

2014

Child maltreatment and adult criminal behavior: Does criminal thinking explain the association?

Lorraine E. Cuadra

University of Nebraska-Lincoln

Anna E. Jaffe

University of Nebraska-Lincoln, anna.e.jaffe@gmail.com

Renu Thomas

University of Nebraska-Lincoln

David DiLillo

University of Nebraska-Lincoln, ddilillo@unl.edu

Follow this and additional works at: <http://digitalcommons.unl.edu/psychfacpub>



Part of the [Child Psychology Commons](#), [Developmental Psychology Commons](#), and the [Personality and Social Contexts Commons](#)

Cuadra, Lorraine E.; Jaffe, Anna E.; Thomas, Renu; and DiLillo, David, "Child maltreatment and adult criminal behavior: Does criminal thinking explain the association?" (2014). *Faculty Publications, Department of Psychology*. 652.
<http://digitalcommons.unl.edu/psychfacpub/652>

This Article is brought to you for free and open access by the Psychology, Department of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Faculty Publications, Department of Psychology by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

Child maltreatment and adult criminal behavior: Does criminal thinking explain the association?

Lorraine E. Cuadra, Anna E. Jaffe, Renu Thomas,² and David DiLillo

University of Nebraska-Lincoln

Corresponding author – David DiLillo, Department of Psychology, 238 Burnett Hall,
University of Nebraska-Lincoln, Lincoln, NE 68588-0308, USA.

Present address (2014) for L. E. Cuadra: Twin Towers Correctional Facility, Los Angeles, CA, USA.

Present address (2014) for R. Thomas: The Menninger Clinic, Houston, TX, USA.

Abstract

Criminal thinking styles were examined as mediational links between different forms of child maltreatment (i.e., sexual abuse, physical abuse, and physical neglect) and adult criminal behaviors in 338 recently adjudicated men. Analyses revealed positive associations between child sexual abuse and sexual offenses as an adult, and between child physical abuse/neglect and endorsing proactive and reactive criminal thinking styles. Mediation analyses showed that associations between overall maltreatment history and adult criminal behaviors were accounted for by general criminal thinking styles and both proactive and reactive criminal thinking. These findings suggest a potential psychological pathway to criminal behavior associated with child maltreatment. Limitations of the study as well as research and clinical implications of the results are discussed.

Keywords: Child maltreatment, Criminal thinking, Cognitive distortions, Criminal behavior

Abundant evidence links child maltreatment to adverse psychological and behavioral outcomes – some of grave importance at both an individual and a societal level such as criminal behaviors (English et al., 2002; Fang and Corso, 2007; McGrath et al., 2011; Widom and Maxfield, 2001; Widom, 1989a). Although recent studies have begun to investigate factors that account for this association between early victimization and adult criminal offending (e.g., foster care placement; DeGue & Widom, 2009), *psychological* processes underlying this relationship have not been fully delineated. To help address this issue, we tested potential pathways from child maltreatment to adult criminal behavior among adjudicated male offenders, a population noted to report higher levels of early abuse experiences (e.g., Fondacaro, Holt, & Powell, 1999). In particular, we examined cognitive distortions in the form of *criminal thinking styles*, as mechanisms that may explain why inmates reporting early maltreatment may be more likely than their non-maltreated peers to have engaged in criminal activities in adulthood.

Child maltreatment and criminal behaviors

Although criminality is certainly not an inevitable outcome of child maltreatment, in a recent review of child maltreatment and delinquency, McGrath et al. (2011) highlight a social learning perspective to explain the frequent occurrence of criminal outcomes in adult victims of child maltreatment. These theories propose that individuals who are exposed directly or indirectly to violent or abusive experiences (e.g., sexual and physical abuse, witnessing domestic violence) early in development may be more likely to adopt corresponding attitudes and beliefs emphasizing the reinforcing qualities of violence and engage in offensive or abusive behaviors later in life. A key element of this *cycle of violence* (Widom, 1989b; Widom, 2000) is that victims internalize maladaptive, violence-supportive beliefs and attitudes, including that physical aggression

is an acceptable and useful way to accomplish personal and interpersonal goals such as managing stress or resolving conflicts, and thus, model abusive behaviors in relating with others (Widom, 2000).

A significant body of research supports the existence of this cycle of violence. Using a longitudinal design and matched groups of maltreated and non-maltreated individuals in the general population, Widom (1989b) found that, relative to non-maltreated individuals, those with a history of maltreatment engaged in substantially more criminal behaviors as adults and were more likely to have a criminal record of violent offenses. The Rochester Youth Development Study, which also used a longitudinal design, similarly revealed that maltreatment in childhood and adolescence are associated with increased risk for subsequent delinquent and criminal behaviors in adolescence and young adulthood (Smith and Thornberry, 1995; Smith et al., 2005; Thornberry et al., 2001). Similarly, studies among correctional samples of male offenders show that those who experienced child abuse or witnessed violence growing up are more likely than non-maltreated inmates to engage in violent or aggressive acts as adults (Felson and Lane, 2009; Hill and Nathan, 2008; Komarovskaya, 2009; Neller et al., 2006). Moreover, some studies suggest that the type of criminal behaviors that victims partake in may depend on the type of maltreatment they endured. For example, sexual victimization in childhood, especially over extended periods of time, has been associated with commission of more sex crimes (e.g., rape, sexual contact with children) relative to nonsexual offenses (Felson and Lane, 2009; Romano and De Luca, 1997; Simons et al., 2002), while engagement in violent nonsexual offenses (e.g., assault, attempted murder) in adulthood has been linked to a history of physical abuse in childhood (Dutton and Hart, 1992; Felson and Lane, 2009; Haapasalo and Moilanen, 2004; Lansford et al., 2007; Teague et al., 2008) and physical neglect (Grogan-Kaylor and Otis, 2003; Weeks and Widom, 1998; Widom, 1989b). At the same time, investigators (e.g., Widom, 1995) have observed that, compared to those who were sexually abused, adults who were physically abused as children are more likely to commit sexual offenses that are also violent. This finding suggests a diffusion of long-term outcomes associated with different forms of maltreatment and is consistent with a cycle of violence framework in which violent acts of abuse regardless of the type of abuse experience (i.e., sexual, physical, psychological) in childhood may be related to more violent criminal offending (physical or sexual) later in life (Widom, 1995).

Child maltreatment and criminal thinking

Although evidence clearly points to adult criminal behaviors as a potential outcome of early maltreatment, this relationship is likely to be indirect, influenced by a host of intervening factors. Extensive work in cognitive development indicates that adverse personal experiences impact the development of cognitive structures through which individuals interpret subsequent experiences (Flavell, Miller, & Miller, 2002). In accordance with this view, maltreated children may develop distinct maladaptive cognitive processes involving distorted beliefs about oneself, others, and their environment, which consolidate over time and shape how they later construe their experiences and respond in social situations (Young, Klosko, & Weishaar, 2003). These disruptions in the processing of incoming information may in turn be associated with what adult victims of child maltreatment perceive, remember, and eventually act upon. This *social processing* perspective (Crick & Dodge, 1994) suggests that aggressive behaviors proceed through maladaptation in encoding and interpreting information (e.g., hypervigilance to hostile stimuli and hostile attribution biases), identifying goals (which may be instrumental and self-defensive), brainstorming solutions to attain these goals, and selecting and executing responses (which may be aggressive).

