composed of 131,261 youth, with 114,502 receiving any Positive Achievement Change Tool assessment (Pre-Screen or Full), of which 75.5% were low risk, 11.0% moderate risk, 9.2% moderate-high risk, and 4.4% high risk to reoffend. The current sample also differs from the full sample of 131,261 youth in terms of demographic variables with the study sample youth being older at age of release ($t = -68.5, p < .001$), a higher proportion male ($t = -41.8, p < .001$), higher proportion Black (46.1% compared to 38.2% in full sample, $t = -23.6, p < .001$), and slightly less Hispanic (15.2% compared to 16.0% in the full sample, $t = 3.3, p = .001$).
3. This measure does not include probation violations, as all youth completed Department of Juvenile Justice supervision prior to the follow-up period.
4. A supplemental factor analysis indicated that the social bond measure was unidimensional, with all items loading strongly on one factor.
5. To provide context, only 22% of individuals in the original ACE study had ACE scores over 2 (Centers for Disease Control and Prevention, 2016). Further, while some may be concerned over the low α, the measure operates in the manner in which both prior theory and research anticipated and was created as an additive index in an identical fashion to that used by the Centers for Disease Control and Prevention of the same 10 exposure types.
6. Of the 28,169 youth, 121 youth (0.4%) were classified as "other" race/ethnicity, with 1 additional youth having race/ethnicity "unknown." Based on these low sample sizes, the current study includes the Other and the 1 unknown youth with the White youth sample.
7. Supplemental split-sample analyses were also estimated, where the sample was split at approximately 50% (54.85%) of the social bonds index distribution. Specifically, those scoring 3 or less were coded as having weaker social bonds and those scoring 4 were coded as having stronger social bonds. The results from these logistic regressions were virtually identical to the ones presented in this study (results available upon request).
8. Heteroscedasticity was examined after each logistic regression model, and none was detected. A missing data analysis found the concentrated disadvantage measure was missing at random. Two hundred sixty-six multivariate outliers (approximately 1% of the sample) were identified using Mahalinobis distance scores.

Supplemental analyses were estimated with and without these outliers, and the results were found to be substantially similar, so these cases were retained in the analysis.

9. A supplemental moderation analysis was also estimated where an interaction of the mean-centered social bond and ACE score measures was used in the logistic regression (Jaccard, 2001). Similar to the results presented here, the interaction variable was positive and significant.

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