

Chapter 2

**FROM INTERNALIZING TO EXTERNALIZING:
THEORETICAL MODELS OF THE PROCESSES
LINKING PTSD TO JUVENILE DELINQUENCY**

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ABSTRACT

In recent years, increasing attention has been drawn to a population previously overlooked in studies of posttraumatic stress disorder (PTSD), and that is youth involved with the juvenile justice system. Although prevalence rates vary, recent studies reveal that as many as 32% of boys and 52% of girls in detention settings meet DSM-IV criteria for a diagnosis of PTSD (see Kerig & Becker, in press, for a review). However, given that this area of research is relatively new, few studies to date have gone beyond the documentation of prevalence rates to examine the underlying processes that might account for the link between trauma and severe forms of antisocial behavior. The present chapter describes the prevailing theoretical models of the developmental psychopathology of trauma and delinquency and reviews the existing empirical evidence in support of their suppositions. Models discussed include those focusing on emotion processing (e.g., affect dysregulation, emotional numbing, emotion recognition deficits); cognitive processes (e.g., hostile attributions, stigma, alienation); interpersonal processes (e.g., traumatic bonding, antisocial peers); as well as integrative models, including attachment theory and the trauma coping model.

TRAUMA EXPOSURE, PTSD, AND DELINQUENCY

A large body of literature attests to the fact that youth in detention settings have been exposed to significant levels of trauma. For example, Abram and colleagues (2004) found that 93% of boys and 84% of girls in their sample had experienced a traumatic life event, with the typical youth having experienced 14 traumatic stressors over the life course. Similarly, Chamberlain & Moore (2002) reported that 93% of girls mandated to out-of-home treatment had undergone a terrifying experience in the past year: 67% had been attacked or beaten, 40% had been forced to engage in a sexual act, and 26% had been in a car accident; in a subsequent study with a larger sample, Smith, Leve, & Chamberlain (2006) found that sexual abuse was reported by 76% these girls. Using DSM-IV criteria, Ford and colleagues (2008) found that 61% of youth in a pre-trial detention center had been exposed to a traumatic event, whereas Kerig and colleagues (2009) found that, among detained youth, 85% of girls and 72% of boys met DSM-IV criteria for exposure to trauma. Further, there is evidence that exposure to traumatic events increases the risk of juvenile delinquency. In addition to the many concurrent studies showing an association between trauma and antisocial behavior, longitudinal research also suggests that maltreatment in early childhood is predictive of engagement in the kind of serious delinquency that involves youth in the juvenile justice system (e.g., Cernkovich et al., 2008; Feiring et al., 2007; Henry & Moffitt, 1997; Lansford et al., 2007; Mersky & Reynolds, 2007; Smith & Thornberry, 1995; Stewart et al., 2008; Tyler et al., 2008; Widom et al., 2006; Widom & White, 1997).

Some research also suggests that the relationship between trauma and delinquency is particularly evident for girls. Delinquent girls typically are found to have been exposed disproportionately to trauma, particularly sexual abuse (e.g., Abram et al., 2004; Belknap & Holsinger, 2006; Ford, Hartman, et al., 2008; Gavazzi & Yarcheck, 2006; Holsinger et al., 1999; Johannson & Kempf-Leonard, 2009; Kerig et al., 2009; Wareham & Dembo, 2007). Although the research is not entirely consistent, detained girls also have been found to have higher levels of PTSD symptoms than boys in a number of studies (e.g., Cauffman et al., 1998; Kerig et al., 2009; Martin et al., 2008; Wood et al., 2002). Yet another set of studies finds that traumatic experiences such as abuse and neglect are more predictive of delinquency, particularly violent behavior, among girls than boys (e.g., Delbo et al., 1995; Funk, 1999; Gavazzi & Yarcheck, 2006; Martin et al., 2008; McCabe et al., 2002; Trickett & Gordis, 2004; Widom & White, 1997; Wood et al., 2002).

There are a number of limitations to this research, however, that limit our ability to draw clear conclusions about causal relationships between trauma and delinquency. First, the majority of studies have not directly tested whether trauma comprises a mechanism by which exposure to early adversity is linked to later delinquency. To establish this kind of causal link, formal tests of mediational effects in data derived from prospective longitudinal studies would be needed. Second, the majority of the studies conducted have not investigated “trauma” as it is defined formally by the DSM-IV. Instead, the term is used loosely to refer to adverse childhood experiences that are assumed to be traumagenic, including maltreatment and exposure to community violence. However, not all adverse childhood experiences involve the degree of “fear, helplessness, and horror” that DSM-IV requires for the definition of trauma, and not all children exposed to such events develop symptoms of posttraumatic stress (Fletcher, 2006). Third, the kinds of adverse experiences that are labeled as “traumatic”

differ along a number of important dimensions that may have significant implications for development. For example, Terr (1991) makes the distinction between Type I (discrete, dramatic, single-incident stressors) and Type II traumas (chronic, pervasive, early-onset stressors). Although the symptoms that follow from Type I traumas are captured by the DSM-IV criteria for the diagnosis of PTSD, Type II traumas may be associated with very different symptom clusters and developmental sequelae. These have been termed complex PTSD (Herman, 1992; Ford & Courtois, 2009) or, more recently, the Developmental Trauma Disorder diagnosis proposed for DSM-V (Cook, Spinazzola, Ford, Lanktree, Blaustein, Cloitre, et al., 2005; van der Kolk, 2005, van der Kolk et al., 2009), which has been shown to have utility in discriminating the subgroup of delinquent youth who have experienced trauma (Silvern & McClintic, 2009). The distinction between Type I and Type II traumas is not necessarily clear-cut, however, and they are not mutually exclusive. Children growing up in maltreating homes may experience a backdrop of chronic, low-level adversity that would be labeled as Type II trauma, but which is punctuated at erratic intervals by the kinds of terrifying events or extremely abusive parental behavior that would be characterized as Type I trauma. Therefore, it is important to continue to take a broad view of the concept of trauma as we attempt to understand how it might derail normal development and set youth on the pathway to delinquent behavior.

Another thorny issue concerns what exactly is meant by the dependent variable, “delinquency.” Although this is a term that some reserve for the legal designation of having been adjudicated in court, in much of the literature it is used as a catch-all phrase for engaging in a wide variety of misconduct. Particularly on measures requesting self-reports of delinquency in community samples, behaviors range widely from those that suggest exaggerations of normative youthful hijinks (e.g., vandalism), to those that are illegal only because of the minor status of the adolescents (e.g., cigarette use), to those that would represent truly heinous crimes at any age (e.g., sexual assault). The same widely divergent list of reasons that an adolescent is termed “delinquent” is evident even among those who are incarcerated. For example, at one point our own sample of youth housed in a county detention center included a boy who was a habitual runaway from an abusive and neglectful home, a girl who had participated in a “joy ride” that involved the unauthorized use of a neighbor’s automobile, and a boy who lured an eight-year-old girl into an abandoned shed and violently raped her after nailing her hands to the floor. Clearly, these forms of “delinquency” are diverse and likely are differentially predicted by such risk factors as PTSD. Although much of the literature equates delinquency with violence, this clearly is not the case for all youth, and focusing on the charges on a youth’s record does not necessarily distinguish which do and do not involve physical aggression. For example, charges such as domestic violence may, upon closer inspection, provide a euphemism for parent-child conflicts in which little-to-no actual violence is involved (e.g., Acoca, 1999). Therefore, this review requires a caveat in that what is meant by “delinquency” in the various studies is diverse and sometimes poorly defined. Future research on the role of PTSD in youth delinquency will benefit from greater clarity about the kind of antisocial behavior under question—for example, whether it involves predatory aggression, reacting against those who perpetrated the trauma, behaving in ways that are more self-destructive than harmful to others, or simply engaging in poor judgment.

MECHANISMS LINKING TRAUMA TO DELINQUENCY

Although few have undergone direct empirical testing, a number of constructs, theories, mechanisms, and models have been proposed that might help to account for the relationship between posttraumatic stress and antisocial behavior—or, alternatively stated—the transformation of trauma into delinquency. In keeping with the developmental psychopathology principles of *multideterminism*, *equipfinality* and *multifinality*, it is understood that delinquency is not “caused” by any single variable, and that risk factors for delinquency might also increase the risk for other disorders and for psychopathology in general. However, the goal of *specificity* is a valuable one, lest theoretical models be reduced simply to the obvious conclusion that “bad input leads to bad output” (Kerig & Wenar, 2006). Therefore, in this review we strive to identify ways in which each of these purported mediators might be associated specifically with delinquency above and beyond other possible youth outcomes.

PTSD Symptoms as Mediators

The symptoms of PTSD may directly increase the likelihood of delinquent behavior, particularly as these symptoms are evidenced in developmentally-specific ways by young people. For example, Pappagallo, Silva, & Rojas (2004) suggest that in children reexperiencing may emerge as dysregulated behavior, avoidance may take the form of oppositionality, and hyperarousal may be evidenced by irritability. On a similar note, Lipschitz, Morgan, & Southwick (2002) point to the phenomenological overlap in symptoms between PTSD and the DSM-IV disruptive behavior disorders. For example, symptom of arousal include bouts of irritability, aggression, and rage, which might manifest as “temper tantrums” or “constant arguing,” both of which are features of oppositional defiance; and irritability, aggression, and rage might manifest as “bullying and threatening” or “recurrent physical fights,” which are symptoms of conduct disorder. In addition, symptoms of avoidance, including numbness and a sense of foreshortened future, might be manifest as impaired empathy toward others, a desire for instant gratification, impulsive and risky behavior, and a lack of concern for consequences, all of which map onto the conduct disorder diagnostic criterion of “a persistent disregard of rules or rights of others.” Particularly among boys, trauma exposure is related to increased aggressive behavior (Darves-Bornoz, Choquet, Ledouz, Gasquet, & Manfredi, 1998) and symptoms of conduct disorder (Livingston, Lawson, & Jones, 1993). Further, among detained youth, those with a diagnosis of PTSD are most likely to also show aggression, poor impulse control, and negative affectivity (Cauffman et al., 1998; Steiner et al., 1997).

A few studies to date lend some support to the idea that the relationship between traumatic exposure and delinquency is mediated by PTSD symptomatology. For example, Ruchkin, Henrich, Jones, Vermeiren, & Schwab-Stone (2007) found that, in a community sample, PTSD symptoms partially mediated the relationship between violence exposure and self-reported commission of violence among boys; however, PTSD fully mediated the relationship between victimization and anxiety for girls. In turn, Kerig et al. (2009) found that PTSD mediated the relationship between trauma exposure and mental health problems in a

sample of incarcerated adolescents; in this study as well, the effects were stronger for girls than boys. Among those that have looked separately at PTSD symptom clusters, patterns of gender differences also have emerged. Allwood and Bell (2008) found that, for a community sample of girls exposed to violence, symptoms of re-experiencing were related to self-reported aggression against others, whereas for boys symptoms of arousal mediated the relationship between exposure to and perpetration of violence. In turn, avoidance of trauma reminders was negatively related to the perpetration of violence, suggesting that efforts to turn mental attention away from the traumatic event might be protective against the tendency to re-enact it against others. A different pattern of gender differences emerged in a study of incarcerated delinquent youth by Kerig et al. (2009) who found that, for boys but not girls, PTSD symptoms of re-experiencing and arousal were related to anger/irritability. Further, and again for boys only, arousal was related to substance abuse. However, these studies still beg the question of how and why the symptoms of PTSD become transformed into antisocial behavior. A closer look at the purported mechanisms is called for.

