COMPLEX TRAUMA AND AGGRESSION IN SECURE JUVENILE JUSTICE SETTINGS

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Youth in secure juvenile justice settings (e.g., detention, incarceration) often have histories of complex trauma: exposure to traumatic stressors including polyvictimization, life-threatening accidents or disasters, and interpersonal losses. Complex trauma adversely affects early childhood biopsychosocial development and attachment bonding, placing the youth at risk for a range of serious problems (e.g., depression, anxiety, oppositional defiance, risk taking, substance abuse) that may lead to reactive aggression. Complex trauma is associated with an extremely problematic combination of persistently diminished adaptive arousal reactions, episodic maladaptive hyperarousal, impaired information processing and impulse control, self-critical and aggression-endorsing cognitive schemas, and peer relationships that model and reinforce disinhibited reactions, maladaptive ways of thinking, and aggressive, antisocial, and delinquent behaviors. This constellation of problems poses significant challenges for management, rehabilitation, and treatment of youth in secure justice settings. Epidemiological and clinical evidence of the prevalence, impact on development and functioning, comorbidity, and adverse outcomes in adolescence of exposure to complex trauma are reviewed. Implications for milieu management, screening, assessment, and treatment of youth who have complex trauma histories and problems with aggression in secure juvenile justice settings are discussed, with directions for future research and program development.

Keywords: traumatic stress; juvenile justice; detention, incarceration; aggression; adolescent; epidemiology; comorbidity; assessment; diagnosis; treatment

Youth in secure juvenile justice settings often have experienced multiple forms of traumatic stressors, including victimization (e.g., abuse, family and community violence), life-threatening accidents or disasters, and interpersonal losses (Abram et al., 2004; Ford, Hartman, Hawke, & Chapman, 2008). By definition (American Psychiatric Association [APA], 2000), *traumatic stressors* are events that involve a threat, or the actual occurrence, of an untimely death or severe physical injury that could be life threatening, or a violation of bodily integrity (i.e., sexual assault or molestation). Complex traumatic stressors (hereafter *complex trauma*) are a subset of these dangerous or harmful events in which the person suffers not only a traumatic shock but also severe disruption in his or her development

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of core self-regulatory competences (Ford, 2005) or primary attachment bonds (Cook et al., 2005).

Exposure to complex trauma places children at risk for a range of serious internalizing (e.g., fear, depression, somatic complaints) and externalizing (anger, aggression, oppositional-defiant, conduct disorder, substance abuse) problems. In secure juvenile justice settings, youth suffering the sequelae of complex trauma often display aggressive behavior (e.g., reactive episodes of rage or methodically assaultive or destructive acts) that has substantial social, educational, and economic costs (Foster & Jones, 2005; Zakireh, Ronis, & Knight, 2008). Although aggression is only one way in which the sequelae of complex trauma may manifest (Ford, Connor, & Hawke, 2009; Ford, Elhai, Connor, & Frueh, 2010), and aggression has many origins and precipitants in addition to traumatic stress (Connor, Glatt, Lopez, Jackson, & Melloni, 2002), the combination of trauma-related emotional, behavioral, and cognitive dysregulation with aggressive attitudes and behaviors is potentially highly dangerous and volatile.

In this article, we review epidemiological and clinical studies regarding the prevalence, sequelae, comorbidities, and functional impact of complex trauma in childhood and adolescence, with particular reference to the relation with aggression among youth in secure juvenile justice settings. Assessment and treatment of complex stress reactions with aggressive youth in secure juvenile justice settings is discussed, with implications for future research and program development.

COMPLEX TRAUMA AND ITS SEQUELAE ACROSS THE LIFESPAN

The term *complex trauma* has been used in a number of ways and has several cognate terms that warrant brief clarification. Two decades ago, two pioneering psychiatrists described pervasive forms of psychic trauma that undermine the survivor's fundamental sense of the integrity of self and the safety and trustworthiness of relationships with other human beings as, respectively, "Type II" childhood trauma (Terr, 1991), and "complex" trauma (Herman, 1992). Traumatic stressors have been defined as events and circumstances that are life threatening or violations of bodily integrity and that evoke reactions of extreme fear, helplessness, or horror (APA, 2000). Complex trauma has been defined as exposure to traumatic stressors at an age (e.g., early childhood) or in a context (e.g., prolonged torture or captivity) that compromises secure attachment with primary caregivers (Cook et al., 2005) and the associated ability to self-regulate emotions (Ford, 2005). Complex trauma includes physical or sexual abuse or neglect, and chronic childhood victimization such as family and community violence, physical and sexual assault, and bullying (Finkelhor, Ormrod, & Turner, 2009a). Complex trauma also occurs when children are exposed to chronic violence such as war, captivity, genocide, terrorism, torture, and forced displacement from home and community (Joshi & O'Donnell, 2003; Porter & Haslam, 2005). Complex trauma tends to be multifaceted (i.e., several forms of traumatic stressors) and cumulative (i.e., involving repeated revictimization). Revictimization occurring repeatedly in several different forms ("polyvictimization"; Finkelhor, Ormrod, & Turner, 2009b) is associated with especially particularly severe emotional and behavioral impairment (Anda et al., 2006; Briere, Kaltman, & Green, 2008; Cloitre et al., 2009; Dube et al., 2009; Ford, Stockton, Kaltman, & Green, 2006; Koenen, Moffitt, Poulton, Martin, & Caspi, 2007; Lu, Mueser, Rosenberg, &

Jankowski, 2008; Nixon, Nishith, & Resick, 2004; Pickett, Iannotti, Simons-Morton, & Dostaler, 2009; Schumm, Briggs-Phillips, & Hobfoll, 2006).