These theorized processes are supported by research with maltreated children showing that experiences of abuse and neglect alter information processing in social situations involving threat and provocation, resulting in increased tendencies to focus preferentially on threatening stimuli (e.g., others' aggression), interpret neutral or ambiguous actions as hostile, and resolve conflicts in an aggressive manner (Dodge, 2006; Dodge et al., 1990; Dodge et al., 1995; Lee and Hoaken, 2007). Physically abused children, for example, display heightened tendencies to make encoding errors and hostile attributions, and display a preference for responding aggressively toward peers, each of which predict later externalizing behaviors (Dodge et al., 1995). Relatedly, Finkelhor and Browne's (1988) traumagenic model of responses to sexual abuse (also applied to physical abuse; Brown & Kolko, 1999), suggests that sexual abuse engenders a sense of powerlessness in victims who may come to view the world as a dangerous place and people as abusive, untrustworthy, and hostile. In attempting to regain power and control, victims of maltreatment may identify with their abusers, exhibit limited empathy toward others, disregard others' wants and needs, and form beliefs that rationalize or condone behaving in an overtly aggressive or manipulative manner (Kreps & Gonzalez, 2010). Together, these works suggest that early maltreatment experiences are associated with the development of long-lasting criminal thinking styles. As adults, victims of child maltreatment may attend to salient social cues and respond to their environment in a manner consistent with their pre-existing schemas (Epps & Kendall, 1995), increasing the risk of criminal offending.

Criminal thinking and criminal behaviors

Within the criminology literature, certain thinking styles have been recognized as predictors of adult criminal behavior, such that individuals who engage in criminal acts, particularly in severe crimes (Walters, 1995), report more cognitive distortions than those who do not engage in these behaviors (Barriga, Landau, Stinson, Liao, & Gibbs, 2000). These distortions may include minimizing the seriousness of criminal acts and attributing blame to others. Moreover, prospective data from

Table 1. Description of and sample items for the eight criminal thinking styles measured in the Psychological Inventory of Criminal Thinking Styles (PICTS).

Dimension	Scale	Description	Sample item ^a
Proactive	Mollification	Justification, rationalization of criminal behavior; focus on external factors	I have told myself that I would never have had to engage in crime if I had a good job.
	Entitlement	Perception of oneself as privileged or special	The way I look at it, I've paid my dues and am therefore justified in taking what I want.
	Power orientation	Focus on power and control over others	When not in control of a situation I feel weak and helpless and experience a desire to exert power over others.
	Superoptimism	Over-confidence in ability to avoid negative consequences	The more I got away with crime the more I thought there was no way police or authorities would ever catch up with me.
Reactive	Cutoff	Elimination of deterrents (e.g., fear, anxiety, disgust) to criminal behavior	I have used alcohol or drugs to eliminate fear or apprehension before committing a crime.
	Cognitive indolence	Putting little effort into problem-solving or critical evaluation of thought	I tend to put off until tomorrow what should have been done today.
	Discontinuity	Being easily distracted; trouble following through on good intentions	There have been times when I have made plans to do something with my family and then canceled these plans so that I could hang out with my friends, use drugs, or commit crimes.

a. From Walters (1995).

male prisoners have linked high levels of criminal thinking with a greater occurrence of aggressive disciplinary infractions (Walters, 2005). Similarly, linkages have been established between self-serving attitudes, thoughts, or beliefs that offenders utilize to rationalize or justify their own actions, blame others, or negatively interpret others' behaviors and engagement in aggressive and antisocial behaviors (Chambers et al., 2008; Wallinius et al., 2011, Walters, 2002; Walters, 2005).

In the quest to understand crime-supportive cognitions, researchers have identified a number of specific thinking styles that may contribute to criminal behavior (e.g., Walters, 1995; Walters and White, 1989; see Table 1 for an overview). These behaviors have recently been grouped into two dimensions: proactive and reactive criminal thinking, which reflect thinking associated with proactive and reactive aggression (Walters, 2007; Walters, 2008). Proactive aggression is instrumental and purposive, and reactive aggression is linked to emotion dysregulation and impulsivity (see Walters, 2007; Walters, 2008). Proactive criminal thinking styles include *mollification*, which involves a pattern of justifying and rationalizing criminal behavior by blaming society or others, and denying or minimizing the seriousness of criminal acts. Those who engage in proactive criminal behavior may also have a global sense of *entitlement*, in that they see themselves as so special or privileged that societal norms and expectations do not apply to them. They may also tend to have a *power orientation*, focusing on the perceived need to be strong instead of weak, as well as a desire to gain power and control over others. Those who engage in proactive criminal behaviors also tend to engage in *superoptimism*, in that they are overly optimistic about their ability to avoid punishment for criminal behavior.

Reactive aggression is also associated with a set of distinct criminal thinking styles. For example, to engage in antisocial behaviors, one must stop, eliminate, or *cutoff* experiences of fear, anxiety, or other factors that may deter them from criminal behavior. This cutoff may be accomplished through the use of drugs or alcohol, specific images or music, or certain angry words or phrases to eliminate deterrents. A pattern of *cognitive indolence* can also be observed in those who commit reactive crimes, in that they put little effort into problem solving or being critical of their own ideas. Lastly, *discontinuity*, which involves a tendency to be easily distracted and low self-discipline, may interfere with one's ability to follow through on good intentions. As a group, these thinking styles are conceptually associated with impulsive, reactive aggression.

Various aspects of proactive and reactive criminal thinking have been differentially linked to certain types of criminal behavior (i.e., sexual, violent nonsexual, or nonviolent offenses; Barriga et al., 2000; Eckhardt and Jamison, 2002; Hatch-Maillette et al., 2001). Generally, having a history of sexual offenses has been associated with mollification (e.g., a belief that sexual contact benefits children; Marziano et al., 2006; Stermac and Segal, 1989), entitlement (Hanson, Gizzarelli, & Scott, 1994), and power orientation (Hatch-Maillette et al., 2001). Although a history of sexual offenses has also been associated with cognitive indolence (Hatch-Maillette et al., 2001), it appears that sexual offenses may be primarily associated with proactive criminal thinking styles. On the other hand, committing nonsexual offenses has been associated with both cutoff and entitlement (Hatch-Maillette et al., 2001), which are reflective of both proactive and reactive criminal thinking styles. As such, it appears that specific criminal thinking styles may be differentially associated with specific criminal behaviors.