Dissociation

Among the symptoms of PTSD, one that has received specific attention in the study of juvenile delinquency is dissociation (Carrion & Steiner, 2000; Steiner et al., 1997). Dissociation is described as an autohypnotic process in which one enters into an altered state of consciousness in order to isolate from awareness experiences, memories, or perceptions that are associated with unmanageable pain or psychological conflict (Putnam, 1989). Dissociation may occur on a continuum ranging from a discrete symptom to a chronic syndrome (Putman et al., 1996) and, whereas the short-term use of dissociative defenses might serve as an effective strategy for coping with trauma, the consequences of long-term dissociation are maladaptive (van der Kolk et al., 1991). Evidence suggests that dissociation is high among delinquent youth and has been linked to their likelihood of engagement in self-harming and risky activities, including substance abuse (Carrion & Steiner, 2000)—behaviors which in turn increase the risk of attracting the attention of the juvenile justice system.

Biological Processes

Behavioral Inhibition

Research suggests that preexisting temperamental traits, such as behavioral inhibition, might predispose some youth to developing PTSD through increasing their sensitivity to stressful life events and decreasing their coping efficacy (Ruchkin et al., 1998). Ruchkin and colleagues (2002) found that, in a sample of incarcerated Russian male adolescents, youth who met criteria for Full PTSD also had higher ratings on personality dimensions related to behavioral inhibition, including harm avoidance and poor coping skills. However to date this research has been cross-sectional and does not rule out the possibility that exposure to adverse environments contributes to the development of behavioral inhibition, which then leaves the youth more vulnerable to the effects of subsequent trauma.

Alterations in Brain Structure and Function

Recent advances in neuroscience allow for a consideration of how the experience of trauma affects neuropsychological functioning (De Bellis & Putnam 1994; van der Kolk, 1996). The majority of research on the neurobiological effects of trauma to date has been conducted with adults and has shown that PTSD is associated with deficits in various mental processes, including poorer working memory and difficulty in sustained attention, as well as right brain and frontal lobe impairment (Newport & Nemeroff, 2000). For children and adolescents, whose brains and neural networks are still in the process of development, traumatic experiences may be particularly detrimental (De Bellis, 2001; Ford, 2005). A separate line of inquiry has investigated the neurobiology underlying antisocial behavior, although the majority of this research has focused on aggression, violence, or diagnosed conduct disorder (Giancola, 1995; Loeber & Pardini, 2008; Ishikawa & Raine, 2003; Schore, 2003; Steiner & Karnik, 2006), rather than the full spectrum of delinquency. Also, this research has focused disproportionately on males, and therefore its generalizability to delinquent girls is open to question. Despite these limitations, findings examining PTSD and brain structure and biological stress systems provide a promising avenue for understanding the mechanisms by which PTSD is associated with juvenile delinquency (see Lipschitz, Morgan, & Southwick, 2002 for an in-depth review).

Research has shown that one area of the brain that may be particularly vulnerable to traumatic stress is the hippocampus, which is involved in memory and the modulation of emotions, particularly of fear and aggression (Cellini, 2004; Gould & Tanapat, 1999; Kim, Song, & Kosten, 2006). Although studies of adults with PTSD have found decreased hippocampal size in those who experienced childhood abuse (Bremner et al., 1997; Stein, 1997), research with abuse children has either failed to find differences in hippocampal size (Carrion et al., 2001; De Bellis, Keshavan, et al., 1999) or has found that children with PTSD have *larger* hippocampal size than controls (Tupler & De Bellis, 2005). Teicher and colleagues (2003) suggest three possible explanations for these inconsistent findings: 1) PTSD's effects on hippocampal volume are gradual rather than immediate; 2) Hippocampal volume might be affected by the alcohol or substance use which often follows from PTSD; or 3) A decrease in hippocampal volume may not be a direct result of traumatic exposure, but instead may be a factor contributing to the persistence of PTSD into adulthood. Asymmetries in hippocampus structure and functioning have been found in adult samples of violent offenders (Raine, Buchsbaum, & LaCasse, 1997; Soderstrom et al., 2002), and therefore further research on the role of hippocampal function in the relationship between PTSD and delinquency seems warranted. Trauma-related deficits in memory, fear response, and modulation of aggression might contribute to youth's involvement in the juvenile justice system, and the elevated levels of alcohol and substance use found in delinquent samples (Vermierin, 2003) might exacerbate these effects.

In addition to the evidence suggesting that PTSD has a long-term effect on the brain, immediate effects of childhood trauma on brain structure have been found. For example, De Bellis, Keshavan and colleagues (1999) found that youth who met criteria for a diagnosis of PTSD had 7-8% smaller intracranial and cerebral volumes than the non-maltreated controls, and the evidence for adverse brain development was somewhat more pronounced for males than for females. Intracranial volume was positively correlated with the age of maltreatment onset and negatively correlated with the duration of the abuse. In addition, the left and total lateral ventricular volumes were positively associated with maltreatment duration, whereas

duration of abuse was negatively associated with the total corpus collosum and its middle and posterior region volumes. The impact of trauma on the developing brain may alter the exchange of information between the brain's left and right hemisphere and the capacity for sensory information to be integrated (Teicher et al., 2003). These findings may be particularly relevant for understanding the development of dissociation, whereby "dissociative symptoms are the result of less 'connectivity' in the corpus collosum" (De Bellis, 2001, p. 546). In addition, smaller cerebral volume in youth with PTSD may contribute to lower IQ and weaker response inhibition (De Bellis, Keshavan et al., 1999), each of which might contribute to engagement in antisocial behavior (Koolhof, Loeber, Wei, Pardini, & D'Escury, 2007). Taken together, these results indicate that children and adolescents with PTSD may be at risk for various cognitive and executive functioning deficits, as well as neuronal loss, and that the effects of trauma on the brain may be cumulative over time. These alterations in brain function and structure may help to explain relationships between PTSD and delinquent behavior, although the cross-sectional nature of the research conducted to date does not allow for causal conclusions.

Trauma also has been related to prefrontal lobe dysfunction, another neuropsychological deficit that also is seen among antisocial individuals (Ishikawa & Raine, 2003). In particular, research has focused on the role of the orbitofrontal cortex in mental processes related to emotion processing, emotion regulation, interpersonal communication, and moral reasoning (Schore, 2003). Deficits in orbitofrontal functioning may impact an individual's propensity to engage in socially acceptable responses when faced with stressful situations or decreased behavioral inhibitions (Giancola, 1995; Schore, 2003), and some researchers have found decreased activation of the orbitofrontal cortex in individuals with histories of childhood trauma-related PTSD (Raine, 2002; Shin et al., 1997).

Alterations in Neurochemistry and the Biological Stress System

In addition to changes in brain structure, PTSD also affects the body's biological stress systems in ways that have implications for antisocial behavior. Research has focused on the interrelationships among the catecholamine system (epinephrine, norepinephrine, and dopamine), the sympathetic nervous system, and the limbic-hypothalamic-pituitary-adrenal (LHPA) axis. As part of the "fight or flight" response, traumatic stress activates the catecholamine system and the parasympathetic nervous system, which elevates heart rate, blood pressure, and metabolism, and activates the LHPA system through which the pituitary secretes ACTH to stimulate the adrenal gland to release cortisol. Cortisol in turn suppresses LHPA activity and returns the system to homeostasis. Studies have shown that, in comparison with overanxious youth and healthy controls, youth with PTSD exhibit elevated levels of norepinephrine and dopamine and excrete greater concentrations of cortisol. In addition, levels of these neurochemicals are correlated with the duration of trauma and with the PTSD symptoms of intrusive thoughts, avoidance, and hyperarousal (De Bellis, Baum, et al., 1999). Thus, youth with PTSD symptoms may have dysregulated biological stress systems and a hyperaroused and overreactive response to stress (De Bellis, 2001; Heim, Meinlschmidt, & Nemeroff, 2003) as well as dysregulations in emotions and impulse control (Gollan, Lee, & Coccaro, 2005). Each of these factors may contribute to a propensity to be easily provoked, to perceive situations to be more threatening than they are in actuality, and to act impulsively, all of which increase the risk of antisocial behavior. Serotonin also may be implicated, particularly given that its role in emotion regulation and compulsive behaviors may be

relevant to understanding PTSD symptoms of reexperiencing and intrusive thoughts, although little research to date has examined this possibility in humans (De Bellis, 2001).

In addition, over time the brain attempts to compensate for elevated LHPA activity by a negative feedback loop which reduces response to stimulation of the LHPA axis, resulting in a desensitization to stress (De Bellis et al., 1994; Glaser, 2000). The results of this desensitization may include callousness, unemotionality, non-responsiveness to punishment, and a heightened need for external stimulation, all of which, as Widom and Wilson (2009) point out, are characteristics of a subset of delinquent youth with psychopathic traits. This is a point we will return to in a later section. In fact, low cortisol levels have been found in studies of conduct disordered boys (McBurnett, Lahey, Rathouz, & Loeber, 2000) and girls (Pajer, Gardner, Rubin, Perel, & Neal, 2001). Among a sample of 103 boys referred to a delinquency diversion program in the Netherlands, Popma and colleagues (2007a, 2007b) found that cortisol release was lowest in boys who met criteria for a disruptive behavior disorder and that cortisol levels moderated the relationship between testosterone levels and overt aggression. Interestingly, these investigators found that none of the disruptive youth in their sample met criteria for PTSD, as assessed by youth- and parent-report. This is surprising given the high rates of PTSD found in other delinquent samples, but might be attributable to the fact that this sample of youth had committed only minor offenses and thus may have differed from samples including youth who engage in more serious or chronic forms of delinquency.

Biological factors also have been theorized to be important for understanding the life-course persistent and adolescent-limited typologies of delinquency (Moffitt, 1993). Whereas adolescent-limited antisocial behavior is more strongly associated with social and peer influences, evidence suggests that biological factors, particularly cortisol levels, are implicated in the developmental psychopathology of childhood-onset antisocial behavior (Eley, Lichtenstein, & Moffitt, 2003; McBurnett, King, & Scarpa, 2003; Moffitt & Caspi, 2001). However, Lipschitz and colleagues (2002) propose that differences in the way that early trauma and effects individual biology might help to explain the childhood- versus adolescent-onset typology of conduct disorder. Observing that the studies of traumatized children to date evidence various disturbances in neurobiological functioning rather than a single pattern, the authors also note that youth with childhood-onset conduct problems demonstrate psychophysiological under-arousal whereas those with adolescent-onset conduct problems are physiologically over-reactive. Determined by the interaction among many factors, including temperament, gender, type of trauma, age of onset of adversity, and current symptoms of PTSD, these may represent two different biological subtypes of reaction to stress: one in which the youth becomes hypervigilant, fearful, and anxious, and another in which the youth withdraws, dissociates, and becomes emotionally numb. This is an interesting hypothesis which may provide a more nuanced understanding of how PTSD and biological factors contribute differentially to the development of specific subtypes of antisocial behavior.

Future research will benefit from considering the interrelationships between dysregulated biological stress systems, temperament, posttraumatic symptoms, and juvenile delinquency. Particularly, the relatively new field of developmental traumatology—"the systemic investigation of the psychiatric and psychobiological impact of overwhelming and chronic interpersonal violence...on the developing child" (De Bellis, 2001, p. 539)—holds promise for further explicating the mechanisms by which trauma influences delinquency.

Emotion Processes

Affect Dysregulation

Dysregulated affect is a central feature of both PTSD and juvenile delinquency (Ford, 2002; Ford et al., 2006). Horowitz (1993) describes PTSD essentially as a disorder of affect regulation, in which there is a vacillation between unmodulated emotional states and attempts to compensate through overcontrol. Moreover, van der Kolk and Fisler (1994) suggest that one of the most significant effects of trauma on the developing child is its interference with the development of the ability to regulate affect, cope with intense emotions, and control impulses, each of which can lead to the development of delinquent behaviors such as aggression, self-destructiveness, and substance abuse. As noted previously, emotion dysregulation resulting from PTSD also might contribute to the development of delinquent behavior through increasing irritability and impulsivity (Pappagallo, Silva, and Rojas, 2004).