Research also supports the view that complex trauma compromises the development of core self-regulatory competences (Ford, 2005), including: (a) attention and learning; (b) sensorimotor functions; (c) working (short-term processing), declarative (verbal) and narrative (autobiographical) memory; and (d) emotion regulation and social relatedness (attachment). In addition, though not constituting the sole etiology for any one disorder, complex trauma in childhood has been implicated as a precipitant of or contributor to a wide range of affective, anxiety, psychotic, eating, substance use, oppositional-defiant, conduct, and later personality disorders (Ford, 2010). One way to understand the wide range of adverse sequelae of complex trauma is to distinguish between the exploration and learning that is a hallmark of healthy biopsychosocial development in childhood versus a survival-oriented preoccupation with detecting and surviving threats (Pine, 2007). When the brain operates in survival mode (Ford, 2009), chronic changes occur not in only psychological and behavioral functioning (e.g., hypervigilance, dysphoria, reduced tolerance for frustration and delayed gratification, impulsivity) but also in the body's central and autonomic nervous systems (Neumeister, Henry, & Krystal, 2007). Such biological changes can severely compromise physical health, as well as override and reduce the functionality of key learning networks in the brain: reward and motivation systems (involving neurotransmitter dopamine), distress tolerance systems (involving neurotransmitter serotonin), and "executive" systems (involving emotion and information processing in limbic and prefrontal cortex areas). Complex traumatic stress reactions thus extend beyond the primary symptoms of anxiety and dysphoria characterizing posttraumatic stress disorder.

As a result of these impairments in self-regulation, youth with complex trauma histories often develop externalizing problems (e.g., hostility, oppositionality, impulsivity) in childhood (Ford et al., 1999; Ford, Fraleigh, & Connor, 2010; Mongillo, Briggs-Gowan, Ford, & Carter, 2009) and adolescence (Farrington, 1993; Ford et al., 2009; Ford, Hartman, et al., 2008; Ruchkin, Henrich, Jones, Vermeiren, & Schwab-Stone, 2007; Turner, Finkelhor, & Ormrod, 2006). These youth tend to be diagnosed with externalizing disorders such as attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder, and conduct disorder, or personality disorders, or behavioral dyscontrol syndromes (e.g., psychopathy or substance use, or intermittent explosive disorders). Although those diagnoses may be warranted, this diagnostic profile fits many dysregulated youth in secure justice settings who are primarily *reactively* aggressive and not intractable to treatment or rehabilitation. Assessing and treating the sequelae of undetected complex trauma provides an alternative approach to remediating complicated and severe behavior problems in justice-involved youth, and thus to promote more effective management and treatment options.

PREVALENCE OF COMPLEX TRAUMA IN COMMUNITY, TREATMENT, AND CRIMINAL JUSTICE SETTINGS

Childhood and adolescent exposure to traumatic stressors appears common across societies. Between 25% (Costello, Fairbank, Erklani, & Angold, 2002) and 43% (Silverman, Reinherz, & Giaconia, 1996) of children in the United States are estimated to experience at least one (Seedat, Nyamai, Njenga, Vythilingum, & Stein, 2004) traumatic stressor.

More than 75% of adolescents in the United States and South African and Kenyan 10th graders (Seedat et al., 2004) reported having experienced at least one traumatic stressor in their lifetimes. When complex trauma specifically is considered, the lowest epidemiological estimate for children and youth in the United States is 5% (Costello et al., 2002). Other studies indicate that as many as one in five (20%) 3-year-olds in community samples had experienced potentially traumatic family violence (Mongillo et al., 2009), and almost one in three adolescents (30%; Kilpatrick et al., 2000) had experienced potentially traumatic physical or sexual assault. Between 50% (Kilpatrick et al., 2000) and 80% (Finkelhor et al., 2009b) of children and adolescents in the United States report some form of victimization, including sexual assault (5%-8%), physical assault (22%-61%), abuse (16%), witnessing family violence or abuse (10%), or murder of a family member or friend (8%).

Approximately 90% of youth in juvenile detention facilities reported a history of exposure to at least one potentially traumatic event in two independent surveys of representative samples (Abram et al., 2004; Ford, Hartman, et al., 2008). Prevalence estimates of being threatened with a weapon (58%; Abram et al., 2004), traumatic loss (48%; Ford, Hartman, et al., 2008), and physical assault (35%; Abram et al., 2004; Ford, Hawke, & Chapman, 2010) were particularly high in the juvenile detention samples compared to community samples. A hierarchical cluster analysis of a large representative sample of youth in juvenile detention revealed two complex trauma subgroups: Twenty percent of the sample reported some combination of sexual or physical abuse or family violence, and 15% had experienced emotional abuse and family violence but not physical or sexual abuse (Ford, Hawke, et al., 2010). The resultant combined prevalence estimate of 35% for complex trauma history is about 3 times higher than the 10% to 13% estimates of polyvictimization from epidemiological study of children and adolescents (Finkelhor et al., 2009b) and adolescents (Ford, Elhai, et al., 2010). Differences in how complex trauma cases were defined by the studies prevent direct comparison, but the findings suggest that complex trauma stressors are highly prevalent among youth in secure juvenile justice facilities.

SEQUELAE OF COMPLEX TRAUMA

High prevalence estimates of PTSD have been reported for youth in psychiatric and justice settings. One in four (Ford et al., 2000; Mueser & Taub, 2008) adolescents in psychiatric treatment have been found to meet criteria for PTSD. Similarly, 33% of Japanese female juvenile offenders (Ariga et al., 2008), 27% of Swiss male juvenile offenders (Urbaniok, Endrass, Noll, Vetter, & Rossegger, 2007), and 10% to 19% of detained youth in the United States (Abram et al., 2004; Cauffman, Feldman, Waterman, & Steiner, 1998; Ford, Hartman, et al., 2008; Steiner, Garcia, & Matthews, 1997) meet criteria for PTSD, with similar prevalence among boys remanded to secure facilities compared to those in mental health treatment programs (Urbaniok et al., 2007).