Child maltreatment, criminal thinking, and criminal behaviors

Research provides clear evidence for the connections between child maltreatment, cognitive distortions, and adult criminal behavior. Although some prior research has addressed cognitions associated with general interpersonal aggression (e.g., Dodge, 2006), we are aware of no studies that examine criminal thinking styles as possible mechanisms in the association between early maltreatment and adult criminal offending. To address this need, we tested a model that focused on overall criminal thinking style as a mechanism that may explain the commonly found linkages between child maltreatment and adult criminality. In particular, we expected that overall maltreatment history would be associated with increased criminal thinking in adulthood. We also predicted that criminal thinking styles would be positively associated with adult criminal offending, including sexual offenses and violent nonsexual offenses. Further, we tested a mediational model in which criminal thinking was expected to account for the associations between child maltreatment and adult criminal behavior.

Beyond investigating global associations between child maltreatment, criminal thinking, and adult criminality, we also drew on the above reviewed literature to test whether the relations between certain types of offenses and maltreatment may be accounted for by particular criminal thinking styles. Specifically, we hypothesized that higher levels of child sexual abuse would predict adult sexual offending, whereas more physical abuse and physical neglect experiences as a child would each be associated with higher levels of violent nonsexual offending. Finally, based on the convergence of literature on thinking styles in relation to child maltreatment and adult offending, we predicted that the specific relationship between sexual abuse and sexual offending would be mediated by proactive criminal thinking, whereas relations between physical abuse/neglect and violent nonsexual offenses would be mediated by both proactive and reactive criminal thinking styles.

Method

Participants

A total of 385 recently adjudicated adult male offenders from a state correctional facility initially consented to take part in this study. However, official criminal records were unavailable for 35 participants and an additional 12 participants provided only partial data. Both groups were excluded from analyses, resulting in a final sample of 338 participants. This sample had an average age of 32.45 years ($SD = 10.17$, Range = 19–67). The ethnic breakdown of the sample was: European American (67.5%), African American (19.5%), Latino (8.3%), Native American (2.1%), Asian-Pacific Islander (0.3%), and eight individuals who did not indicate their race or ethnicity (2.4%). The majority of the sample reported that they were single (46.2%) or divorced (19.2%). A total of 45.6% of the sample had less than a 12th grade education, 22.2% had completed 12th grade, 25.4% had completed some college, 2.1% had received a Bachelor's degree, and 4.7% did not indicate their level of educational attainment.

Measures

Child maltreatment history. The Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998) contains 25 items assessing multiple forms of child maltreatment including, physical abuse, physical neglect, sexual abuse, emotional abuse, and emotional neglect. Participants respond to each item in reference to "When I was growing up..." (i.e., prior to age 18). Items are rated on a 5-point Likert scale ranging from 1 (*never true*) to 5 (*very often true*). In the present study, a total maltreatment score reflecting the sum of the 25 abuse and neglect items was created, resulting in a range of scores from 25 (*no overall maltreatment*) to 125 (*high overall maltreatment*). Consistent with prior literature on child maltreatment and criminal thinking, the following specific maltreatment types were also examined individually: sexual abuse, physical abuse, and physical neglect. Using procedures recommended by the authors (Bernstein & Fink, 1998), continuous severity scores for these abuse types were computed from the sum of 5 items from each subscale resulting in a range from 5 (*no maltreatment*) to 25 (*high maltreatment*). The CTQ is the most widely used retrospective measure of maltreatment and has demonstrated strong reliability and validity across various populations (Bernstein and Fink, 1998; Bernstein et al., 1994; Bernstein et al., 2003; Paivio and Cramer, 2004). For the present study, coefficient alpha for the total maltreatment score was .93; alphas for the sexual abuse, physical abuse, and physical neglect subscales (used here) were .93, .86, and .67, respectively.

Criminal thinking. The Psychological Inventory of Criminal Thinking Styles (PICTS; Walters, 1995) is an 80-item self-report measure that assesses eight criminal thinking styles that have been empirically linked to criminal behaviors. Participants responded to items on a 4-point Likert scale that ranged from 1 (*disagree*) to 4 (*strongly agree*). Using the most recent scoring recommendations for the PICTS (Walters, Hagman, & Cohn, 2011), three scales were used as indicators of criminal thinking styles in the current study including: (a) a *General Criminal Thinking* (GCT) scale, computed by averaging across all 56 items from the Mollification, Cutoff, Entitlement, Power orientation, Superoptimism, Cognitive indolence, and Discontinuity scales; (b) a *Proactive* (P) subscale, computed by averaging across 32 items from the Mollification, Entitlement, Power Orientation, and Superoptimism scales; and (c) the *Reactive* (R) subscale, computed by averaging across 24 items from the Cutoff, Cognitive Indolence, and Discontinuity scales. The criminal thinking style of Sentimentality has not been empirically supported as part of either the proactive or reactive dimension (Walters et al., 2011) and was therefore not included in any analyses. Table 1 provides a description of the seven specific criminal thinking styles included in the present analyses, as well as a sample item from each scale. The PICTS has been used in numerous studies of criminal thinking. Meta-analytic

findings have shown that PICTS scores reliably predict future criminal offenses of various types (Walters, 2002). For the present study, coefficient alphas for the GCT, P, and R scales were .95, .92, and .92, respectively.

Adult criminal behavior. To assess nonsexual criminal offenses, trained research assistants reviewed official crime data contained in each participant's correctional file, which included classification reports, criminal history in adulthood, victim statements, police reports, and other pertinent records. From this information, researchers coded basic demographic data and detailed criminal history information on a file coding form. The crime categories used included sexual offenses, violent nonsexual offenses (e.g., assault), and nonviolent offenses (e.g., drug possession). Frequency scores for each crime category were tabulated; a score of 0 indicated no commission of the specific type of crime; 1 indicated commission of the specific type of crime once; 2 indicated commission of the specific crime two times, and; 3 indicating commission of the specific type of crime three or more times.

Based on prior work showing that sexual offenses (e.g., rape) in particular often go unreported to authorities (Koss, Gidycz, & Wisniewski, 1987) and therefore may have been particularly likely to be undocumented in the correction records, participants also completed five self-report items from the Sexual Experiences Questionnaire (SEQ; Lisak & Roth, 1988). These items reflected legally defined sexual offenses occurring since the age of 18 (i.e., fondling or intercourse obtained by threat or use of physical force, attempted physical force, or getting a victim too drunk or high to physically resist). Participants indicated their frequency of engaging in each behavior as an adult on a 5-point Likert scale that ranged from 1 (*never*) to 5 (*often*). Coefficient alpha for this scale was .81. For consistency with the other offense types, non-zero scores on this measure were converted to a 1 to 3 metric based on a tertiary split of the data. The highest sexual offending score (from either file review or self-report) for each participant was used for analyses. Out of the 291 men without a history of sexual offenses, 65 (22.3%) reported sexual aggression on the self-report measure. Of 47 men with a history of sexual offenses, 35 (74.5%) denied a history of sexual aggression on the self-report measure.