Notably, parents play an important role in the development of emotion regulation strategies, as well as in their recovery following trauma, essentially by lending children an auxiliary emotion regulation mechanism from which they can borrow. But when the parent is unavailable due to his or her own trauma, or when the trauma the child exposed to is a chronic and pervasive one such as maltreatment, the development of emotion regulation capacities may be impaired in the long term. A parent who rejects, ignores, or punishes a child's distress signals leaves the child in a prolonged and intolerable emotional state and fails to assist the child to develop internal strategies with which to regulate his or her own distress (Izard & Kobak, 1991). Thus, the child fails to develop strategies for modulating emotions in response to challenging stimuli, and this poor modulation may be expressed in the form of internalizing, externalizing, or a combination of the two (Cole & Zahn Waxler, 1992). In a follow-up study of delinquent boys who had experienced physical abuse, Dankowski and colleagues (2006) found that affect dysregulation, in the form of internalizing and externalizing behavior, mediated the link between of adverse family environments and the perpetration of violence against women in adulthood. The authors conclude that maltreated children "may not have good strategies for managing emotions such as shame, fear, rejection, sadness, or anxiety, and they may then act out aggressively and/or withdraw and turn inward. These dysregulated behaviors may then serve as 'stepping stones' towards the adult perpetration of violence" (p. 335).

Emotional Numbing

Another purported mechanism linking PTSD and juvenile delinquency is the defensive strategy of emotion numbing. Lansford and colleagues (2006) speculate that emotion numbing might act as a "pathological adaptation" (p. 51) which protects the youth from the conscious awareness of overwhelming distress while at the same time increasing the likelihood that the youth will act it out against others. In a preliminary test of this model in a sample of 123 middle school children, Allwood and Bell (2008) found that PTSD symptoms mediated the relationship between violence exposure and perpetration, but emotion numbing did not help to explain this relationship. In a subsequent study, Allwood, Horan, & Bell (2009) studied the role of emotional numbing in delinquent behavior among a sample of

community sample using the Emotional Numbing Scale (Luterek et al., 2002) and found that numbing of fear in particular was related to self-reported delinquency.

Acquired Callousness

Emotion numbing also has been implicated in the development of acquired psychopathic or callous-unemotional traits (CU) among delinquent youth. Whereas early studies of psychopathy suggested that CU traits were not related to childhood adversity and thus were inherent, more recent studies have indicated that, at least among a subset of delinquent youth, CU is related to a history of maltreatment (Forth et al., 2003; Krischer & Sevecke, 2008; Poythress et al., 2006; Weiler & Widom, 1996). To explain this, Porter (1996) has proposed that, in contrast to inherent callousness (termed primary psychopathy), a secondary form of psychopathy may develop through the de-activation of or dissociation from emotions following trauma. This emotional detachment may serve an adaptive function in the short term by helping the child to cope with unbearable distress, whereas its long-term generalization into an emotionally blunted interpersonal style is associated with maladaptation and antisocial behavior. Although a youth with this emotionally detached style might appear on the surface to be cold and without empathy just like the primary psychopath, Porter (1996) distinguishes the “learned” emotional detachment of secondary psychopathy from that which is “born” in those with primary psychopathy. Tellingly, the characteristic that most clearly distinguishes between primary and secondary psychopathy is the absence versus the presence of anxiety (Patrick, 2009).

Only recently have researchers begun investigating the relationship between CU traits and PTSD (Kimonis, 2009) but this appears to be a promising line of inquiry. Among youth with CU traits, those who have been maltreated differ in their emotional processing by virtue of showing enhanced reactivity to facial displays of distress (Kimonis, Frick, Munoz, & Aucoin, 2008). Very recent research also demonstrates that, among detained youth, those identified as having secondary psychopathic traits have more extensive trauma histories and higher levels of PTSD symptoms, particularly hyperarousal and dissociation (Sink & Kerig, 2010; Tatar, Kimonis, Kennealy, Skeem, & Cauffman, 2009). Although most of the research on psychopathy/CU traits has focused on boys, the research conducted so far raises questions about the possibility of gender differences in these effects. For example, Krischer and Sevecke (2008) found that physical abuse was associated with psychopathic traits among detained adolescent boys, but not girls. In a study focusing on detained girls, Odgers, Reppucci, and Moretti (2005) found that the relationship between psychopathic traits and aggression was no longer significant when traumatic victimization was entered into the regression, suggesting that the complex relationships among trauma, aggression, and psychopathy have yet to be disentangled for girls.

Experiential Avoidance

A broader construct related to emotion numbing is experiential avoidance, which refers to emotional, cognitive, and behavioral efforts to distance oneself from a traumatic experience (Hayes et al., 1996). In the only study of this construct among detained youth that we have found to date, Zerubavel and colleagues (2009) found that experiential avoidance (as indicated by emotion numbing, self-harming thoughts, and substance abuse) was highest among those whose traumatic experiences were characterized by betrayal in the context of a personal relationship. Experiential avoidance also appears to be related to Briere’s (2002)

concept of *tension-reduction behavior*, the tendency to turn to external methods (e.g., self-harming, aggression, sexual acting-out, suicide threats) in order to distract, soothe, or otherwise reduce inner tension or distress. Traumatized youth who lack more adaptive strategies for affect regulation are vulnerable to sorting to maladaptive strategies such as tension-reducing behaviors and substance abuse, both of which involve behaviors that could run them afoul of the law. In this regard, Flannery, Singer, Williams, & Castro (1998) confirmed that among a sample of 3,734 community youth, those exposed to violence reported higher levels of PTSD symptoms and the use of more maladaptive coping strategies (e.g., venting anger, acting out, using alcohol and drugs); however, the authors did not examine the relationship between PTSD and maladaptive coping, nor whether these factors were linked to delinquency.

Substance abuse in particular is a commonly seen sequela of exposure to trauma that may comprise a maladaptive attempt to cope through numbing emotions (Kilpatrick et al., 2000), but which in turn increases the risk of engagement in risky behaviors and in juvenile arrest. Substance use of all sorts is common among detained youth, is related to the severity of antisocial behavior and the violence of offenses (see Vermierin, 2003), and often is implicated in the arrest itself: 4/5 of youth arrests involve adolescents who are under the influence of drugs or alcohol (National Center on Addiction and Substance Abuse, 2004). Although developmental research suggests that the onset of substance abuse generally follows after the emergence of conduct problems (Loeber, 1988), substance abuse nevertheless may contribute to the persistence of delinquency, whether through fostering physical dependency and the habitual use of illegal methods to secure the drug, disinhibiting behavior and clouding judgment, or through involving youth in an antisocial lifestyle and a circle of antisocial peers from which it becomes increasingly hard to extricate themselves over time (Kerig & Wenar, 2006). Research also suggests that trauma is a more significant predictor of substance abuse for girls than boys. In a 3-year study of 1,000 youth, the National Center on Addiction and Substance Abuse (2004) found that drug use was more often predicted by a history of sexual or physical abuse among girls than boys, and that girls reported initiating substance use as a method for coping with emotional distress, whereas boys were more likely to endorse reasons such as thrill-seeking and enhancement of peer status. Moreover, once engaged in substance use, girls fell into addiction more quickly than boys and suffered even more adverse physical and mental health consequences. Therefore, there is particular reason to be concerned about the role that substance abuse might play in “self-medication” among those traumatized girls who are involved in the juvenile justice system.

Emotion Recognition

Research by Pollak and colleagues (2008) indicates that youth who have been traumatized by maltreatment process emotions differently from non-maltreated children. In particular, children who have been abused are primed to perceive ambiguous facial expressions as angry and are more sensitive to detecting even the most subtle cues of anger in others' faces (Pollak, Cicchetti, Hornung, & Reed, 2000; Pollak & Sinha, 2003). As Pollak (2008) suggests, the adaptive value in detecting that an abusive parent is becoming angry is evident; thus maltreated youth have learned to vigilantly scan the interpersonal environment in search of hostile cues. However, the tendency to misperceive others as angry, and to be overly reactive to even the smallest indications of anger in others, might lead traumatized

youth to view the world as a hostile place and one in which aggression is expected and inevitable, thus contributing to the development of delinquent behavior.

Cognitive Processes

Interpersonal Processing Deficits

Theories of conduct disorder and delinquency long have posited that exposure to violence provides children with maladaptive models that teach that “might makes right” and that aggression is an acceptable way of solving interpersonal problems (Bandura, 1972; Dodge et al., 1990). Consistent with the research on emotion processing, maltreated children also appear to be cognitively primed to respond to aggressive cues. In a longitudinal investigation, Dodge, Petit, Bates, and Volente (1995) found that children with a history of physical abuse were likely to misread social cues, to have positive evaluations of aggression, to misperceive others intentions as hostile, and to readily access aggressive strategies in response to interpersonal problems; and the latter two social information processing deficits partially mediated the relationship between childhood trauma and the perpetration of aggression in adolescence. Delinquent youth who have been traumatized by abuse also have more positive expectations of aggression and are more likely to see violence as a means of enhancing their personal reputations (Spaccerelli et al., 1995). Shahinfar, Kupersmidt, & Matza (2001) found similar effects in a cross-sectional study of incarcerated adolescents: youth who had been victimized were the most likely to demonstrate acceptance of aggression, misperceptions of others’ intentions as hostile, and maladaptive social goals characterized by desires for dominance and revenge.

The interrelationships between exposure to violence, youth aggression, and PTSD also have been examined and suggest that symptoms of posttraumatic stress may have an exacerbating effect. In a cross-sectional study of community adolescents, Allwood and Bell (2008) found that PTSD and beliefs about acceptance of violence were modestly related to one another and both variables independently mediated the relationship between exposure to violence and aggressive behavior. In turn, Moretti, Osbuth, Odgers, and Reebye (2006) found that, in a sample of severely aggressive delinquent youth, those who met criteria for PTSD evidenced the strongest relationship between viewing violence in the home and perpetrating it against peers..

Attention to *hostile attribution biases* is likely to be helpful for explaining how PTSD specifically—rather than a more general risk factor such as exposure to violence—might lead to delinquency. As noted in the section on emotion processing, children who had been maltreated tend to misread ambiguous facial cues as angry (Pollak, 2008). When combined with a cognitive interpretation of hostile intentions aimed their way, such youth are highly likely to perceive it as justified—and even incumbent upon them—to take action and to do whatever is necessary and, without mercy, to protect themselves from further harm. Related to this, Schwab-Stone and colleagues (1995) found that, among children in inner city environments, exposure to violence was associated with pervasive feelings of being under threat from a hostile environment, and these feelings of lack of safety were associated with increased willingness to use physical aggression.

Rejection Sensitivity

Another attributional style related to the trauma of child maltreatment is rejection sensitivity, the cognitive disposition to “anxiously expect, readily perceive, and intensely react to rejection by others” (Downey, Khouri, & Feldman, 1997, p. 85). Investigations suggest that child abuse is predictive of rejection sensitivity and that rejection sensitivity in turn mediates the relationship of early trauma on interpersonal relationships in gender-specific ways: for boys, on the tendency toward perpetrating violence against dating partners and, for girls, on the tendency to be willing to do “anything”—even things they perceive as wrong—in order to prevent a partner from rejecting them (Downey, Bonica, & Rincon, 1999; Purdie & Downey, 2001; Volz & Kerig, in press). Given the ways in which female delinquency is influenced by encouragement from male peers (described in more detail below), rejection sensitivity and relational insecurity might comprise sequelae of trauma that particularly increase girls’ susceptibility to antisocial influences.