Exposure to complex trauma in childhood puts adolescents and young adults at risk for PTSD (Copeland, Keeler, Angold, & Costello, 2007; Holmes & Sammel, 2005; Kilpatrick et al., 2000; Kilpatrick et al., 2003), depression (Hazen, Connelly, Roesch, Hough, & Landsverk, 2009; Holmes & Sammel, 2005; Kilpatrick et al., 2000; Kilpatrick et al., 2003; Manly, Kim, Rogosch, & Cicchetti, 2001; McCloskey & Lichter, 2003), suicidality (Ford, Hartman, et al., 2008; Swahn & Bossarte, 2007; Waldrop et al., 2007), substance use

disorders (Ford, Hartman, et al., 2008; Kilpatrick et al., 2000; Kilpatrick et al., 2003), and legal problems and incarceration (Holmes & Sammel, 2005). Polyvictimized youth are at risk for severe sequelae including psychological distress (Finkelhor, Ormrod, & Turner, 2007a, 2007b; Hazen et al., 2009; Turner et al., 2006), psychiatric disorders (Cuevas, Finkelhor, Ormrod, & Turner, 2009; Ford, Elhai, et al., 2010), preteen initiation of substance use (Hamburger, Leeb, & Swahn, 2008), and delinquency (Cuevas, Finkelhor, Turner, & Ormrod, 2007; Ford, Elhai, et al., 2010). Polyvictimized children also are more likely than other children not only to be revictimized (Finkelhor, Ormrod, & Turner, 2007), but also to experience other forms of potentially traumatic adversity (e.g., serious accidents or losses; Finkelhor, Ormrod, Turner, & Hamby, 2009; Ford et al., 2009; Ford, Elhai, et al., 2010).

COMPLEX TRAUMA AND AGGRESSION

Several lines of evidence suggest an association between complex trauma and aggression among youth. Aggressive acts differ in their function (i.e., proactive attempts to harm or control vs. reactive attempts to cope or protect self or others) and whether they are exhibited in an overt (e.g., physical violence) or relational (e.g., verbal or unspoken threats) form (Barker, Tremblay, Nagin, Vitaro, & Lacourse, 2006; Munoz, Frick, Kimonis, & Aucoin, 2008). Child abuse has been shown to be associated with reactive but not proactive (Marsee, 2008) aggression (Ford, Fraleigh, & Connor, 2010) and with autonomic hypoarousal (Klorman, Cicchetti, Thatcher, & Ison, 2003) to a painful physical stressor (Ford, Fraleigh, Albert, & Connor, 2010) among psychiatrically impaired children and adolescents, as well as in high-risk (McGee, Wolfe, & Wilson, 1997) and community samples (Jaffee, Caspi, Moffitt, & Taylor, 2004). However, proactive and reactive aggression tend to be highly interrelated (Ford, Fraleigh, & Connor, 2010), and some youth who are proactively aggressive are not highly "callous and unemotional" but instead may be proactively attempting to defend themselves based on past complex trauma (Ford, Chapman, Mack, & Pearson, 2006). This would be consistent with the "adolescent-limited" subtype of antisocial youth identified in prospective studies (Moffitt, 1993). What appears to be an instrumental or malicious tendency toward aggression may be reactive and trauma related (Jaffee et al., 2004).

Disruption of primary attachment relationships—a key component in complex trauma—often occurs when children are repeatedly placed outside the home by child protective services, and multiple out-of-home placements were found to contribute to the severity of conduct, attention, and hyperactivity problems over and above the generalized impairment caused by physical abuse (Ford et al., 2009). Both physical abuse and out-of-home placement may include overt and relational modeling of aggression by caregivers (Paton, Crouch, & Camic, 2009), which prospectively puts the youth at risk for problems with aggression (De Genna, Stack, Serbin, Ledingham, & Schwartzman, 2007; Hops, Davis, Leve, & Sheeber, 2003; McCloskey & Lichter, 2003). Evidence cited above of heightened self-criticism and shame among youth with abuse or family violence histories suggests that complex trauma may increase the risk of aggression by leading to diminished self esteem. Low self-esteem was associated with aggression, antisocial behavior, and delinquency in a community sample of youth and adults (Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005).

Exposure to childhood abuse (Ayoub et al., 2006; Dodge, Pettit, Bates, & Valente, 1995), family violence (Buka, Stichick, Birdthistle, & Earls, 2001; Haj-Yahia, 2001), and community violence (Fehon, Grilo, & Lipschitz, 2001; Ruchkin et al., 2007; Stein, Jaycox, Kataoka, Rhodes, & Vestal, 2003) are predictive of the development of beliefs, attitudes, and peer group affiliations (Ford, Elhai, et al., 2010) that endorse or encourage delinquency or aggression. Moreover, exposure to domestic violence has been shown to be associated with lower levels of intellectual functioning independent of genetic effects (Koenen, Moffitt, Caspi, Taylor, & Purcell, 2003), and with impaired arousal regulation (Saltzman, Holden, & Holahan, 2005). Attitudes or affiliations supporting delinquency and lower intellectual functioning (Giancola, Martin, Tarter, Pelham, & Moss, 1996; Seguin, Nagin, Assaad, & Tremblay, 2004; Vitiello, Behar, Hunt, Stoff, & Ricciuti, 1990), have been found to be related to increased risk of reactive aggression. Dysregulated stress reactivity (Lopez-Duran, Olson, Hajal, Felt, & Vazquez, 2009; van Bokhoven et al., 2005; S. J. Yang, Shin, Noh, & Stein, 2007) may include diminished (Ford, Fraleigh, Albert, et al., 2010) as well as excessive reactivity to stressors. A biological link between complex trauma exposure and risk of aggression is suggested by evidence that childhood exposure to domestic violence or abuse (Choi, Jeong, Rohan, Polcari, & Teicher, 2009; De Bellis & Kuchibhatla, 2006) and childhood sexual abuse (Kitayama et al., 2007; Lanius et al., 2005; Schmahl, Vermetten, Elzinga, & Bremner, 2003) are associated with dysregulation specifically in brain areas and pathways associated with stress reactivity (Saltzman et al., 2005) and cognitive appraisals and intellectual functioning (Koenen et al., 2003).