As such, scores for specific types of criminal behavior ranged from 0 to 3. A total frequency score for all criminal behaviors was then derived by summing across the frequencies/classifications for the three offense types, producing scores ranging from 0 (i.e., *lowest frequency crime commission*) to 9 (i.e., *highest frequency crime commission*). To ensure that severity of criminal acts was also accounted for in our measure of overall adult criminal behavior, participants were scored on a 1–3 scale according to the most serious offense committed, where 1 = *only nonviolent offenses were committed*, 2 = *either a violent nonsexual offense or a sexual offense was committed*, and 3 = *commission of both a violent nonsexual offense and a sexual offense*. Finally, an overall adult criminal behavior score was computed by multiplying the total crime frequency (0–9) by the crime severity score (1–3), resulting in a possible score ranging from 0 to 27.

Procedure

This study was approved by the Institutional Review Board of the authors' university as well as the state of Nebraska Diagnostic and Evaluation Center (NDEC), where data were collected. Male inmates at NDEC were recruited for a study concerned with "life experiences and sexual behavior" utilizing signs placed throughout the facility. They were informed that their participation was voluntary and would have no effect on their legal status or standing within the facility. All inmates were eligible to participate regardless of their convicted offense, with the exception of those who were unable to read in English. Respondents were compensated upon completion of the study with a payment of \$10 directly deposited into their institutional account. Following informed consent, collection of self-report data took place in groups of 6–10 on a weekly basis at a secure location within the institution by trained research assistants.

Data analysis strategy

The data were analyzed in three steps. The response frequencies for each variable were first examined. Next, zero-order correlations were computed to examine the associations between the variables. Finally, simple mediation analyses were conducted using Preacher and Hayes' (2004) SOBEL macro in SPSS. This procedure involved estimating total, direct, and indirect effects of child maltreatment (X) on adult criminal behavior (Y) through criminal thinking styles (M). The indirect effect indicates the degree to which the effect of child maltreatment on criminal behavior is reduced when the mediator (criminal thinking) is included. A 95% confidence interval of the indirect effect was estimated using 1000 bootstrap resamples. Confidence intervals not including zero signify statistically significant mediation. Finally, to test the possibility of reverse causal effects, we examined whether adult criminal behavior mediated a relationship between child maltreatment and criminal thinking.

Results

Descriptive analyses and bivariate associations

Based on cut-scores derived by the authors of the CTQ using Receiver Operating Characteristics (ROC) analyses (Bernstein & Fink, 1998), 31.5% of participants reported sexual abuse, 65.4% reported physical abuse, 50.3% physical neglect, 56.2% emotional abuse, and 53.8% emotional neglect in childhood. Overall, 14.5% of participants did not report any maltreatment, 18.0% reported one form of maltreatment, 14.5% reported two forms of maltreatment, 17.5% reported three forms of

Table 2. Descriptive statistics and intercorrelations.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Childhood maltreatment																				
1. Sexual abuse																				
2. Physical abuse	.34																			
3. Physical neglect	.31	.41																		
4. Emotional abuse	.42	.75	.53																	
5. Emotional neglect	.28	.50	.60	.62																
6. Total score	.63	.81	.71	.88	.78															
Criminal thinking styles																				
7. Mollification	.02	.19	.20	.23	.21	.22														
8. Entitlement	.03	.18	.29	.21	.24	.24	.76													
9. Power orientation	.10	.18	.26	.26	.24	.26	.72	.72												
10. Superoptimism	.02	.13	.16	.14	.15	.15	.66	.69	.66											
11. Cutoff	.05	.21	.23	.24	.24	.25	.68	.61	.67	.64										
12. Cognitive Indolence	.06	.14	.14	.22	.22	.21	.60	.60	.60	.59	.67									
13. Discontinuity	.13	.23	.24	.31	.30	.32	.59	.54	.56	.53	.71	.75								
14. Proactive	.05	.19	.25	.24	.23	.25	.89	.89	.88	.86	.74	.68	.63							
15. Reactive	.09	.22	.23	.29	.29	.29	.70	.65	.68	.65	.89	.89	.91	.76						
16. General	.07	.22	.26	.28	.28	.29	.85	.83	.84	.81	.86	.83	.81	.95	.93					
Adult criminal behavior																				
17. Nonviolent/nonsexual	-.27	.01	.02	-.08	-.01	-.09	.16	.15	.00	.13	.19	.05	.07	.13	.12	.13				
18. Violent/nonsexual	-.12	.05	.03	.03	.04	.01	.05	.14	.07	.09	.10	.06	.04	.10	.08	.10	.15			
19. Sexual	.28	.11	.17	.23	.09	.23	.13	.08	.16	.04	.10	.13	.13	.12	.14	.13	-.26	-.05		
20. Overall criminality	.01	.11	.14	.16	.09	.13	.19	.22	.17	.15	.23	.17	.17	.21	.22	.23	.21	.70	.56	
Mean	8.05	11.33	8.71	10.72	11.39	50.18	1.73	1.70	1.80	2.09	2.11	2.05	2.00	1.83	2.05	1.92	2.75	1.01	0.53	8.73
Standard deviation	5.64	6.03	3.95	5.68	5.61	20.54	0.52	0.51	0.56	0.56	0.66	0.56	0.60	0.47	0.54	0.47	0.70	1.14	0.89	5.70

Bold coefficients are statistically significant at $p < .01$. Bold-italicized coefficients are statistically significant at $p < .05$. Non-bold, non-italicized coefficients are not statistically significant.

maltreatment, 20.4% reported four forms of maltreatment, and 15.1% endorsed all five forms of maltreatment. With regard to adult criminal behavior, 96.4% of participants had a history of nonviolent offenses, 52.7% had a history of violent nonsexual offenses, and 33.1% had a history of sexual offenses.

Zero-order correlations and descriptive statistics for all study variables, including mean severity scores for child maltreatment, criminal thinking styles, and adult criminal behavior, are reported in Table 2. Intercorrelations between maltreatment types all were positive and statistically significant, as were the intercorrelations between the criminal thinking styles. There were no significant associations between violent nonsexual offenses and sexual offenses, whereas nonviolent offenses were positively related to violent nonsexual offenses and negatively associated with sexual offenses.

For the remaining correlations, we focus specifically on those that are relevant to the study hypotheses (see Table 2 for relevant statistics). As expected, overall child maltreatment experiences were positively and significantly associated with overall adult criminal behavior. Moreover, as predicted, overall child maltreatment experiences were positively and significantly associated with general, proactive, and reactive criminal thinking styles, each of which were positively associated with overall adult criminal behavior. These results provide sufficient evidence to consider general criminal thinking styles and both the proactive and reactive subscales of the PICTS as potential mediators of the association between overall child maltreatment experiences and overall adult criminal behavior, which is considered in the next section.

As predicted, experiences with child sexual abuse were positively correlated with the commission of sexual offenses as an adult. In addition, general, proactive, and reactive criminal thinking styles each were positively and significantly correlated with the commission of sexual offenses. However, experiences with child sexual abuse were not significantly associated with general, proactive, or reactive criminal thinking styles, thus precluding the testing of mediated effects for the association between child sexual abuse and the commission of sex crimes.