Alienation

The concept of alienation has a long history among the theories attempting to explain the processes driving juvenile delinquency (Horney, 1950; Seeman, 1959). Seeman (1959, 1983) identified six dimensions of alienation, including powerlessness, self-estrangement, normlessness, isolation, meaninglessness, and societal estrangement, although most theorists and researchers have focused on two underlying factors: alienation from society and alienation from the self (Gergen, 1992; Lacourse, Villeneuve, & Claes, 2003). More recently, factor analyses have suggested that the construct is best represented by the dimensions of powerlessness and self-estrangement (Lacourse et al., 2003). Although the concept of powerlessness is self-evident, the self-estrangement construct has proved more elusive and difficult to define. According to Frome (1955), “By alienation is meant a mode of experience in which the person experiences himself as an alien. He has become, one might say, estranged from himself” (p. 120). Seeman (1983) suggested that alienation from the self can be conceptualized in three ways—as the despised self (a discrepancy between how one perceives oneself to be and how one believes one should be), the disguised self (a lack of awareness or disavowal of one’s true thoughts and feelings), and the detached self (a disconnection between one’s actions and one’s emotions).

Both theory and empirical research link the concept of alienation to delinquency. Horney (1950) hypothesized that alienation contributes to the perception that one lacks the ability to control or influence the outside world and this perceived powerlessness contributes to a sense of isolation, estrangement, and meaninglessness that can lead to antisocial behavior. Similarly, Bailey (1996) observed that “adolescents placed in custody represent the extremes among young people who are estranged from, and at the margins of, society” (p. 6). Research confirms that incarcerated adolescents provide higher ratings on self-report measures of alienation than their non-incarcerated peers (Calabrese & Adams, 1990). Further, in a study of a community sample of 152 adolescents, Sankey and Huon (1999) found that alienation from society was associated with higher levels of delinquency, and that this relationship was mediated by engagement with delinquent peers.

The possibility that alienation might be related to PTSD is suggested by O’Donnell and colleagues (2006) who point out that the symptoms of PTSD “are similar in many ways to

those indicative of the isolation and self-estrangement dimensions of alienation” (p. 218). A view of the world as uncontrollable and unpredictable often is seen among youth who display symptoms of PTSD (Herman, 1997), consistent with the powerlessness dimension of the alienation construct. Alienation also is directly related to the DSM-IV criteria for the PTSD symptom cluster of avoidance (Criterion C), including a loss of interest in pleasurable activities or feelings of distance or isolation from others, which parallels Seeman’s (1959) detached dimension of self-estrangement. Moreover, Seeman’s (1959) description of the disguised self, in which one’s true thoughts and feelings are kept from awareness, may be related both to dissociation and to the emotional numbing and callousness seen among traumatized youth who have “switched off” affectively. Therefore, it is possible that the experience of trauma and subsequent PTSD symptoms may lead to self-estrangement and powerlessness, which in turn make youth more liable to distance themselves from others, dismiss prosocial values, and engage in negative behaviors such as aggression and substance use, each of which are factors associated with an increased risk for delinquency.

To date, only a small body of empirical research has investigated these proposed links among alienation, traumatic life experiences, and delinquency. O’Donnell, Schwab-Stone, and Ruchkin (2006) examined alienation as a mediator of the relationship between exposure to violence and delinquency. In a study of 1,478 sixth and eighth graders from urban schools, the authors found distinctions between youth who had either witnessed or experienced violent victimization. Although both witnessing and experiencing violence were both related to normlessness, only direct victimization was associated with isolation and self-estrangement.

A more specific construct related to alienation, *legal cynicism*, refers to the perception that police, judges, and other legal authorities are unfair or untrustworthy (Simpson & Bartusch, 1998). The links between cynicism and delinquency are evident. For example, Fagan and Tyler (2005) found that legal cynicism was related to self-reported criminal behavior and negative experiences with law enforcement among a sample of community youth. Similarly, Piquero, Fagan, Mulvey, Steinberg, & Odgers (2005) followed a sample of serious offenders from the Pathways to Desistance study and found that boys, Hispanic youth, and those with histories of more prior arrests increased most in legal cynicism over a period of 18 months and Carr, Napolitano, and Keating (2007) found that the inner city youth with the most cynical attitudes toward police were those who themselves had experienced arrest. Although we have found no studies to date that have examined legal cynicism in the context of trauma, the possibility is suggested by the fact that legal cynicism is highest among community members exposed to violence and crime (Simpson & Bartusch, 1998). Moreover, given the links between trauma and the development of other kinds of hostile, distrustful, and cynical attitudes described earlier, legal cynicism might be a construct worthy of further study in the developmental psychopathology of trauma and delinquency. Another potential link to PTSD is suggested by the possibility that, for some youth, involvement in the legal system itself is a traumatic experience—it is not unusual to hear from youth in our detained sample that their most distressing recollection is of being handcuffed, strip-searched, physically restrained, or escorted by armed officers to the detention center. Moreover, among traumatized youth, the incarceration process may evoke reminders of other traumatic events, such as witnessing the police forcibly escorting away a beloved family member during an episode of domestic violence. For example, after his incarceration, one youth reported intrusive memories of witnessing his father’s own “suicide by cop” in which he brandished a gun and goaded the police to “take the first shot.”

Moral Disengagement

Another more specific concept related to alienation/cynicism is Bandura's concept of moral disengagement, which might comprise a mechanism by which children who have been traumatized develop a worldview that justifies and legitimizes perpetrating against others. Bandura and colleagues (1996) delineate eight mechanisms of moral disengagement by which an immoral act may be made more acceptable: attributing it to a higher purpose (moral justification), contrasting it with an even worse action (advantageous comparison), creative reframing (euphemistic labeling), blaming others (displacement of responsibility), blaming the situation (diffusion of responsibility), making light of the problem (minimizing consequences), belittling the victim (dehumanizing), or blaming the victim (attribution of blame). Bandura (1997) proposes a couple of processes through which moral disengagement might develop: first, through the influence of social systems that engage in systematic degradation and abuse of individuals, accompanied by self-serving moral justifications—here one can envision the child growing up in an abusive home—and secondly, through the progressively desensitizing effects of engaging in perpetration against others over time: “The disengagement devices discussed above will not instantaneously transform a considerate person into an unprincipled, callous one. Rather, the change is usually achieved through gradual weakening of self-sanctions, during which people may not fully recognize the changes they are undergoing. Initially, individuals are prompted to perform questionable acts that they can tolerate with little self-censure. After their discomfort and self-reproof have been diminished through repeated performances, the level of reprehensibility progressively increases until, eventually, acts originally regarded as abhorrent can be performed without much distress” (Bandura, 1990, p. 42). In other words, through engaging in delinquent acts that involve disregarding the rights others, youth may increasingly desensitize themselves, revise their self-images, and develop self-justifications that lead to the perpetration of even more offensive kinds of behaviors (Wilkinson & Carr, 2008).

Bandura and colleagues (1996; Kwak & Bandura, 1998) have shown that moral disengagement is linked to delinquency through lessening guilt, reducing prosocial behavior, and increasing angry rumination and vengefulness. In turn, the link between moral disengagement and trauma is suggested by Garbarino (1999) who proposes that trauma may interrupt moral development or lead to a changed morality that justifies victimizing others. However, Bandura's description of the “facile moral disengager” who engages with evident self-satisfaction in violence, theft, and other forms of antisocial conduct sounds more like a psychopathic youth than one who reacting to underlying trauma. One possibility, however, is that moral disengagement comes naturally to the “primary psychopath” but is a tool acquired with some effort by the “secondary psychopath” who has experienced trauma. The links to the emotion-numbing processes described earlier are evident: moral disengagement may comprise a cognitive strategy that assists traumatized youth to wall off emotions and empathy toward others by providing them with persuasive rationales for doing so, even if this requires an effortful and intentional process. As declared one severely traumatized adolescent in an inpatient setting, who had recently turned from self-mutilating to persuading his younger peers to mutilate themselves: “I've been working on getting rid of my conscience.”

Stigmatization: Shame and Self-blame

Another set of proposed mechanisms focuses on self-perceptions as mediators of the relationship between trauma and delinquency. The concept of stigma includes appraisals of *shame* (the perception of being “damaged goods”) and *self-blame* (the belief that one’s inherent “badness” is responsible for negative events), beliefs that are often seen among children who have been victimized (Feiring et al., 2007; Finkelhor & Browne, 1985), particularly when that victimization occurs in the context of a close personal relationship (Freyd, 1997). The extent to which children engage in attributions of self-blame and shame about traumatic experiences is associated with the severity of their PTSD symptoms (Budden, 2009; Deblinger, Steer, & Lippmann, 1999) whereas children’s ability to relinquish these “traumagenic” beliefs is associated with recovery from PTSD (Celano et al., 1996).

These negative self-appraisals also have been implicated in the development of delinquency. Perceived stigma is proposed to contribute to the development of a deviant identity which draws youth to associate with like-minded peers and, through such associations, to become involved in delinquent activities, which serves to consolidate and reinforce their negative self-view (Finkelhor & Browne, 1985). Shame in particular has been theorized to engender an uncomfortable internal state that the youth attempts to escape through transforming into anger and displacing it onto others, which further contributes to the development of antisocial attitudes and behavior (Feiring, Taksa, & Lewis, 1996). Empirical research has confirmed that shame is related to aggressiveness, anger, suspiciousness, resentment, irritability, and externalization of blame (Tangney, Wagner, Fletcher, & Gramzow, 1992).

Therefore, the hypothesis has been proposed that there are interrelationships among self-conscious affects, trauma, and delinquency. Two studies yield data that are relevant to these proposed mechanisms of effect, although neither assessed PTSD specifically. In a prospective longitudinal study, Feiring and colleagues (2007) demonstrated that, among 160 youth with histories of traumatic sexual abuse, stigma and shame following from the abuse were related to increased delinquent behavior over the course of 6 years, and this relationship was mediated by anger and affiliation with deviant peers. In turn, Stuewig & McCloskey (2005) assessed whether child maltreatment was related to a general shame-prone or guilt-prone orientation to the world, and whether these negative self-affects were associated with adolescent delinquency. In a study following abused children over a period of eight years, they found that parental rejection in the context of childhood maltreatment predicted increased shame-proneness and reduced guilt-proneness. In turn, shame-proneness was associated with adolescent depression, whereas guilt-proneness was associated with reduced delinquency. Taken together, the results of these studies suggest that, whereas perceived stigma specific to traumatic events is associated with a greater likelihood of delinquency, a general proneness toward guilt (in other words, relevant to the discussion of psychopathy above, a lack of callousness/unemotionality) might help to keep antisocial propensities in check.

Cognitive Immaturity

Youth who become involved in the juvenile justice system demonstrate cognitive vulnerabilities associated with impaired decision-making, poor judgment, intellectual limitations, low competence, and susceptibility to coercion (Steinberg, Blatt-Eisengart, & Cauffman, 2006; Steinberg & Cauffman, 1996; Steinberg & Scott, 2003). In turn, conduct

problems undermine academic achievement, which contributes problems in many domains of developmental competence and thus may contribute further to an antisocial orientation. (Capaldi & Patterson, 1994). Similarly, children growing up in the context of chronic trauma, such as abusive or neglectful family environments, show declines in cognitive performance over time and high levels of learning disorders, executive functioning deficits, and academic problems (see Kerig & Wenar, 2006). Thus, the negative effects of trauma on cognitive development might contribute to impaired judgment and thus both increase youths' propensity to enter into problematic situations and decrease their ability to extricate themselves from those situations when arrest is imminent. It may be under-appreciated how judgment, decision-making, and cool-headedness contribute to the distinctions between child-versus adolescent-onset conduct disorder, and between rule-violators who end up in detention versus those who remain in the community. Put plainly, many troubled youth misbehave but some are better than others at avoiding getting caught; it is the former who comprise the samples of youth involved in the juvenile justice system.