Complex trauma also places youth at risk for juvenile delinquency (Ford, Elhai, et al., 2010). Victimization has been shown to place youth at risk for delinquency (Dembo et al., 1989; Nofziger & Kurtz, 2005) and to be associated with more severe delinquency (Dembo et al., 2000). Youth who have been victimized by abuse or violence also have been found to be more likely to recidivate than other youth (Dembo et al., 1995; Heilbrun, Lee, & Cottle, 2005; Ryan & Testa, 2005). The impact of complex trauma may be particularly adverse for youth who become involved in delinquency: Polyvictimized youth who were involved in delinquency reported more severe psychological distress than polyvictimized youth who had no involvement in delinquency (Cuevas et al., 2007). Witnessing or exposure to violence may be particularly detrimental for delinquent youth: Violence exposure was found to be more strongly associated than a history of abuse with risk of juvenile offending (Eitle & Turner, 2002) and with the severity of traumatic stress symptoms and risk of suicide and substance abuse (Ford, Hartman, et al., 2008) among detained juvenile offenders.

The adverse effects of complex trauma on adolescent psychosocial functioning and risk of aggression may be due to a variety of mechanisms. The central (brain) and peripheral (autonomic) nervous system alterations associated with childhood exposure to maltreatment and violence are likely to increase stress reactivity, anger, and impulsivity while reducing the youth's ability to inhibit these reactions and engage in effective problem solving (Weder et al., 2009; P. Yang, Wu, Hsu, & Ker, 2004; S. J. Yang et al., 2007). Complex trauma exposure also is associated with altered cognitive information processing, schemas, and expectations, which may lead the youth to be prone to endorse aggression (Bradshaw & Garbarino, 2004; Dodge et al., 1995), submit to victimization (Ponce, Williams, & Allen, 2004), or experience high levels of self-criticism and shame (Alessandri & Lewis, 1996; Glassman, Weierich, Hooley, Deliberto, & Nock, 2007; Sachs-Ericsson, Verona, Joiner, & Preacher, 2006) —all of which are associated with increased risk of reactive

aggression (Crick & Dodge, 1996; Hudley & Friday, 1996; Shields & Cicchetti, 1998). Moreover, complex trauma may lead to involvement with peers who engage in, model, and encourage delinquent behavior (Ford, Elhai et al., 2010). Association with delinquent peers may increase the risk of psychosocial impairment and aggression as a result of a clustering of behavior problems (Donovan, Jessor, & Costa, 1988), peer modeling (Dishion & Dodge, 2005), and engagement in violent behavior secondary to alcohol (Swahn & Donovan, 2004, 2006) or drug (van den Bree & Pickworth, 2005) use, or combinations of these factors (Finkelhor et al., 2007a).

Exposure to traumatic stressors has not been found to be a cause of or risk factor for ADHD (Ford & Connor, 2009). However, aggressive behavior tends to be exacerbated when juvenile detainees have ADHD. Given high rates of ADHD in the juvenile inmate or detainee population, it is important not to overlook this diagnosis when residential facility screening or assessment identifies youth with complex trauma histories who also display aggressive behavior (Connor, Ford, Chapman, & Banga, 2012).

CHALLENGES OF COMPLEX PTSD TREATMENT WITH AGGRESSIVE YOUTH IN SECURE JUVENILE SETTINGS

Complex trauma thus may lead to an extremely problematic combination of persistently diminished adaptive arousal reactions, episodic maladaptive hyperarousal, impaired information processing and impulse control, self-critical and aggression-endorsing cognitive schemas, and peer relationships that model and reinforce disinhibited and aggressive ways of thinking and behaving. This constellation of problems poses significant challenges for milieu management, screening and assessment, rehabilitation, and treatment of youth in secure justice placements.

MILIEU MANAGEMENT AND SAFETY

Milieu management interventions in juvenile justice residential programs typically have been generic “one-size-fits-all” programs designed to reduce or prevent unrest and violence, and to enhance educational and vocational skills (Berkshire & McMahon, 1994; Schwartz, 2003). Three domains are usually addressed. First, the foundation for most milieu programs is provided by educational, vocational, and recreational activities designed to meet statutory requirements and engage youth in prosocial learning and socialization (Delaney, 2006; DeSocio, Bowllan, & Staschak, 1997; Pearson, Billian, & Delaney, 1997). Second, a behavior management protocol involving rules and sanctions is usually provided to limit problematic and risky or aggressive behavior, with an increasing trend toward adding a rewards to motivate prosocial behavior (Dean, Duke, George, & Scott, 2007). Third, staff usually are trained to implement crisis prevention and management programs designed to enhance safety and reduce violence and suicidality (Morrissey, Fagan, & Cocozza, 2009; Roberts & Bender, 2006). A complex trauma perspective is potentially relevant to each of these milieu program domains (Ford et al., 2006).

As described previously, adolescents with complex trauma histories are likely to have impairments in the types of self-regulation that are required to successfully participate in milieu activities and to respond favorably to milieu motivational and crisis prevention interventions. Therefore, milieu interventions are needed that systematically *build*, rather

than requiring or presupposing (or penalizing limitations in), competence in self-regulation. Day-in and day-out "24-7" milieu programs are necessary to provide intensive social learning experiences that reinforce and lead to sustained use of self-regulation skills taught in classes and therapeutic interventions. Staff and administrators are irreplaceable role models for self-regulation in their interactions with youth and with each other in milieu settings. Staff and administrators thus can not only encourage, reinforce, and coach youth in using self-regulation skills, but moreover can *demonstrate* through their own self-regulated actions how to deal with stressors in the milieu without lapsing into dysregulated behavior (e.g., impulsivity, aggression, avoidance), emotion (e.g., rapid shifts into states of hyper- or hypoarousal, with difficulty regaining a balanced calm affective state), cognitive processing (e.g., proactive consequence-based decision making and problem solving, attentional focusing on stimuli other than threat-related cues, storage and retrieval of information in working or long-term memory), or interpersonal interaction (e.g., limited tolerance for frustration, uncertainty, or delay of gratification; difficulty in empathic perspective taking). From a developmental perspective (DeSocio et al., 1997), the latency age and adolescent youth in juvenile justice residential programs are highly attuned to social interaction and learn as much from what others do as from what they are told or read in texts.