We also predicted that experiences with physical abuse and neglect as a child would be positively correlated with the commission of nonviolent offenses and the commission of violent nonsexual offenses. These predictions were not supported. However, as expected, experiences with physical abuse and neglect as a child were positively and significantly correlated with the general, proactive, and reactive criminal thinking styles. Although consistent with our hypotheses, the non-significant direct associations do not allow for tests of mediation.

Mediation analyses

As noted, the preliminary analyses allowed us to test three mediation hypotheses, specifically whether the association between overall child maltreatment and overall adult criminal behavior was mediated by: (a) the General Criminal Thinking scale of the PICTS, (b) the Proactive subscale of the PICTS, and (c) the Reactive subscale of the PICTS. Unstandardized path coefficients for these analyses are shown in Table 3. Consistent with the bivariate associations, overall child maltreatment

Table 3. Criminal thinking styles mediate the relationship between child maltreatment and adult criminal behavior.

Criminal thinking style	Effect of child maltreatment on criminal thinking		Effect of criminal thinking on adult criminal behavior, controlling for child maltreatment		Direct effect of child maltreatment on adult criminal behavior		Indirect effect of child maltreatment on adult criminal behavior through criminal thinking		95% Confidence interval for indirect effect
	B	SE	B	SE	B	SE	B	SE	
General	.033	.006	2.451	.669	.178	.075	.097	.077	.037–.142
Proactive	.029	.006	2.229	.664	.178	.075	.114	.076	.019–.120
Reactive	.038	.007	2.031	.583	.178	.075	.100	.077	.029–.139

B: unstandardized coefficient; SE: standard error. Bold coefficients are statistically significant at $p < .01$. Bold-italicized figures are statistically significant at $p < .05$. Non-bold, non-italicized figures are not statistically significant.

experiences were positively and significantly associated with overall adult criminal behavior and general, proactive, and reactive criminal thinking styles. In addition, controlling for overall child maltreatment experiences, general, proactive, and reactive criminal thinking were each positively and significantly associated with overall adult criminal behavior. In all three models, the indirect effects were statistically significant, not including zero in the 95% confidence interval, which indicates full mediation (Preacher & Hayes, 2004).

Finally, although the focus of the present analysis is on criminal thinking patterns as a mediator of child maltreatment and adult criminality, there has been some debate regarding whether criminal thinking facilitates criminal offending (as suggested by the analyses) or emerges as a post-offense justification for criminal acts (e.g., Gannon et al., 2007; Maruna and Mann, 2006). To assist in determining directionality and examine the possibility of reverse causal effects, we tested an alternate model with adult criminality as a mediator of the relations between child maltreatment and criminal thinking styles (general, proactive, and reactive). Analyses revealed that these indirect effects were not statistically significant, as zero was included in each of the 95% confidence intervals. As such, reverse causal effects were not supported.

Discussion

The present study is one of the few to assess mediating mechanisms that explain linkages between child maltreatment and criminal offending. Consistent with prior work with male inmates (e.g., Komarovskaya et al., 2011; Mandelli et al., 2011; Wolff et al., 2009), rates of child maltreatment were enormously high and reflected a large amount of co-occurrence among various types of abuse and neglect. Also in line with prior work (e.g., Romano and De Luca, 1997; Simons et al., 2002), bivariate analyses showed the expected relations between early sexual abuse and the commission of sexual offenses as an adult. Moreover, child sexual abuse was inversely related to all other criminal offenses (violent nonsexual and non-violent), suggesting some specificity of outcomes associated with this form of maltreatment. We did not find expected associations between child physical abuse or neglect and the commission of violent nonsexual offenses in adulthood. It is possible that the low internal consistency of the physical neglect scale hindered our ability to detect this association. Prior literature presents a mixed picture of this association, with some studies linking early abuse to violent offending (Dutton and Hart, 1992; Haapasalo and Moilanen, 2004) and others reporting no such linkage (e.g., Widom & Maxfield, 2001). Variation in the means of assessing both child maltreatment and criminality may contribute to these inconsistent findings. Whereas some studies draw from child welfare or arrest records, others rely on self-report to assess these variables. However, both methods are flawed. Crime records exist only when an arrest is made and self-reports of criminality may be subject to inaccurate recall or intentional underreporting. In the present study, for example, our file review identified 52.7% of inmates as having committed violent criminal acts, which although high, likely still underestimates the actual occurrence of these behaviors. Future work that aggregates arrest record and self-report data would be useful to capture a larger proportion of these offenses. Despite the potential limitations of self-reports, we found a small but significant association between overall maltreatment and overall criminality, which is broadly consistent with the literature documenting a cycle of violence (Widom, 1989b; Widom, 2000).

Analyses examining relations between maltreatment types and criminal thinking confirmed expectations that proactive and reactive criminal thinking styles are elevated among inmates reporting physical abuse and neglect histories. These findings are in accord with existing theories and research showing linkages between specific forms of child maltreatment and various cognitive distortions (Barriga et al., 2000; Dodge et al., 1995; Eckhardt and Jamison, 2002; Hatch-Maillette et al., 2001). An exception to this pattern was that sexual abuse was not associated with any measured thinking styles. It is possible that male inmates who experienced sexual abuse—a particularly stigmatizing form of maltreatment (Holmes, Offen, & Waller, 1997)—sought to minimize the impact their abuse had on their belief system and disclosed fewer thinking distortions. Further, the particular measure for criminal thinking used in this study (the PICTS) may not adequately capture internally-oriented thinking styles associated with sexual abuse (e.g., internal, stable, and global view of negative events; Mannarino and Cohen, 1996; Steel et al., 2004), but rather is more sensitive to externally oriented attitudes and beliefs more commonly associated with other types of maltreatment, such as child physical abuse (e.g., hostile attribution bias; Dodge

et al., 1995). Additional research is needed to identify unique cognitions that may be specific to sexual abuse and increase the risk of subsequent offending.

Analyses also explored relations between thinking styles and criminal behaviors. Consistent with hypotheses, proactive criminal thinking was associated with sexual offending. Specifically, consistent with prior work (Hatch-Maillette et al., 2001; Stermac and Segal, 1989) the proactive thinking styles of mollification and power orientation were associated with sexual offending. These findings suggest that rationalization of criminal behavior and focusing on the need for power over others may increase risk for sexual offending. Entitlement was not related to prior commission of sex offenses. Although some studies link a sense of entitlement to sexual offending (Hanson et al., 1994; Marziano et al., 2006), others suggest this thinking style is not strongly characteristic of sexual offenders who have sexual victimization experiences or have offended against minors as opposed to adults or peers (Richardson, 2005). Further, reactive criminal thinking, particularly including cognitive indolence and discontinuity, was also related to increased sexual offending. This suggests that difficulty persisting in problem solving and following through on good intentions may also be associated with sexual offending.