Deficits in Recognition and Response to Risk

Even more specific as to how PTSD might affect decision-making are deficits found in the recognition and response to risk. Orcutt, Erickson, & Wolfe (2002) suggest that symptoms of PTSD decrease available cognitive resources to make demanding and complex decisions regarding risky behaviors (something that already is challenging for the adolescent whose executive functions are still in the process of developing; Giedd, 2003). Difficulty maintaining concentration due to dissociation, interference from intrusive recollections, and the disruptive effects of increased arousal all may interfere with a youth's ability to accurately and efficiently process information regarding the wisdom of engaging in risky behaviors. In addition, chronic diffuse arousal may contribute to the development of an internal alarm system with "high sensitivity but low specificity" which leads to repeated experiences of false alarms. Eventually, the overreactivity of this alarm system may lead the youth to tune out internal signals of danger. "Thus ... individuals with PTSD, despite their increased attention to threat and danger, may show deficits in risk disengagement ... due to impaired information processing and a disconnection between emotional arousal and self-protective action" (p. 264). Such a disconnect may not only increase the likelihood that a youth would enter into dangerous, risky, and illegal situations, but also that, once in "jam," s/he would not make the kinds of strategic choices that would allow him/her to avoid getting entangled in the law.

One of the most precarious choices a youth may make in reaction to a traumatic home life—and one that is directly linked to delinquency—is to attempt to escape by running away. Physical and sexual abuse is a common precipitant reported by runaway youth (Hammer, Finkelhor, & Sedlak, 2002; Thrane et al., 2006) and in fact running away constitutes the third most common offense for which girls get arrested (Snyder, 1999). Running away, in turn, further increases the likelihood of delinquency given that while on the streets youth often engage in illegal activities (e.g., theft, prostitution, drug dealing, gang activity) in order to survive (Herrera & McCloskey, 2003; Kaufman & Widom, 1999). Kim, Tajima, Herrenkohl, & Huang (2009) confirmed these effects in data drawn from the LeHigh longitudinal study, in which they found that physical and psychological abuse led to runaway behavior, and running away predicted later delinquency and partially mediated the effects of early abuse on antisocial behavior. Running away not only increases the risk of involvement in a deviant lifestyle but also increases the risk of further exposure to trauma—youth who have

experienced prior abuse at home, particularly sexual abuse, are differentially likely to be victimized while on the streets (Thrane et al., 2006; Kim, Tajima, Herrenkohl, & Huang, 2009), perhaps due to the impaired self-protective capacities described above.

Futurelessness

Perhaps the most extreme end of disregard for risk is the belief there is no point in considering the consequences of one's actions because there is no future in which those consequences might be brought to bear. A characteristic often seen in children with PTSD is futurelessness, the belief that they will not live a long life, or at least not one that is devoid of continued trauma. Many children with PTSD do not believe that they will marry, have children of their own, or live a normal span of life (Saigh, 1992). Futurelessness and the idea that it is best to "live for today" is also a feature of the risk-taking, reckless behavior, and disregard for consequences often seen among delinquent youth. These effects are exacerbated in contexts in which youth actually have witnessed death and the foreshortened futures of their peers and relatives, such as is the case in the inner city. For example, Schwab-Stone and colleagues (1995) found that exposure to violence was related to diminished expectations for the future among a sample of 2,248 urban schoolchildren and, in a recent study of a large nationally representative sample of adolescents, Borowsky, Ireland, & Resnick (2009) found that the 14.7% of youth who believed that they would not live past age 35 were at the highest risk for engaging in risky behavior including arrest, substance abuse, unsafe sexual activity, suicide attempts, and fight-related injuries. Compellingly, in a series of interviews with "hardcore" youth offenders from the streets of Atlanta, Brezina, Tekin, & Topalli (in press) observed a marked lack of faith in the plausibility or even desirability of a future: "When I'm from you never know if you gonna live one minute to the next ... People die everyday;" "Might be dead by 25, so who cares?" Quantitative analyses of their data also confirmed a link between anticipated death and youth criminal behavior, even after controlling for other factors. Similarly, in a community sample of adolescents, Allwood, Horan, and Bell (2009) found that a single item reflecting a sense of foreshortened future ("I think that I will not live a long life") was related to self-reported delinquency.

Therefore, when taken together, research on futurelessness as a consequence of PTSD and research on futurelessness as a predictor of high-risk behaviors suggest the possibility that a sense of foreshortened lifespan borne of trauma might increase the risk of delinquency. On the other hand, having a sense of alternative "possible selves" and the prospect of a brighter future could serve as a source of resilience among juvenile justice-involved youth—but only if balanced by a realistic sense of what can be done, and what needs to be avoided, in order to achieve those better outcomes (Oyserman & Markus, 1990; Oyserman & Saltz, 1993). Future research on futurelessness and adolescent behavior would benefit from the inclusion of PTSD as a risk factor, as well as consideration of the ways in which posttraumatic processing might affect youths' ability to make judgments about and protect themselves in the context of life-threatening and future-shortening behaviors.

Delinquency as Adaptation

Others have proposed that delinquent behavior comprises a method of coping with trauma that has adaptive intent, if maladaptive consequences. For example, Swisher and Larzman (2008) propose that youth violence may comprise a functional and intentional response to a violent environment, such as through generating a fearsome reputation that

deters future victimization by others. Blechman's (1994) coping model also describes antisocial behavior as a potentially adaptive response and echoes Karen Horney's tripartite description of the strategies one might adopt to deal with interpersonal stressors: by turning toward (prosocial coping), away from (asocial coping), or against others (antisocial coping).

Interpersonal Processes

Disrupted Parent-child Relationships

Implicit in the well-replicated finding that childhood maltreatment is predictive of delinquency is the suggestion that problematic parent-child relationships are implicated in the process (Moffit & Caspi, 2001). In addition to being linked to delinquency specifically, maltreatment is associated with dysfunctions in a host of emotional, cognitive, and interpersonal capacities that are important to healthy psychological development (Kerig & Wenar, 2006). However, maltreatment often is a poorly defined variable. Although in most cases family members are the perpetrators of the abuse experienced by detained adolescents (National Correctional Task Force on the Female Offender, 1999), in some cases maltreatment may not involve harm at the hands of the parent—for example, sexual abuse might be perpetrated by a teacher or other adult outside the home. On the other hand, it also is quite possible that the children who are more vulnerable to sexual predators or other perpetrators are those who are neglected, rejected, poorly monitored, or are being raised by parents who are inattentive, non-nurturing, or distracted by their own life stress or emotional problems (Finkelhor, 1984). A particularly important link between parenting and trauma is that children whose parents are unsupportive and emotionally unavailable are those most likely to develop PTSD and chronic psychological problems in the aftermath of a traumatic event (Mannarino & Cohen, 1996).

As noted earlier, evidence from both concurrent and longitudinal studies suggests that maltreatment in general, and harsh parenting in particular, are risk factors for delinquency (Siegfried, Ko, & Kelley, 2004). However, as Widom and Wilson (2009) note, various studies have shown that parental neglect is as strong a predictor of youth arrest for violent crime as is physical abuse. These findings suggest the possibility that, above and beyond the roles of aggressive modeling and social learning, trauma may play a role in the link between maltreatment and delinquency.

Some research suggests that the effects of problematic parent-child relationships are particularly salient for delinquent girls. Girls generally may be more reactive than boys to stress and disruptions in their home lives (Keenan, Loeber, & Green, 1999), and the family lives of delinquent girls are described as even more rife with conflict, instability, parent psychopathology, and dysfunctional parenting than those of their male peers (Chamberlain & Moore, 2002; Chesney-Lind & Sheldon, 1998; Dixon et al., 2004; Lederman, et al., 2004; Leve & Chamberlain, 2005). Moreover, child abuse and neglect are more powerful predictor of violent offending in girls than boys (Funk, 1999; Maxfield & Widom, 1996). As Bloom and colleagues (2002) concluded after a state-wide assessment of the juvenile detention system for girls in California, family dysfunction, including family conflict, poor communication, inadequate parenting skills, and parental antisocial attitudes, comprise the key risk factors leading to girls' delinquency. Troubled mother-daughter relationships in particular have been implicated in girls' delinquency (Belknap & Holsinger, 2006; Henggeler,

Edward, & Bourduin, 1987; Kerpelman & Smith-Adcock, 2005; Lawrence-Wills, 2004). For example, Chamberlain and Moore (2002) found that girls in the Oregon sample had undergone on average 14 parental transitions—the equivalent of one for each year of their lives—and the mothers of detained girls are disproportionately likely to have mental health problems, substance abuse, and a history of criminal behavior (Dixon et al., 2004; Lederman et al., 2004).

In this regard, it is noteworthy that, when girls offend violently, they are more likely than boys to do so against members of their own families (Acoca, 1999; Rutter, Giller, & Hagel, 1998) and the most common target is the mother (Zahn, Brumbaugh, Steffenseier, Feld et al., 2008). Being the victim of maltreatment appears to be a catalyst for girls' aggression against family members. For example, in a longitudinal study of 141 girls, Herrera and McCloskey (2003) found that childhood sexual abuse predicted girls' self-reported criminal behavior in adolescence; however, a history of childhood physical abuse was associated specifically with girls' violence toward a parent (the investigators did not distinguish whether the violence was directed at the mother or father, or whether the parent concerned was the perpetrator of the girls' abuse). The authors suggest that girls' violent behavior is in direct reaction to their own victimization—whether that is a matter of retaliation, self-defense, or generalized aggression would be an interesting question for further research.

Moreover, particularly for girls, there is evidence to suggest that maltreating parents may be directly responsible for their children's involvement in the juvenile justice system. Arrest records show some parents calling the police to arrest their daughters for minor infractions, such as "throwing cookies," which the police give alarming labels such as "domestic violence" even when the incidents involve mutually aggressive exchanges that in fact were initiated by the parent (Acoca, 1999; Chesney-Lind & Belknap, 2004). (A particularly egregious example comes from a recent media report of a mother who called the police when her 10 year-old daughter refused to take a shower. When the girl continued to resist, the mother encouraged the officer to apply his Taser—after doing so, the officer handcuffed the child and placed her under arrest with a charge of disorderly conduct: <http://www.cbsnews.com/stories/2009/11/18/national/main5697860.shtml>). Further, as noted earlier, youth may react to parental maltreatment in ways that bring them into contact with the juvenile justice system, such as by running away (Chesney-Lind & Sheldon, 1998; Hammer, Finkelhor, & Sedlak, 2002) or engaging in other kinds of extreme behaviors that represent a cry for help but yield them only an arrest record (Anda et al., 2006; Wright, Friedrich, & Cinq-Mars, 2004).

Thus, parental maltreatment may involve youth in the juvenile justice system in a number of ways: directly by precipitating an arrest for misbehavior; concurrently through catapulting youth into delinquent activity in an attempt to escape the abusive home; indirectly through disrupting the development of the cognitive, emotional, and interpersonal capacities that contribute to a prosocial adolescence; or after the fact by failing to provide the kind of emotional support needed to help a child to recover from a traumatic experience.