The challenge is that youth with complex trauma histories often have, at best, an ambivalent attitude toward trusting in and learning from their relationships with adults or with unfamiliar peers. Having been terrified, intimidated, exploited, deceived, abandoned, rejected, betrayed, or insufficiently protected in key relationships—often with primary caregivers or surrogates (e.g., older siblings, gang members) when primary caregivers are absent, unavailable, unpredictable, or dangerous)—justice-involved youth with complex trauma histories are understandably distrustful of current relationships. This is particularly true in relationships in which the other person(s) has authority, because power can be used (and in these youth's experiences, often has been used) to take advantage of or harm anyone who lets down their guard and is trusting or hopeful. These youth understandably tend to react negatively to adults who use physical or legal means of intimidation to control the youth's behavior and thinking—having learned that it does not pay to allow oneself to appear weak or a victim. However, oppositionality is equally or even more likely by youth with complex trauma histories when they encounter adults who actually want to help and protect them. In too many cases, traumatic relationships have taught these youth that the most dangerous person is one who appears kind and helpful, because that person may have ulterior motives or may take advantage of the youth if she or he takes the risk of trusting. Therefore, youth with complex trauma histories may react surprisingly negatively to well-intentioned and well-designed milieu programs—not simply to be "resistant" or "callous and indifferent," but to maintain an avoidant and detached stance to not be either disappointed or victimized by those programs and the staff running them, as they too often have been betrayed and exploited by apparently helpful people in the past.

Perhaps the most critical implication of a complex trauma perspective, milieu programs that teach and enhance the in situ implementation of self-regulation skills by youth require *staff* who are well trained, supervised, and supported in demonstrating a *self-regulated approach to their interactions with their charges and their colleagues*. A commonly voiced complaint by youth in juvenile justice (and other, e.g., psychiatric, substance abuse treatment) residential facilities is that of a dual standard of conduct: "We have to control ourselves and treat others with respect, but staff can act any way they want, including yelling at us

or not listening to us if they feel frustrated or worn out." These youth are very alert, and prone to react adversely, to people whose behavior conveys a demand to "do as I say, but not as I do." On the other hand, youth with complex trauma histories are no less able—and may actually be particularly able—to learn and benefit from adult role modeling than other youth. Staff and administrators, however, need education and support to successfully persist in role modeling self-regulation, because youth with complex trauma histories are not quick to trust and often "test" adults by acting out in ways that trigger intense stress reactions for those adults (as will be illustrated in the case example provided below). These youth tend to gravitate toward adults who balance firmness and kindness rather than taking only one or the other stance, but particularly if the adult is able to remain calm, think clearly, and act consistent with the values she or he teaches.

From a traumatic stress perspective, it is crucial that staff managing the milieu in residential juvenile justice programs receive education to enable them to understand and anticipate the trauma-related triggers for aggressive, avoidant, dissociated, or other problematic stress reactions (Ford et al., 2006). From a complex trauma perspective, in addition, milieu programs will be most likely to be safe and successful if milieu staff and administrators also receive education and ongoing support to enable them to consistently regulate their own stress reactions—most of which are not elicited by traumatic violence (although that is a serious concern when staff are involved in violent incidents), but by the "testing" and defensive reactions of youth whose complex trauma histories lead them to react to ordinary stressors in residential settings as if traumatic violence or abuse was occurring (i.e., the intrusive re-experiencing symptoms that are the core of PTSD). Milieu programs can best help youth understand, anticipate, and prevent or reduce the frequency and intensity of these PTSD intrusive re-experiencing (and associated avoidance) reactions when administrators and staff not only teach but actively role model a self-regulated approach to handling stress reactions.

SCREENING AND ASSESSMENT

The primary focus of complex trauma screening and assessment is determining each youth's trauma history and the sequelae that most seriously impair functioning and compromise her or his and others' safety. Adolescents, including those in juvenile detention settings (Abram et al., 2004; Ford, Hartman, et al., 2008), can credibly self-report past traumatic experiences when provided with brief and behaviorally specific questions that do not include vague and affectively charged terms such as *abuse* (Ford, 2010). Screening for complex trauma has been done in juvenile detention settings with brief but comprehensive self-report measures such as the Traumatic Events Screening Instrument (TESI; Ford, Hartman, et al., 2008) or with the Massachusetts Youth Screening Instrument–2 (MAYSI-2) Traumatic Experiences (TE) subscale. However, detained youth who endorsed potentially traumatic events on the MAYSI-2 TE have been found to have symptoms more consistent with PTSD than with the sequelae of complex trauma, while other detained youth who did not endorse traumatic events on the TE report severe symptoms (i.e., somatic complaints, hopelessness, substance abuse) more consistent with complex trauma (Ford, Chapman, Pearson, Borum, & Wolpaw, 2008). Although symptoms alone should not be used to infer a complex trauma history, these findings suggest that more than the MAYSI-2 TE may be needed to identify detained youth with complex trauma histories.

Even with a detailed trauma history screen such as the TESI, detained youth may defensively underreport exposure to complex traumas such as physical or sexual abuse or family or community violence and sequelae such as suicidality or externalizing problems (Ford, Hartman, et al., 2008).

A major challenge for assessment and classification of youth in secure justice settings is distinguishing between reactive and proactive aggression. Proactive aggression is associated with positive outcome expectations (Pardini, Lochman, & Wells, 2004) for aggression and the presence of "callous and unemotional" traits (White, Cruise, & Frick, 2009) that are considered to be a negative prognostic factor for treatment or rehabilitation (Frick, Cornell, Barry, Bodin, & Dane, 2003). Youth with complex trauma histories may exhibit aggression in combination with emotional numbing (a hallmark of PTSD), which may appear to reflect premeditated, callous, and unemotional violence or delinquency. However, there is evidence that maltreated youth are more likely to engage in reactive than proactive aggression (Ford, Fraleigh, & Connor, 2010), consistent with the association between emotion dysregulation and reactive aggression. Complex trauma such as maltreatment and disrupted primary attachments has been shown to be associated with conduct, impulsivity, attention, and delinquency problems independent of the effects of externalizing or internalizing psychiatric disorders (Ford, Elhai, et al., 2010; Ford et al., 2009). Complex trauma may offer an approach to understanding reactive aggression among youth in secure justice settings as maladaptive attempts to cope with trauma-related perceived threats (e.g., hypervigilance, hyperarousal, and emotional numbing consistent with PTSD) as well as a counterreaction to perceived powerlessness, betrayal, and abandonment consistent with complex traumatic stress disorders (Ford et al., 2006). Indirect support comes from findings that psychiatrically impaired youth with physical abuse histories were *hypo*aroused in response to a physical stressor (Ford, Fraleigh, Albert, et al., 2010). What appears superficially to be emotional callousness due to autonomic hypoarousal or apparent indifference to harm to self or others may be a biologically based reactive (defensive) response secondary to complex trauma.