Contrary to hypotheses, violent nonsexual offending was unrelated to overall proactive or reactive criminal thinking styles. However, violent nonsexual offenses were associated with a sense of entitlement to act criminally, consistent with past research (Mills, Kroner, & Hemmati, 2004). If, as suggested earlier, violent nonsexual offending was underrepresented in the correctional files, this may have weakened any association between thinking styles and these behaviors, to a level of non-significance. Nonviolent offending, on the other hand, was significantly associated with general, proactive, and reactive criminal thinking styles. Thus, criminal thinking in this sample was more consistently associated with nonviolent as opposed to violent non-sexual offenses.

We next tested our proposed cognitive process model in which criminal thinking styles were expected to mediate associations between child maltreatment and adult criminal behavior. Notably, general criminal thinking styles, including both proactive and reactive thinking, fully accounted for the relations between early maltreatment to adult criminal behavior. This finding suggests that a history of child maltreatment may contribute to the commission of criminal behaviors in adulthood through cognitive distortions that are recognized risk factors for offending. This finding fits with prior research supporting the cycle of violence theory (e.g., Widom, 2000; Widom and Ames, 1994; Widom and Maxfield, 2001), which posits that children who observe or directly experience some form of maltreatment may internalize beliefs that criminal behavior is an acceptable and effective way to accomplish personal and interpersonal goals (Crick and Dodge, 1994; Langhinrichsen-Rohling et al., 2004), resulting in a higher rate of aggressive and violent behaviors. Our findings that general criminal thinking, and its components of proactive and reactive thinking, were all significant mediators is consistent with a "general effects model" in which all forms of maltreatment are seen as traumatizing and sharing certain elements (e.g., threats to one's psychological or physical integrity) that lead to similar adverse outcomes in adulthood (Higgins and McCabe, 2001; Varia et al., 1996). In the present context, this model suggests that cognitive distortions arising from early maltreatment may serve as a generalized pathway to increased criminal behavior in adulthood.

The present findings should be viewed in the context of study limitations. First, characteristics of our sample (male inmates in the Midwest) limit the generalizability of results to similar populations. It will be important for future research to test the current hypotheses with a broader range of participants impacted by maltreatment. For example, given possible gender differences in the cycle of violence (Fagan, 2001 and Topitzes et al., 2011), further investigations are needed in incarcerated females as well as community and clinical (i.e., psychiatric) samples of men and women from different geographic locations. Second, although participant responses remained anonymous, the sensitive nature of the survey may have made some individuals hesitant to disclose certain maltreatment experiences or criminal behaviors (e.g., sexual offending), resulting in underreporting of either of these activities. As noted previously, the retrospective method of data collection also introduces the likelihood that certain events were recalled inaccurately or intentionally withheld. Likewise, official records cannot fully capture the extent of criminal offending (especially violent nonsexual offenses). Official records in conjunction with self-report measures of all types of crimes committed may provide a more comprehensive appraisal of adult criminal behavior (Weinrott & Saylor, 1991).

Finally, although the findings are consistent with the possibility that cognitive distortions originating from child maltreatment contribute to adult criminality, the correlational design of the study does not permit conclusions about causation or the temporal ordering of variables. In this study, thinking styles were assessed subsequent to the occurrence of criminal behavior, which differs from our proposed model of criminal behaviors as an outcome of criminal thinking. Although it is quite possible that criminal behavior enhances criminal thinking, our analyses did not support this alternate model, which lends credence to the original hypothesized ordering. Nevertheless, only a longitudinal design assessing criminal thinking styles and criminality over time could definitively establish the temporal sequence of these variables. Moreover, although statistically significant, criminal thinking accounted for a modest amount of variance in the relationship between child maltreatment and criminal behavior. This highlights the fact that a multitude of psychosocial and other factors, including genetics (Kim-Cohen et al., 2006), are likely to play a role in the cycle of violence. Further, given that the independent variable (child maltreatment) was not (and could not be) experimentally manipulated, an unmeasured variable could account for the variance in the mediation model (e.g., Hayes, 2013). Additional research is needed to examine additional mechanisms, not measured here, to more fully understand the complex pathways between maltreatment and adult offending.

Although criminal behavior is not an inevitable consequence of maltreatment, early maltreatment does heighten the risk of such outcomes. The current study explicates this link by highlighting the contributions of maltreatment-related criminal thinking to adult offending. While cognitive distortions have long been recognized as etiological risk factors for the commission of crimes (Gannon et al., 2007), this study may be the first to suggest that early maltreatment, criminal thinking, and offending behaviors operate as part of a more coherent whole. As such, the present findings have several treatment implications. First, it may be beneficial for practitioners and those working in correctional settings to address the heightened risk of offending associated with a history of child maltreatment, while bearing in mind that criminal behavior is by no means an inevitable outcome of early abuse or neglect. Second, this study found that specific child maltreatment types are associated with certain criminal thinking styles. For example, child physical abuse and neglect were both related to general, proactive, and reactive thinking styles. Although these thinking styles were not related to violent nonsexual criminal acts, they may still have a negative impact in other domains such as interpersonal relationships and occupational functioning. Further research will be necessary to consider this possibility. If supported, such results would suggest that intervention efforts should focus on modifying both cognitive distortions that justify harmful behaviors toward others (proactive thinking styles) and result in impulsive behaviors (reactive thinking styles). General, proactive, and reactive thinking styles were associated with nonviolent crimes, as well as sexual crimes. These findings add to a large literature (see Jolliffe & Farrington, 2004) suggesting the need for interventions that help offenders modify offense-supportive cognitions in ways that will enhance empathy and perspective-taking among offenders. Ultimately, the identification and amelioration of offense-supportive cognitions may help break the cycle of violence within this at-risk group.