Disrupted Peer Relations: Friendships

The role of deviant peer associations in delinquency is well-established (e.g., Dishion et al., 1996; Fergusson et al., 2002) and it has been suggested that youth with a history of trauma are more vulnerable to these effects. Due to perceived alienation and stigma, maltreated youth may gravitate toward a peer group of "outsiders" that marks its difference from the

mainstream by engaging in behaviors that deviate from the larger society's standards (Finkelhor & Browne, 1992). Participation in antisocial peer groups sometimes seems to be interpreted as a function of troubled youths' rejection from the society of prosocial peers, which they would prefer to join if only they were invited. Certainly, peer rejection is linked to antisocial behavior (Dishion et al., 1995), but there also is an active selection process operating: it may not be sufficiently appreciated that the antisocial peer group provides a sense of belonging and membership in a surrogate family that is highly valued by these youth, and thus they actively seek out, value, and prefer these associations (Kerig & Wenar, 2006). For example, in a qualitative study of gang-involved girls, Miller and colleagues (in press) report that many of the girls expressed hostility toward and distrust of mainstream youth while viewing their antisocial peers (most of whom were older and male) as soul mates, fictive kin, and sources of nurturance and protection. Moreover, through their incarceration and placement in treatment or diversion programs, delinquent youth are brought together in ways that reinforce their adoption of an antisocial identity and engagement in antisocial behavior (Dishion, McCord, & Poulin, 1999). Therefore, association with antisocial peers is both a contributor to and a consequence of juvenile justice-involvement among traumatized youth.

Disrupted Peer Relations: Romantic Attachments

The role of romantic relationships in the link between trauma and delinquency has emerged particularly in the literature on girls. Interpersonal relationships are particularly salient influences on female development in general and thus girls may be particularly impacted by those with whom they form intimate emotional bonds (Funk, 1999). Juvenile justice-involved girls tend to associate with older, antisocial boyfriends who directly encourage them to participate in delinquent behavior (Cauffman, Farrugia, & Goldweber, 2008). Once on an antisocial trajectory, girls are likely to seek out partners who are involved in criminal behavior and to sanction those activities (Capaldi & Crosby, 1997) and girls with such partners are more likely to continue on an antisocial course (Haynie et al., 2005; Moffit, Caspi, Rutter, & Silva, 2001). Some evidence suggests that this "bad boyfriend" (Cauffman et al., 2008) effect is particularly salient for girls who have experienced trauma. Girls with histories of physical or sexual abuse are more likely than their peers to associate with antisocial males who initiate them prematurely into sexual activity and other delinquent behaviors (Adams & East, 1999; Chandy, Bluym, & Resnick, 1996; Miller, 1998; Stock et al., 1997).

Wolfe and colleagues (Wekerle & Wolfe, 1998; Wolfe & Feiring, 2000; Wolfe, Wekerle, Scott, Straatman, & Grasley, 2004) describe how the trauma of child abuse interferes with young people's ability to develop healthy romantic attachments and increases the likelihood of engaging in antisocial behavior. Youth from maltreating homes tend to seek independence from their families at an early age and precociously involve themselves in intense and maladaptive relationships with other troubled youth. Insecure attachment stemming from early maltreatment fuels chronic anxiety about abandonment, interpersonal neediness, sensitivity to rejection, and unrealistic expectations that this one relationship will meet all of their emotional needs and compensate for all the nurturance of which they have been deprived. When these expectations are disappointed, frustration, coerciveness, anger, and violence might ensue. In this way, once again, trauma begets trauma, as vulnerable youth are

increasingly likely to experience revictimization at the hands of those with whom they seek intimacy (Ball, Kerig, & Rosenbluth, 2009).

Iatrogenic Effects of Involvement in the Juvenile Justice System

Steinberg, Chung, and Little (2004) describe a number of ways in which involvement in the juvenile justice system is associated with the consolidation and exacerbation of delinquency. During incarceration, youth are deprived of the opportunity to participate in many normative adolescent experiences which potentially could divert them from an antisocial course through promoting a sense of mastery and competence, providing experiences with prosocial relationships, or fostering a positive identity. Instead, through incarceration, development itself becomes “arrested.” However, above and beyond these aversive effects, the concern has been expressed that involvement in the juvenile justice system may comprise a traumatic stressor, particularly for youth who already suffer from PTSD. The process of arrest and incarceration—including being confronted by armed officers, handcuffed, restrained, strip-searched, and locked up against their will in a restrictive environment—might trigger symptoms of reexperiencing in youth who have been traumatized by physical or sexual abuse. In addition, characteristics of detention—such as seclusion, loss of privacy, punitiveness, and staff gruffness—may be re-traumatizing for youth with PTSD, whose behaviorally and emotionally dysregulated reactions may provoke harsh limit-setting measures from the institution, further exacerbating the youths’ distress (Griffin, 2002; Hennessey et al., 2004). Youth also may become newly traumatized while in detention through becoming victims or witnesses to violent episodes, such as gang fights, take-downs, sexual assaults, and peer suicide attempts (Steinberg et al., 2004). Even more alarming, Acoca (1998) has uncovered harrowing descriptions of verbal, emotional, physical, and sexual abuse enduring by incarcerated girls at the hands of detention staff as well as by other inmates.

Research has shown that youth with mental health issues in general are more likely to recidivate (Trulson et al., 2005) and thus to have repeated, and increasingly lengthy, contacts with the juvenile justice system over time. It also may be that traumatized youth are particularly vulnerable to these effects. For example, in a recent study, Ezechukwu, Kerig, & Lim (2009) found that PTSD was associated with an increased likelihood of recidivism among a sample of 588 detained youth followed over a three year period. In addition, hierarchical linear modeling showed that, over the course of multiple admissions to detention, boys with PTSD reported escalating levels of substance use over time, whereas girls with PTSD reported the steepest increases in anger/irritability. These data suggest that the possible iatrogenic effects of detention, and how those interact with the sequelae of trauma, will be an important topic for further study and clinical attention.

Transactional Relationships

Consideration of the interrelationships among traumatic experiences, PTSD, delinquency, and involvement in the juvenile justice system also will need to take a transactional, dynamic approach. As noted previously, some forms of delinquent behavior—such as risky sexual behavior, substance abuse, and running away—comprise maladaptive strategies for coping

with trauma, and thus derive directly from posttraumatic stress. However, even if trauma is a catalyst for the development of delinquency, it also is likely that engagement in a delinquent lifestyle increases youth exposure to traumatic events, such as by exposing them to violence and victimization in the context of high-risk behaviors. Therefore, a transactional developmental model must consider the possibility that there is a complex chain of causes and effects. For example, trauma might lead to engagement in risky behavior, which increases the likelihood of involvement in the juvenile justice system, thus contributing to further stigmatization and alienation and low competence in prosocial spheres of development, further consolidating the adoption of a negative identity, which fosters increased affiliation with a delinquent peer group, which exacerbates engagement in antisocial behavior, and in turn increases the risk of exposure to new traumatic events. (See Figure 1).

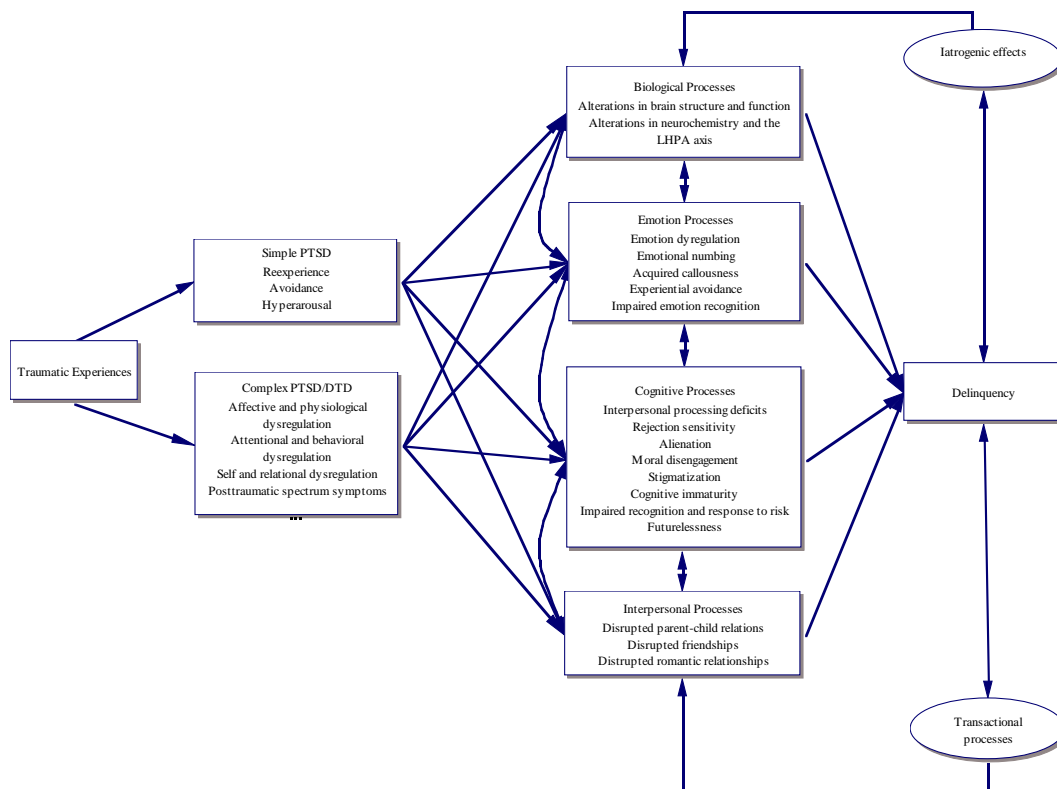


Figure 1. Mechanisms Underlying the Relationships Among Trauma, PTSD, and Juvenile Delinquency.

INTEGRATIVE DEVELOPMENTAL MODELS

General Strain Theory

Maschi, Bradley, and Morgen (2008) used Agnew's (1992, 1997) general strain theory to develop a model of the factors that link trauma and delinquency. Specifically, general strain

theory argues that it is negative affect in reaction to traumatic life events that leads to delinquent behavior. The most potent of these negative affects is anger, which has been shown to mediate the relationship between victimization and delinquency in a number of studies; for example, Aseltine and colleagues (2000) followed a sample of 1,036 youth over 3 waves of data collection and found that anger and hostility acted as a mediator of the association between negative life events and later violent delinquency. Moreover, general strain theory posits that the effect of negative affect is intensified by interpersonal factors, such as involvement with delinquent peers, and that problems in peer relations comprise one of the most significant sources of strain for adolescents (Agnew & Brezina, 1997). As we have seen, youth who experience trauma are at high risk for associating with antisocial peers and these associations, in turn, increase the likelihood of engagement in criminal behavior. For example, Agnew and White (1992) found in a prospective longitudinal study that association with delinquent friends exacerbated the relationship between early life stress and later delinquency and substance abuse. Maschi and colleagues (2008) tested both propositions of the model in a cross-sectional study of a nationally representative sample of 2,065 boys and found that both anger and exposure to delinquent peers partially mediated the association between exposure to violence and delinquency. Limitations of this model include that it is not specific to PTSD, but rather to a range of stressful life experiences that may or may not include actual trauma. In addition, the association of anger with delinquency also may be tautological in that delinquency is comprised, at least in part, by aggressive, disruptive, and antisocial behavior.

Trauma Coping Model

Ford and colleagues' (Ford, 2002; Ford et al., 2006; Ford, Albert, & Hawke, 2009) trauma coping model makes an important contribution to the field by integrating research on biological, cognitive, and emotional processes in order to understand the development of delinquency in the context of a complex PTSD framework. The model focuses specifically on the biological and psychological processes underlying trauma which relate to the impaired emotion regulation and interpersonal problem-solving seen among delinquent youth. The model notes that over time the unrelenting distress and terror associated with trauma create a heightened sense of alarm that exhausts the individual's resources and interferes with the capacity of the executive functions of the brain to mediate thought, emotion, and behavior, leading to a depleted ability to regulate affect, rigid cognitive style, impulsive responding, and diminished sense of empathy toward others. (See Figure 2)

Ford and colleagues (2002, 2006) also provide a compelling description of the existential dilemma of the traumatized youth and how that might lead to delinquency. Traumatic victimization, they propose, is an assault to the self that involves a loss of personal integrity and control. In an attempt to regain a sense of agency and to seek redress for the injustices done to them, traumatized youth may adopt a "survival coping" mode in which a tough façade of defiance and callousness masks an inner sense of hopelessness and shame. If the environment does not respond to the youth's disguised and muted calls for help, defiance gives way to desperation and a perceived justification to take any means necessary to defend the self against a hostile world. In this mode, termed "victim coping," the youth's stance toward the world is colored by a sense of distrust in relationships and pessimism about the

future, leading to a tendency to gratify impulses immediately with disregard for the consequences either for the self or others. The continual effort at self-protection from external threats of harm and internal threats of unwanted thoughts and feelings is emotionally and mentally exhausting, and the demoralizing effects of the victim coping mentality come to feel like “an escapable life sentence” (p. 40).