Given the possibility that youth in juvenile justice residential facilities who appear to be proactively aggressive may in fact be reacting defensively based on a history of complex trauma, it is important to screen and assess trauma history and trauma-related symptoms and impairments in functioning to provide those youth with services that address traumatic stress. Rather than assuming that these youth are or are not malicious and psychopathic, it is recommended that they first be screened using a validated measure such as the Inventory of Callous-Unemotional (C-U) Traits (Essau, Sasagawa, & Frick, 2006). Those who score below the threshold for severe C-U traits are good candidates for therapeutic intervention and thus definitely warrant a thorough assessment for complex trauma history and traumatic stress-related impairment. However, those who score in the severe range for C-U traits may still be reactively as well as proactively aggressive, and warrant screening for complex trauma history and traumatic stress impairment. The latter youth may require interventions that incorporate skills for managing stress reactions into rehabilitation and behavior management programs that emphasize monitoring and consequences for antisocial behavior.

Table 1 provides an overview of screening and assessment measures that have been validated for identifying children and adolescents who have (a) histories of complex trauma and (b) traumatic stress-related impairments. The traumatic stress-related impairments that

TABLE 1: Screening and Assessment Tools for Complex Trauma History and Symptoms With Youth

Measure	*Source for Obtaining the Measure*	*Administration Method/Time*	*Population [1]Norms [2]Validation*	*Published Psychometric Studies*
Complex trauma history screening and assessment				
Childhood Trauma Questionnaire	Psychological Corporation www.psychcorp.com	Youth Self-Report 5-15 min	[1,2]Adolescents and adults 12-17 years old	Bernstein, Ahluvalia, Pogge, & Handelsman (1997); Bernstein et al. (2003)
Dimensions of Stressor Exposure (DOSE)	Author Kenneth.Fletcher@Umassmed.edu	Youth Self-Report 10-30 min	[2]Children and adolescents 8-18 years old	Fletcher (1996a)
Traumatic Experiences Screening Instrument (TESI)	Public domain www.ncptsd.org	Youth Self-Report Caregiver Report 10-30 min	[2]Children and adolescents	Daviss et al. (2000); Ford et al. (2000); Ford, Hartman et al. (2008)*
UCLA Post Traumatic Stress Disorder Reaction Index (PTSD-RI)	Author ASteinberg@mednet.ucla.edu	Youth Self-Report Caregiver Report Trauma history items: 5 min	[2]Children and adolescents	Steinberg, Brymer, Decker, & Pynoos (2004)
Complex trauma symptoms screening and assessment				
Abbreviated Dysregulation Inventory	Author adacm@pitt.edu	Self-Report 5-10 min	[2]Adolescents 12-18 years old	Marsee & Frick (2007); Pardini, Lochman, & Frick (2003)
Adolescent Dissociative Experiences Scale (A-DES)	Sidran Press www.sidran.org	Self-Report 5-10 min	[2]Children and adolescents 10-21 years old	Armstrong, Putnam, Carlson, Libero, & Smith (1997)
Anger Responses Inventory	Article (Tangney et al., 1996)	Self-Report 20-30 min	[2]Children and adolescents	Tangney et al. (1996)
Behavior Assessment System for Children	Psychological Corporation www.psychcorp.com	Self-Report Caregiver Report 15-25 min	[1,2]Children and adolescents	Kamphaus et al. (1999); Kamphaus, Huberty, DiStefano, & Petoskey (1997)
Achenbach System of Empirically Based Assessment	Achenbach System of Empirically Based Assessment www.aseba.org	Caregiver Report Teacher Report 15-25 min	[1,2]Children and adolescents	Althoff (2010); Ayer et al. (2009); Sim et al. (2005)
Child PTSD Symptom Scale	Author foa@mail.med.upenn.edu	Self-Report 5-10 min	[2]Children and adolescents 8-18 years old	Foa, Johnson, Feeny, & Treadwell (2001)
Children's PTSD Inventory	Psychological Corporation www.PsychCorp.com	Self-Report 10-20 min	[2]Children and adolescents 6-18 years old	Saigh et al. (2000)
Children's Sexual Behavior Inventory/ Adolescent Clinical Sexual Behavior Inventory	PAR Inc. www4.parinc.com	Self-Report (adolescent only) Caregiver Report	[1,2]Children 2-12 years old and adolescents 12-18 years old	Friedrich, Fisher, et al. (2001); Friedrich, Lysne, Sim, & Shamos (2004)
Massachusetts Youth Screening Instrument Second Edition (MAYSI-2)	Professional Resource Press www.prpress.com	Self-Report ≤15 min	[1,2]Older children and adolescents 11-18 years old	Grisso, Barnum, Fletcher, Cauffman, & Peuschold (2001)*

(continued)

TABLE 1: (continued)

Measure	*Source for Obtaining the Measure*	*Administration Method/Time*	*Population [1]Norms [2]Validation*	*Published Psychometric Studies*
Parent Report of Child's Reaction to Stress	Author Kenneth.Fletcher@Umassmed.edu	Caregiver Report 10-20 min	[2]Children and adolescents	Fletcher (1996b)
PTSD Checklist for Children	Author jford@uchc.edu	Caregiver Report 5-10 min	[2]Children and adolescents	Daviss et al. (2000); Ford et al. (2000)
Test of Self-Conscious Affect	Book Tangney & Dearing (2002)	Self-Report 20-30 min	[2]Children, adolescents, and adults	Tangney (1996)
Trauma Symptom Checklist for Children-R (TSCC)	Psychological Assessment Resources www3.parinc.com	Self-Report Caregiver Report 10-20 min	[1,2]Children and adolescents 8-16 years old	Wolpaw, Ford, Newman, Davis, & Briere (2005)
UCLA Post Traumatic Stress Disorder Reaction Index (PTSD-RI)	Author ASteinberg@mednet.ucla.edu	Self-Report Caregiver Report 10-15 min	[2]Children and adolescents 8-18 years old	Steinberg et al. (2004)