References

- Barriga, A. Q., Landau, J. R., Stinson, B. L., Liau, A. K., & Gibbs, J. C. (2000). Cognitive distortion and problem behaviors in adolescents. *Criminal Justice and Behavior, 27*, 36-56.
- Bernstein, D. P., & Fink, L. (1998). *Childhood Trauma Questionnaire: A retrospective self-report*. San Antonio, TX: The Psychological Corporation.
- Bernstein, D., Fink, L., Handelsman, L., Foote, J., Lovejoy, M., Wenzel, K., Sapareto, E., & Ruggiero, J. (1994). Initial reliability and validity of a new retrospective measure of child abuse and neglect. *American Journal of Psychiatry, 151*, 1132-1136.
- Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., & Zule, W. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse & Neglect, 27*, 169-190.
- Brown, E. J., & Kolko, D. J. (1999). Child victims' attributions about being physically abused: An examination of factors associated with symptom severity. *Journal of Abnormal Child Psychology, 27*, 311-322.
- Chambers, J., Eccleston, L., Day, A., Ward, T., & Howells, K. (2008). Treatment readiness in violent offenders: The influence of cognitive factors on engagement in violence programs. *Aggression and Violent Behavior, 13*, 276-284.
- Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin, 115*, 74-101.
- DeGue, S., & Widom, C. S. (2009). Does out-of-home placement mediate the relationship between child maltreatment and adult criminality? *Child Maltreatment, 14*, 344-355.
- Dodge, K. A. (2006). Translational science in action: Hostile attributional style and the development of aggressive behavior problems. *Development and Psychopathology, 18*, 791-814.
- Dodge, K. A., Bates, J. E., & Pettit, G. S. (1990). Mechanisms in the cycle of violence. *Science, 250*, 1678-1683.
- Dodge, K. A., Pettit, G. S., Bates, J. E., & Valente, E. (1995). Social information-processing patterns partially mediate the effect of early physical abuse on later conduct problems. *Journal of Abnormal Psychology, 104*, 632-643.
- Dutton, D. G., & Hart, S. D. (1992). Evidence for long-term, specific effects of child abuse and neglect on criminal behavior in men. *International Journal of Offender Therapy and Comparative Criminology, 36*, 129-137.
- Eckhardt, C., & Jamison, T. R. (2002). Articulated thoughts of male dating violence perpetrators during anger arousal. *Cognitive Therapy and Research, 26*, 289-308.
- English, D. J., Widom, C. S., & Brandford, C. (2002). *Childhood victimization and delinquency, adult criminality, and violent criminal behavior: A replication and extension. Final Report presented to the National Institute (Grant No. 97-IJ-CX-0017)*. Retrieved from the National Criminal Justice Reference Service website: <http://www.ncjrs.gov>
- Epps, J. B., & Kendall, P. C. (1995). Hostile attributional bias in adults. *Cognitive Therapy and Research, 19*, 159-178.
- Fagan, A. A. (2001). The gender cycle of violence: Comparing the effects of child abuse and neglect on criminal offending for males and females. *Violence and Victims, 16*, 457-474.
- Fang, X., & Corso, P. (2007). Child maltreatment, youth violence, and intimate partner violence: A developmental trajectory. *American Journal of Preventive Medicine, 33*, 281-290.
- Felson, R. B., & Lane, K. J. (2009). Social learning, sexual and physical abuse, and adult crime. *Journal of Aggressive Behavior, 35*, 489-501.
- Finkelhor, D., & Browne, A. (1988). Assessing the long-term impact of child sexual abuse: A review and conceptualization. In G. T. Hotaling, D. Finkelhor, J. Kirkpatrick, & M. A. Straus (Eds.), *Family abuse and its consequences: New directions in research* (pp. 271-284). Newbury Park, CA: Sage.
- Flavell, J. H., Miller, P. H., & Miller, S. A. (2002). *Cognitive development* (4th ed.). Upper Saddle River, NJ: Prentice Hall.
- Fondacaro, K. M., Holt, J. C., & Powell, T. A. (1999). Psychological impact of childhood sexual abuse on male inmates: The importance of perception. *Child Abuse & Neglect, 23*, 361-369.

- Gannon, T., Ward, T., Beech, A. R., & Fisher, D. (Eds.). (2007). *Aggressive offenders cognition: Theory, research and practice*. Chichester, England: Wiley.
- Grogan-Kaylor, A., & Otis, M. D. (2003). The effect of child maltreatment on adult criminality: A tobit regression analysis. *Child Maltreatment, 8*, 129-137.
- Haapasalo, J., & Moilanen, J. (2004). Official and self-reported child abuse and adult crime of young offenders. *Criminal Justice and Behavior, 31*, 127-149.
- Hanson, R. K., Gizzarelli, R., & Scott, H. (1994). The attitudes of incest offenders: Sexual entitlement and acceptance of sex with children. *Criminal Justice and Behavior, 21*, 187-202.
- Hatch-Maillette, M. A., Scalora, M. J., Huss, M. T., & Baumgartner, J. V. (2001). Criminal thinking patterns: Are child molesters unique? *International Journal of Offender Therapy and Comparative Criminology, 45*, 102-117.
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: Guilford Press.
- Higgins, D. J., & McCabe, M. P. (2001). Multiple forms of child abuse and neglect: Adult retrospective reports. *Aggression and Violent Behavior, 6*, 547-578.
- Hill, J., & Nathan, R. (2008). Childhood antecedents of serious violence in adult male offenders. *Aggressive Behavior, 34*, 329-338.
- Holmes, G. R., Offen, L., & Waller, G. (1997). See no evil, hear no evil, speak no evil: Why do relatively few male victims of childhood sexual abuse receive help for abuse-related issues in adulthood? *Clinical Psychology Review, 17*, 69-88.
- Jolliffe, D., & Farrington, D. P. (2004). Empathy and offending: A systematic review and meta-analysis. *Aggression and Violent Behavior, 9*, 441-476.
- Kim-Cohen, J., Caspi, A., Taylor, A., Williams, B., Newcombe, R., Craig, I. W., & Moffitt, T. E. (2006). MAOA, maltreatment, and gene-environment interaction predicting children's mental health: New evidence and a meta-analysis. *Molecular Psychiatry, 11*, 903-913.
- Komarovskaya, I. (2009). *Trauma, PTSD, and the cycle of violence among incarcerated men and women*. Charlottesville, VA: University of Virginia (Doctoral dissertation).
- Komarovskaya, I. A., Booker Loper, A., Warren, J., & Jackson, S. (2011). Exploring gender differences in trauma exposure and the emergence of symptoms of PTSD among incarcerated men and women. *Journal of Forensic Psychiatry and Psychology, 22*, 395-410.
- Koss, M. P., Gidycz, C. A., & Wisniewski, N. (1987). The scope of rape: Incidence and prevalence of sexual aggression and victimization in a national sample of higher education students. *Journal of Consulting and Clinical Psychology, 55*, 162-170.
- Kreps, J. J., & Gonzalez, T. (2010). *The effects of maltreatment on children's moral development*. California Polytechnic State University: San Luis Obispo, CA.
- Langhinrichsen-Rohling, J., Hankla, M., & Stormberg, C. D. (2004). The relationship behavior networks of young adults: A test of the intergenerational transmission of violence hypothesis. *Journal of Family Violence, 19*, 139-151.
- Lansford, J. E., Miller-Johnson, S., Berlin, L. J., Dodge, K. A., Bates, J. E., & Pettit, G. S. (2007). Early physical abuse and later violent delinquency: A prospective longitudinal study. *Child Maltreatment, 12*, 233-245.
- Lee, V., & Hoaken, P. N. S. (2007). Cognition, emotion, and neurobiological development: Mediating the relation between maltreatment and aggression. *Child Maltreatment, 12*, 281-298.
- Lisak, D., & Roth, S. (1988). Motivational factors in nonincarcerated sexually aggressive men. *Journal of Personality and Social Psychology, 55*, 795-802.
- Mandelli, L., V. Carli, V., Roy, A., Serretti, A., & Sarchiapone, M. (2011). The influence of childhood trauma on the onset and repetition of suicidal behavior: An investigation in a high risk sample of male prisoners. *Journal of Psychiatric Research, 45*, 742-747.
- Mannarino, A. P., & Cohen, J. A. (1996). A follow-up study of factors that mediate the development of psychological symptomatology in sexually abused girls. *Child Maltreatment, 1*, 246-260.
- Maruna, S., & Mann, R. E. (2006). A fundamental attribution error? Rethinking cognitive distortions. *Legal and Criminological Psychology, 11*, 155-177.
- Marziano, V., Ward, T., Beech, A. R., & Pattison, P. (2006). Identification of five fundamental implicit theories underlying cognitive distortions in child abusers: A preliminary study. *Crime, Psychology and Law, 12*, 97-105.
- McGrath, S. A., Nilsen, A. A., & Kerley, K. R. (2011). Sexual victimization in childhood and the propensity for juvenile delinquency and adult criminal behavior: A systematic review. *Aggression and Violent Behavior, 16*, 485-492.
- Mills, J. F., Kroner, D. G., & Hemmati, T. (2004). The Measures of Criminal Attitudes and Associates (MCAA): The prediction of general and violent recidivism. *Criminal Justice and Behavior, 31*, 717-733.
- Neller, D. J., Denney, R. L., Pietz, C. A., & Thomlinson, R. P. (2006). The relationship between trauma and violence in a jail inmate sample. *Journal of Interpersonal Violence, 21*, 1234-1241.
- Paivio, S. C., & Cramer, K. M. (2004). Factor structure and reliability of the Childhood Trauma Questionnaire in a Canadian undergraduate student sample. *Child Abuse & Neglect, 28*, 889-904.
- Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*, 717-731.
- Richardson, G. (2005). Early maladaptive schemas in a sample of British adolescent sexual abusers: Implications for therapy. *Journal of Sexual Aggression, 11*, 259-276.
- Romano, E., & De Luca, R. (1997). Exploring the relationship between childhood sexual abuse and adult sexual perpetration. *Journal of Family Violence, 12*, 85-98.
- Simons, D., Wurtele, S. K., & Heil, P. (2002). Childhood victimization and lack of empathy as predictors of sexual offending against women and children. *Journal of Interpersonal Violence, 17*, 1291-1307.
- Smith, C. A., Ireland, T. O., & Thornberry, T. P. (2005). Adolescent maltreatment and its impact on young adult antisocial behavior. *Child Abuse and Neglect, 29*, 1099-1119.
- Smith, C., & Thornberry, T. P. (1995). The relationship between childhood maltreatment and adolescent involvement in delinquency. *Criminology, 33*, 451-481.