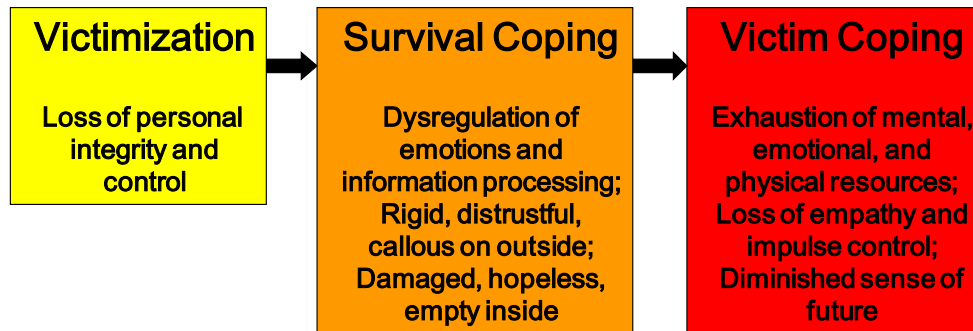


Figure 2. Trauma coping model (Ford, Chapman, Mack, & Pearson, 2006).

By articulating the perspective of the victimized youth, the trauma coping model also specifically addresses how the ostensible callousness borne of PTSD can be differentiated from true psychopathy. The distinction, Ford and colleagues argues (2006), is seen in the persistent defiance of traumatized youth and their repeated desperate attempts to redress the injustice of their victimization—a far cry from the cynical coolness of the delinquent youth whose emotional makeup truly is callous and shallow. Nader (2008) echoes this: “Trauma can wound the personal spirit by interrupting the life that would have been and the self that was, distorting and undermining self-confidence and self-concept, and altering the youth’s relationships to others and the environment” (p. 26).

From Conceptualization to Intervention

One of the ways in which the trauma coping model has contributed significantly to the field is that it has led to the development of an evidence-based intervention designed specifically for treating trauma among juvenile detainees. The TARGET (Trauma Affect Regulation: Guide for Education and Therapy) intervention focuses on helping youth to learn strategies to interrupt automatic and reactive responding on the basis of trauma cues through focusing on the present, recognizing triggers, balancing emotions, evaluating thoughts, generating long-term goals, expanding thinking to include a range of options, and reconnecting to the interpersonal world in positive ways (www.advancedtrauma.com/html/the_target_model.html; Ford & Russo, 2006). Although outcome data are not yet published, promising results are described on the developers’ website based on a clinical trial for PTSD among girls involved in the juvenile justice system, as well as a group and milieu treatment implemented in every juvenile detention facility in the state of Connecticut.

Attachment

Attachment is an organizational construct that provides an integrative framework for understanding how early relational experiences influence cognitive, emotional, and interpersonal development (Kobak, Cassidy, Lyons-Ruth, & Zir, 2006; Sroufe & Waters, 1977). Central to the attachment construct is the development of an internal working model of relationships that organizes the child's perceptions and expectations of self and other. Children whose caregivers have responded to their needs in nurturing and sensitive ways, and whose environments have been predictable and secure, develop a sense of basic trust and confidence that they are deserving of and capable of eliciting care. In contrast, children whose early caregiving environments have been unpredictable, depriving, or abusive develop insecure internal working models that guide them to expect that others will be unresponsive to or rejecting of their needs (Cicchetti & Howes, 1991). In addition, through their early attachment relationships, children develop a number of capacities that are related to good adaptation: emotion regulation and the capacity to self-soothe, positive self-regard, interpersonal trust and the ability to discern who is and is not trustworthy, and the facility to engage in satisfying and reciprocal relationships with others (Carlson & Sroufe, 1995). Impairments in each of these capacities have been implicated in our review of the mechanisms that might provide a link between trauma and delinquency, and it is the same family traumatic experiences that contribute to delinquency—particularly violence in the home—that are implicated in insecure attachment. Not surprisingly, then, beginning with Bowlby's (1944) seminal study on "forty-four juvenile thieves," a wealth of research has shown that insecure attachment is associated with youth aggression, antisocial behavior, poor interpersonal relationships, use of hard drugs, and involvement in the juvenile justice system (Allen, Aber, & Leadbeater, 1990; Allen, Hauser, & Borman-Spurrell, 1996; Allen, Moore, Kuperminc, & Bell, 1998; Allen, Porter, McFarland, McElhaney, & Marsh, 2007; Cooper, Shaver, & Collins, 1998; Marcus & Betzer, 1996; Stouthamer-Loeber, Loeber, Farrington, Zhang, van Kammen, & Maguin, 1993).

Although little of this research has focused on PTSD per se, there are at least four potential ways to understanding the theoretical relationships among attachment, trauma, and delinquency. First, parental maltreatment may comprise the trauma that disrupts attachment and sets a youth on the path to delinquency. Second, insecure attachment may create a vulnerability to stress that increases the likelihood that a youth will be vulnerable to subsequent adverse life experiences and thus to the negative influences that increase the likelihood of engaging in delinquent behavior. Third, parents who themselves are traumatized may be impaired in their ability to provide the kind of caregiving environment that arms children with the protective mechanisms they need to avoid engaging in antisocial behavior and being drawn to antisocial friends (Appleyard & Osofsky, 2003).

Attachment-related Trauma

Kobak, Cassidy, and Zir (2004) describe four types of attachment-related trauma, each of which can be seen among juvenile justice-involved youth. The first involves attachment disruptions that occur as a result of extended or unanticipated separations between caregiver and child. As noted above, research on detained girls has shown a marked history of separations and changes of caregivers, as many as one per year of life (Chamberlain & Moore, 2002) and Kobak and colleagues (2001) find that boys who have experienced

attachment disruptions are more emotionally and behaviorally disturbed. The second and third types of attachment-related trauma occur when a child experiences either the loss or the fear of loss of an attachment figure. Such intense fear is present when there is a threat of violence, as often is the case in the environments in which youth at risk for delinquency are being raised. In addition, threatening a child with abandonment is a common form of emotional abuse (Hart, Brassard, Binggeli, & Davidson, 2003) and threatening to harm the caregiver can be a powerful strategy to enforce child compliance with sexual abuse than threatening the child directly (Kerig & Wenar, 2006).

The fourth form of attachment-related trauma derives from physical or sexual abuse at the hands of the attachment figure, another form of trauma that is prevalent among juvenile justice-involved youth. When the perpetrator is a trusted caregiver, there is betrayal of trust as the victim is “attacked under the guise of being protected” (Silverman & Lieberman, 1999, p. 168). Indeed, “the trauma is not only the act of maltreatment itself...but also the relationship the victim has with the perpetrator of the trauma” (DeBellis, 2001, p. 539). When the relationship between caregiver and child parallels a relationship between perpetrator and victim, the child experiences confusion, fear, and dysregulation. Dependent upon the caregiver for survival, the child experiences extreme ambivalence regarding the attachment figure—trust and safety become intertwined with fear and helplessness. As a result, youth who have experienced traumas involving betrayal display an inability to trust in intimate relationships (Rojas & Lee, 2003), shame and self-deprecation (Herman, 1992; Silverman & Lieberman, 1999), high rates of dissociation (Chu & DePrince, 2006; DePrince & Freyd, 2004), as well as deficits in executive functioning (DePrince, Weinzierl, & Combs, 2009), characteristics that also have been related to delinquency.

Avoidant/dismissive Attachment

One type of insecure internal working model of attachment that has relevance for juvenile delinquency is avoidant/dismissive attachment. Similar to the concept of alienation described earlier, avoidant attachment is characterized by dismissiveness toward relationships and discomfort with intimacy and dependence. Avoidant attachment is seen among infants whose caregivers are emotionally withholding and unresponsive (Ainsworth et al., 1978) and is predictive of adolescent antisocial behavior (Aguilar, Sroufe, Egeland, & Carlson, 2000). In a classic paper on “avoidance in the service of attachment,” Main and Westen (1982) describe avoidance as the child’s strategy to suppress affective displays that might trigger an emotionally abusive parent’s anger. Mikulincer, Shaver, and Pereg (2003) developed this idea further, positing that avoidance represents an affect regulation strategy that involves the deactivation of emotions so as to distance oneself from others and reduce disappointment caused by others’ insensitivity or rejection (Cassidy & Kobak, 1988). In a study of emerging adults, Wei, Vogel, Ku, and Zahalik (2005) showed that the affect regulation strategy of “emotional cut-off”—akin to what we have described earlier as emotional numbing—was uniquely associated with avoidant attachment and predictive of negative mood and interpersonal problems. Thus the avoidant child is characterized in ways that are reminiscent of the alienated, morally disengaged, emotionally numbed delinquent—“by hostility and aggression, emotional isolation, and profound disconnection from experience—that distance feelings and people” (Carlson & Sroufe, 1995, p. 592). Reciprocally, parents with an avoidant style of attachment may react to ordinary child misbehaviors by withdrawing, which may provoke an angry and reactive response from the adolescent (Allen, Moore, & Kuperminc, 1997). As van

Ijzendoorn (1997) notes, “children’s aggressive behavior might be a concomitant of intergenerational transmission of insecure attachment patterns” (p. 712).

Ambivalent/Preoccupied Attachment

Whereas avoidant youth may present as callous and disengaged, the preoccupied adolescent is characterized by high levels of anxiety and distress. Due to inconsistent caregiver availability, youth with a preoccupied internal working model demonstrate heightened anxiety surrounding attachment issues and the stage-salient issues associated with adolescence (Cassidy & Berlin, 1994). Particularly for these youth, the increasing expectations for autonomy and separation-individuation of normative adolescence are not only unwelcome but unsettling and overwhelming. From this perspective, acting out may comprise a method of keeping an abusive parent engaged: “delinquent behavior may both express their anxiety and frustration and also serve as an attempt, albeit dysfunctional, to maintain the intensity of the parent-teen bond” (p. 57). In addition, preoccupation with the attachment figure also is accompanied by anger (Ainsworth et al., 1978; Cassidy & Berlin, 1994), which might contribute directly to delinquency. In a longitudinal study of 125 at-risk youth, Allen and colleagues (2002) found that youth with a preoccupied attachment style, as assessed with the Adult Attachment Interview and Q Set, evidenced increasing delinquency from the ages of 16 to 18. In addition, in a community sample, Cooper, Shaver, and Collins (1998) found that preoccupied adolescents reported significantly higher rates of property offenses and truancy than youth with an avoidant attachment style.

Disorganized Attachment

A particular focus of attachment research in the context of childhood trauma has been the construct of disorganized attachment (Cicchetti, Rogosch, & Toth, 2006). Caregivers of children with disorganized/disoriented attachments behave in frightening, unpredictable ways that interfere with the child’s ability to develop any kind of organized response to maintain a relationship (Hesse, Main, Abrams, & Rifkin, 2003; Liotti, 2004). Often these caregivers are themselves characterized by a history of unresolved trauma or loss that they transmit to the child (Main & Hesse, 1990). Disorganization and disorientation arise out of an inescapable paradox: the infant must use the caregiver as a safe haven when distressed while at the same time the caregiver’s responses are fear-inducing rather than soothing. The child is left with “fright without solution” (Main & Hesse, 1990), which impairs the child’s ability to modulate arousal and distress. Research confirms that infants with a disorganized attachment are at a significantly increased risk for later psychopathology in general (Carlson, 1998; van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999), and aggressive behavior in particular (Lyons-Ruth, 1996; Lyons-Ruth, Easterbrooks, & Davidson Cibelli, 1997).