*Screening instruments that have been tested psychometrically with youth in juvenile justice facilities.

these measures screen or assess include not only PTSD-related intrusive re-experiencing, avoidance, emotional numbing, and hyperarousal and hypervigilance, but also the wider range of self-regulation and interpersonal problems associated with complex trauma: emotion dysregulation (including anger reactions), dissociation, deviant sexual behavior, shame and guilt, impulsivity, and reactive aggression. These measures have been shown to provide evidence of reliability and validity with both boys and girls in the latency and adolescent age groups that are most typically represented in juvenile justice residential facilities. However, readers should note that with only a few exceptions (noted by, respectively, an asterisk or a superscript in the table), most of the measures have *not* been (a) psychometrically evaluated with youth in juvenile justice facilities or (b) normed with community or clinical population samples to yield baserate estimates to which juvenile-justice-involved youth scores can be compared. Thus, screening and assessment for complex trauma history and traumatic stress-related impairment must be done with caution until further research provides an empirical basis for determining when a youth in a juvenile justice residential facility has experienced a sufficient extent of complex trauma and has sufficiently severe traumatic stress-related impairments to warrant specialized services.

REHABILITATION AND TREATMENT

A related dilemma for clinicians, educators, and administrators in juvenile justice residential facilities who want to develop trauma-informed services for aggressive youth (or any incarcerated youth, for that matter) is that there has been very little systematic development or validation of therapeutic or educative interventions to assist these youth in overcoming the impairments related to a complex trauma history. A search of the more than 100,000 clinical trials studies registered with the National Institutes of Health (www.clinicaltrials.gov, accessed December 16, 2010) using the key words *trauma* and *juvenile justice* resulted in only two studies. One is an unpublished study currently in progress that

does not test a specific intervention but instead will prospectively follow cohorts of youth presenting to a Flint, Michigan, hospital emergency department with either violence-related or nonviolent injuries for 2 years to determine their pattern of subsequent violence exposure and health problems and their use of medical, mental health, and substance abuse services.

The other study is the only randomized clinical trial that has reported addressing traumatic stress-related impairments with delinquent or justice-involved youth (Ford, Steinberg, Hawke, Levine, & Zhang, 2012). That study compared the outcomes of an emotion regulation one-to-one psychotherapy (Trauma Affect Regulation: Guide for Education and Therapy [TARGET]; Ford, Chapman, Hawke, & Albert, 2007) versus a one-to-one relational/supportive psychotherapy with 59 delinquent girls (age 13-17 years) with complex trauma histories and severe traumatic stress-related impairments. A large subgroup (one third) of the girls in the study were court ordered to residential juvenile justice treatment facilities. Statistically and clinically significant reductions from baseline to posttherapy in PTSD, anxiety, anger, and depression symptoms and trauma-related beliefs about self and the world were self-reported on validated interview and questionnaire measures. The emotion regulation intervention, TARGET, was particularly effective in reducing PTSD (intrusive re-experiencing and avoidance) and anxiety symptoms, posttraumatic cognitions, and emotion dysregulation. The relational/supportive therapy was particularly effective in reducing anger and increasing a sense of self-efficacy and optimism. Although the findings require replication with larger samples of incarcerated boys and girls, the results suggest that youth in residential juvenile justice programs with complex trauma histories may benefit from one-to-one therapy combining skills for managing extreme emotion states with relationally focused support.

In addition, a further study of the TARGET intervention in juvenile justice residential (detention) facilities—delivered as a group and milieu intervention rather than as a one-to-one therapy—has reported further encouraging results (Ford & Hawke, in press). Counseling and correctional staff at three juvenile detention centers were trained and provided with ongoing intensive quality assurance consultation on using the TARGET intervention in a brief (four-session) psychoeducational format. They also were trained to modify the facility's milieu by incorporating skills taught in TARGET in all daily activities. TARGET skills thus were both taught to detained youth in psychoeducational group sessions and encouraged and role modeled by correctional staff on a 24-7 basis every day of their detention stay. Correctional staff also were taught how to use the TARGET emotion regulation skills to anticipate and prevent or de-escalate the frequent conflicts and behavior problems that can result in injury, further legal charges, and prolonged detention stays. Data were collected for a cohort of detainees who did not receive TARGET for approximately 1 year before the implementation of the TARGET intervention, and for a second cohort of detainees in the following year after TARGET was being implemented—in a quasi-experimental study design.

Consistent with the study's hypothesis, after controlling for the influence of several possible artifacts (including the specific detention center, length of stay in detention, ethnicity, number of arrests, mental health problems, severity of traumatic stress symptoms, and cohort), linear multiple regression results showed that for every session of TARGET received in the first 7 days of detention there was a clinically and statistically significant 53% fewer dangerous incidents and 69 fewer minutes of disciplinary seclusion for each

youth during the modal (14 days) stay in detention. TARGET group participation was unrelated to recidivism, but recidivism was significantly less frequent in the cohort assessed following systemwide implementation of TARGET. Results thus suggested that a combined psychoeducational and milieu intervention addressing trauma-related emotion dysregulation in juvenile detention facilities may lead to improved safety and reduced use of sanctions, and possibly to changes in the facilities' milieus that could reduce recidivism.