- Steel, J., Sanna, L., Hammond, B., Whipple, J., & Cross, H. (2004). Psychological sequelae of childhood sexual abuse: Abuse-related characteristics, coping strategies, and attributional style. *Child Abuse & Neglect, 28*, 785–801.
- Stermac, L., & Segal, Z. V. (1989). Adult sexual contact with children: An examination of cognitive factors. *Behavioral Assessment, 20*, 573–584.
- Teague, R., Mazerolle, P., Legosz, M., & Sanderson, J. (2008). Linking childhood exposure to physical abuse and adult offending: Examining mediating factors and gendered relationships. *Justice Quarterly, 25*, 313–348.
- Thornberry, T. P., Ireland, T. O., & Smith, C. A. (2001). The importance of timing: The varying impact of childhood and adolescent maltreatment on multiple problem outcomes. *Development and Psychopathology, 13*, 957–979.
- Topitzes, J., Mersky, J. P., & Reynolds, A. J. (2011). Child maltreatment and offending behavior: Gender specific effects and pathways. *Criminal Justice and Behavior, 38*, 492–510.
- Varia, R., Abidin, R. R., & Dass, P. (1996). Perceptions of abuse: Effects on adult psychological and social adjustment. *Child Abuse & Neglect, 20*, 511–526.
- Wallinius, M., Johansson, P., Lardén, M., & Dernevik, M. (2011). Self-serving cognitive distortions and antisocial behavior among adults and adolescents. *Criminal Justice and Behavior, 38*, 286–301.
- Walters, G. D. (1995). The Psychological Inventory of Criminal Thinking Styles. Part I. Reliability and preliminary validity. *Criminal Justice and Behavior, 22*, 307–325.
- Walters, G. D. (2002). The Psychological Inventory of Criminal Thinking Styles: A review and meta-analysis. *Assessment, 9*, 278–291.
- Walters, G. D. (2005). Predicting institutional adjustment with the Lifestyle Criminality Screening Form and Psychological Inventory of Criminal Thinking Styles. *International Journal of Forensic Mental Health, 4*, 63–70.
- Walters, G. D. (2007). Measuring proactive and reactive criminal thinking with the PICTS: Correlations with outcome expectancies and hostile attribution biases. *Journal of Interpersonal Violence, 22*, 371–385.
- Walters, G. D. (2008). Self-report measures of psychopathy, antisocial personality, and criminal lifestyle: Testing and validating a two-dimensional model. *Criminal Justice and Behavior, 35*, 1459–1483.
- Walters, G. D., & White, T. W. (1989). The thinking criminal: A cognitive model of lifestyle criminality. *Criminal Justice Research Bulletin, 4*, 1–10.
- Walters, G. D., Hagman, B. T., & Cohn, A. M. (2011). Toward a hierarchical model of criminal thinking: Evidence from item response theory and confirmatory factor analysis. *Psychological Assessment, 23*, 925–936.
- Weeks, R., & Widom, C. S. (1998). Self-reports of early childhood victimization among incarcerated adult male felons. *Journal of Interpersonal Violence, 13*, 346–361.
- Weinrott, M. R., & Saylor, M. (1991). Self-Report of crimes committed by sex offenders. *Journal of Interpersonal Violence, 6*, 286–300.
- Widom, C. S. (1989a). Child abuse, neglect, and adult behavior: Research design and findings on criminality, violence, and child abuse. *American Journal of Orthopsychiatry, 59*, 355–367.
- Widom, C. S. (1989b). The cycle of violence. *Science, 244*, 160–166.
- Widom, C. S. (1995). *Victims of childhood sexual abuse: Later criminal consequences*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, National Institute of Justice.
- Widom, C. S. (2000). Motivation and Mechanisms in the “Cycle of Violence”. In D. J. Hansen (Ed.), *Motivation and Child Maltreatment* (Vol. 46). Lincoln: University of Nebraska Press.
- Widom, C. S., & Ames, M. A. (1994). Criminal consequences of childhood sexual victimization. *Child Abuse & Neglect, 18*, 303–318.
- Widom, C. S., & Maxfield, M. G. (2001). *An update on the cycle of violence*. National Institute of Justice Research in Brief. Washington, DC: National Institute of Justice.
- Wolff, N., Shi, J., & Siegel, J. A. (2009). Patterns of victimization among male and female inmates: Evidence of an enduring legacy. *Violence and Victims, 24*, 469–484.
- Young, J. E., Klosko, J., & Weishaar, M. E. (2003). *Schema therapy: A practitioner's guide*. New York, NY: Guilford.