The relationship between disorganized attachment and delinquency also might be obscured by the diagnostic labels that are given to youth with extreme forms of emotion regulation disorders. For example, children who have developed disorganized attachments in the context of severe attachment disruptions and parental maltreatment are vulnerable to profound forms of psychopathology involving personality disorganization, dissociation, impulsive behavior, and self-harming (Guzder, Paris, & Zelkowitz, 1999; Judd & McGlashan, 2003; Ogawa, Sroufe, Windfield, Carlson, & Egeland, 1997). Whereas during the transition to emerging adulthood these symptoms are associated with a diagnosis of borderline personality disorder among females, among males these symptoms are related to a diagnosis of antisocial

personality disorder (Guzder et al., 1996). In fact, many youth who come to be diagnosed with borderline personality disorder first present to clinical settings for problems with aggression and conduct disorder, and many adults with borderline pathology have histories of criminal behavior and substance abuse (Carlson et al., 2009). Given that trauma is a strong predictor of borderline pathology as well as delinquency, the possible links among these disorders, or at least among the conceptualizations of them, are worth considering.

The similarity between integrative developmental models of borderline pathology and delinquency indeed are striking. For example, Judd and McGlashan (2003) liken borderline personality disorder to a form of “developmental internalized PTSD” in which a chronic psychological and physiological state of stress arising from a traumatic attachment relationship becomes a part of the youth’s personality, identity, and characteristic responses to others. Further, traumatic stress interferes with emotional and cognitive functioning, including the information processing capacities that are essential to good decision-making and the formation of healthy interpersonal relationships. As Carlson, Egeland, and Sroufe (2009) state in their recent study of the development of borderline pathology, “Early traumatic experience compromises emergent capacities in affect regulation, impulse control, and arousal modulation” (p. 1314). “Ongoing reliance on rigid coping styles and defenses results in a progressive narrowing of possibility as the child becomes increasingly isolated from restorative relationships and opportunities ... [and] social behavior may be characterized by intrusiveness, aggression, and insensitivity to interpersonal cues and rules” (p. 1315). This depiction of borderline pathology is distinctly reminiscent of Ford and colleagues (2006) description of the role of complex trauma in the presentation of delinquent youth. Indeed, there are significant controversies in the field as to where the boundary lies between borderline personality disorder and complex PTSD, with some urging that the pejorative and misogynist label of “borderline” be supplanted by the more empathically-oriented and explanatory model offered by the complex PTSD formulation (Hodges, 2003).

Attachment as a Mediator of the Relationship between Trauma and Delinquency

According to the attachment model, youth who experience repeated and prolonged trauma throughout development come to view the world as unsafe and unpredictable. Not having received the kind of soothing from the caregiver that allows a child to develop the capacity to self-soothe, youth with insecure attachments are unable to regulate their own emotional distress, which leads to subsequent anxiety and anger (van der Kolk, 2005). Among abused children, disorganized attachment also may be associated with the shameful cognitive appraisals and dysregulation of emotions which contribute to the “shame-rage spiral” that is predictive of delinquency (Feiring et al., 2007; Scheff, 1987). Parental emotional unavailability also fosters a feeling of underlying resentment, whereby “through processes of internalization, patterns of maladaptation (regulation of emotions, expectations, and attitudes) that begin in the caregiver-infant relationship are carried forward” (Carlson & Sroufe, 1995, p. 606). As noted previously, as they enter adolescence, children who have experienced neglect or abuse in the home tend to precociously detach themselves from the family of origin and to form intense but dysfunctional attachments to troubled peers (Wolfe & Wekerle, 1997), peers whose influence helps to pull the youth further toward an antisocial lifestyle.

In one study examining the links among attachment, trauma, and delinquency, Egeland, Yates, Appleyard, & van Dulmen (2002) construed alienation as a form of insecure attachment that may develop when there is a “lack of trust in the caregiver’s availability,

support, and guidance, particularly in stressful situations in which the child needs support and assistance from the caregivers to cope effectively” (p. 251). The investigators found that alienation helped to account for the relationship between childhood maltreatment and externalizing behaviors in adolescence and concluded that “alienation is a probable consequence of maltreatment that appears to be part of the process leading to an early-onset externalizing trajectory” (p. 257).

Another recent study examined the differential effects of attachment to parents and peers as on the relationship between child maltreatment and antisocial behavior. Using a sample of 100 physically abused children and 100 matched controls followed from age 10 to 16, Salzinger, Rosario, and Feldman (2007) found that attachment to parents mediated the relationship between childhood physical abuse and adolescent violent delinquency. In contrast, attachment to friends was not related to violent behavior. However, other aspects of peer relationships moderated the relationship between childhood abuse and adolescent delinquency: for maltreated youth only, affiliation with nondelinquent friends lowered the risk for violent behavior while abusive behavior with best friends exacerbated the risk. Thus, attachment to parents appears to play a unique role in the relationship between trauma and juvenile delinquency, one that is complemented but not superseded by peer relationships.

In summary, longitudinal research provides support for the role of attachment—and the associated underlying deficits in interpersonal trust, self concept, and emotion regulation—as a mechanism by which traumatic experiences lead to antisocial behavior. Secure attachment also may serve as a protective factor that helps youth to be resilient in the face of subsequent trauma (Bell, Forthun, & Sun, 2000; Mikulincer, 1997; Crittenden, 1999). However, to our knowledge, no empirical studies yet have examined attachment as a mediator of the relationship between PTSD and delinquency and this is an area ripe for future research.

Intervention for Delinquency from an Attachment Perspective

Given that both the experience of trauma and delinquency are characterized by disturbed interpersonal relationships, attachment theory offers a framework for intervention that seems promising. Although promising attachment-informed interventions have been developed for working with detained youth (e.g., Moretti, Holland, Moore, & McKay, 2004), our review has not uncovered evidence-based intervention models for trauma among juvenile justice-involved youth that derive explicitly address PTSD from an attachment perspective. However, the provision of a secure base and opportunities for reworking disturbed internal models of relationships are prominent features of the most well-researched treatment for PTSD in children and adolescents, Trauma-Focused Cognitive Behavioral Therapy (TF-CBT; Cohen, Mannarino, & Deblinger, 2006), as well as one of the most well-supported interventions for traumatized delinquent youth, Multidimensional Treatment Foster Care (MTFC; Leve & Chamberlain, 2005).

Typically, intervention drawing from the attachment framework focuses first and foremost on the use of the therapeutic relationship as a secure base (Bowlby, 1988) from which prior models of relationships can be reexamined and reworked (Dozier and Tyrrell, 1998). However, youth with histories of trauma may not have “the experience base to form stable relationships or the ability to maintain relational continuity even when others (including the therapist) are reliable, consistent, and trustworthy” (Pearlman & Courtois, 2005, p. 454). Compounding this challenge is the fact that juvenile justice-involved youth are

particularly distrusting of and cynical about authority figures, and therefore the therapist's offer to serve as a secure base may encounter skepticism and rejection.

Therefore, rather than viewing the relationship between the youth and the therapist as a potential safe base, these interventions developed for traumatized delinquent youth focus on altering the caregiving environment in ways that provide the youth with dependability, support, emotional responsiveness, and nurturance. In TF-CBT, enhancing the parent's capacity to understand, lend support, and respond helpfully to the youth's traumatic experiences and resulting PTSD symptoms is a central component of the treatment (Cohen et al., 2006; Cohen & Mannarino, 2000). Some evidence from a small pilot study suggests that this approach can be efficacious with juvenile justice-involved youth, although engaging and retaining antisocial families in a voluntary treatment program can be challenging (Kerig, 2009). It is important to note that interventions for detained youth often are implemented under court order, whereas the ethicality of forcing an unwilling youth or unreceptive family to undergo trauma-focused treatment—especially one such as TF-CBT, which requires revealing and working through traumatic events in explicit detail—is highly questionable.

The MTFC approach also is trauma-informed, particularly in the adaptation of the model developed for working with delinquent girls (Chamberlain & Moore, 2002). Designed for the treatment of youth with extremely serious and chronic delinquency, MTFC places girls with carefully trained therapeutic foster parents who provide consistent discipline, mentoring, emotional support, nonconfrontational problem-solving, and a structured daily living environment, aspects of a secure base which many of these girls are experiencing for the first time in their chaotic and traumatic lives (Leve & Chamberlain, 2005). Special attention is paid to helping foster mothers to navigate the sometimes emotionally stormy landscape of their relationships with girls whose attachments to their biological mothers have been colored by betrayal, disappointment, and deprivation. In addition, youth participate in individual therapy focused on skill-building, such as the regulation of emotions, interpersonal problem-solving, and future planning. As distinct from the TF-CBT approach, Chamberlain and Moore (2002) caution that directly addressing trauma issues with these chronically- and multiply-traumatized girls is not the starting place for treatment. Rather than adding to the stress, anxiety, and emotional volatility already present in these youth's lives by bringing trauma-related issues to the forefront, the first goals of treatment are "helping them stabilize and get back on track developmentally" (p. 99), by accomplishing tasks such as learning to live in a family, getting along with others, going to school, and engaging in age-appropriate social behavior. Again, the possible links among complex trauma, juvenile delinquency, and borderline pathology are suggested by Chamberlain and Moore's (2002) reference to Linehan's (1993) Dialectical Behavior Therapy as providing a rationale for their treatment approach; and other treatment programs for incarcerated girls have explicitly incorporated DBT to good effect (Trupin, Stewart, Beach, & Boesky, 2002). In addition, recent, pilot work has suggested that MTFC and TF-CBT can be integrated successfully in the treatment of traumatized delinquent girls (Smith, Chamberlain, & Leve, in press).

CONCLUSION

This review has revealed that there are a wealth of ideas, theories, concepts, models, and findings that have the potential to demarcate the mechanisms that account for the relationships among trauma, PTSD, and delinquency. However, far from being inchoate, it is in keeping with the attachment concept of central coherence that there is in fact a significant amount of consistency in the themes that have emerged from this literature review. For example, disparate findings from researchers of neurobiology, emotional development, social psychology, attachment, and personality suggest that experiential avoidance processes such as dissociation, numbing, distancing, alienation, moral disengagement, survival coping, and dismissing attachment may result in a presentation of callousness and emotional disconnection among traumatized delinquent youth. In turn, unless explicitly sought in the subtext of delinquent behavior, the youth's underlying existential experience of hurt, betrayal, distress, outrage, and anxiety might well be overlooked. Integrative models such as attachment theory hold particular promise for helping to organize and integrate these various literatures and to bring together otherwise disparate-seeming threads that in fact form a coherent pattern. In particular, the attachment perspective points to the importance of understanding trauma as a relational disorder, for which important aspects of treatment must be relational as well. Recent advances in thinking about the construct of trauma, particularly the proposed diagnosis of Developmental Trauma Disorder, also have significant implications for understanding the kind of early-onset, chronic, pervasive, interpersonal stressors that are seen in juvenile delinquency (Silvern & McClintic, 2009), particularly amongst girls (Kerig & Becker, in press; Kerig et al., 2009). The complex trauma perspective also has proven invaluable in informing the design of new interventions that are emerging as effective for traumatized delinquent youth (Ford, 2006; Chamberlain & Moore, 2002). Although further research is needed to explicate these links and to test the hypotheses that they inspire, hopefully the present review will help to encourage the effort and guide the way.

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