Based on these findings of the potential effectiveness of the TARGET intervention with traumatized youth in the juvenile justice system, emotion regulation may provide a focus for effectively reducing reactive aggression with traumatized youth in juvenile justice residential facilities. Five other intervention models that help traumatized youth develop emotion regulation and related skills have been developed and preliminarily evaluated in clinical and school settings, as described in more detail in a recently published summary chapter (Ford & Cloitre, 2009). A brief summary of each model will be provided, with a source reference for readers interested in obtaining more detailed information. The Attachment, Self-Regulation, and Competency model (ARC) is a modular therapy designed specifically for children and adolescents who have experienced complex trauma (Kinniburgh, Blaustein, Spinazzola, & van der Kolk, 2005). Life Skills/Life Story (Cloitre, Cohen, & Koenen, 2006) is an individual therapy for girls and women with childhood abuse histories. Seeking Safety is a psychotherapy that may be delivered either as an individual or group modality for co-occurring substance use disorders and PTSD (Najavits, Gallop, & Weiss, 2006). Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS) is a psychoeducational group therapy designed for school-age youth with trauma histories (DeRosa & Pelcovitz, 2008). A trauma-focused variation of Multisystemic Therapy (MST), Trauma Systems Therapy (TST), takes a "wrap-around" approach involving the youth, parents, teachers, counselors, pediatricians, child protection workers, mentors, probation officers, educational guidance professionals, recreational and occupational therapists, social workers, psychiatrists, and psychotherapists as a collaborative treatment team (Saxe, Ellis, & Kaplow, 2007). Each of the therapies teaches skills for managing distress, impulsivity, and interpersonal conflict and intimacy that may benefit aggressive youth in juvenile justice settings. Other than TARGET, only Seeking Safety has reported even preliminary clinical trial findings with adolescents—and that study was done with girls in outpatient mental health programs, most of whom did not appear to be justice involved (Najavits et al., 2006).

Beyond these promising but preliminary findings, administrators and clinicians seeking to provide effective interventions for incarcerated youth with complex trauma histories must rely on the larger—but still limited—evidence base for psychotherapy with traumatized youth who are not involved in the juvenile justice system. Table 2 provides an overview of research findings for interventions designed to assist youth in overcoming or managing traumatic stress symptoms and related behavioral problems that commonly occur among incarcerated youth. The table and the text that follows in the next section are divided into two sections that address research on (a) treatments for traumatized youth (i.e., PTSD therapies) and (b) aggression, anger, and behavior management interventions. There is very little overlap in these research fields: This is a crucial gap that needs to be filled to provide juvenile justice residential facilities with empirically supported interventions for the many youth in those settings who have problems with *both* traumatic stress reactions and aggression. The interventions section of this article then concludes with a brief overview

TABLE 2: Randomized and Quasi-Experimental Studies of Interventions for Traumatized Adolescents

Study/Intervention	*Sample*	*Participants*	*Trauma Types*	*Inclusion Criteria*	*Exclusion Criteria*	*Focal Problems*
Deblinger, Steer & Lippman (1996) TF-CBT	$N = 100$ Ages 7-13 72% White 20% Black 6% Latino	Sexually abused children referred by forensic evaluator	100% sexual abuse	1. Contact sexual abuse 2. ≥3 PTSD symptoms 3. ≥1 re-experiencing or avoidance symptom 4. Caregiver participates	1. Psychosis 2. Severe develop mental delay 3. Suicidal/dangerous 4. Ongoing contact with perpetrator	29% MDD 30% ODD 20% ADHD 12% CD 24% SAD 20% GAD
King, et al. (2000) TF-CBT	$N = 36$ Ages 5-17 Ethnicity not reported	Sexually abused youth referred from clinical or community sources	100% sexual abuse most with multiple episodes	1. Contact sexual abuse 2. ≥3 PTSD symptoms 3. ≥1 re-experiencing or avoidance symptom 4. English fluent 5. Caregiver participates	1. Unsupervised contact with perpetrator 2. < borderline IQ 3. Psychosis 4. Suicidal 5. Psychiatric meds	69% PTSD 19% DYS 19% ODD 14%-17% SAD, GAD 8% CD 6% ADHD
Kataoka et al. (2003) CBITS	$N = 229$ 50% female Grades 3-8, with 68% in Grades 6-8	Schoolchildren by self-report screening	100% violence >67% multiple types violence	1. Spanish fluent 2. Recent immigrant 3. ≥3 violent exposures 4. PTS or Dep		90% PTS 41% Dep
Stein, Jaycox, Katoaka, Wong (2003) CBITS	N =126 Grade 6	Schoolchildren by self-report screening	100% violence M ≥8.5 incidents	1. ≥3 violent exposures 2. PTS	1. Disruptive behavior	100% PTS 6% TR-DB
Cohen, Deblinger, Mannarino, & Steer (2004) TF-CBT	$N = 229$ Ages 8-14 60% White 28% Black 4% Latino	Sexually abused children from clinical or community referrals	100% sexual abuse 90% >one other trauma	1. At least 1 PTSD symptom per cluster 2. Caregiver participates	1. Psychosis 2. Substance abuse 3. Mental retardation 4. Autism spectrum 5. Non-English speaker	89% PTSD 35% CBCL T > 70
P. Smith et al. (2007) CBT-PE	Ages 8-18 British 50% female 33% Black	Children referred by National Health Service clinician	56% motor vehicle 32% single assault 12% witness violence	1. Current PTSD 2. English fluent	1. Brain injury 2. Psychiatric meds 3. Learning disorder	100% PTSD 78% ≥ 1 psychiatric comorbidity
Gilboa-Schechtman et al. (2010) CBT-PE	Ages 12-18 Israeli 63% female 100% Jewish	Self-referred from community	42% motor vehicle 21% sexual assault 13% terrorist attack	1. Current PTSD 2. Hebrew fluent	1. CD/ADHD 2. Imminent psychiatric comorbidity suicidal 3. Substance abuse 4. Psychiatric meds	100% PTSD 81% ≥ 1

Note. MDD = major depressive disorder; ODD = oppositional defiant disorder; ADHD = attention deficit hyperactivity disorder; CD = conduct disorder; SAD = separation anxiety disorder; GAD = generalized anxiety disorder; DYS = dysthymia; PTS = clinically significant post-traumatic stress disorder (PTSD) symptoms; Dep = clinically significant depression symptoms; TF-CBT = Trauma Focused Cognitive Behavior Therapy; CBITS = Cognitive Behavior Intervention for Traumatized Students; CBT-PE = Cognitive Behavior Therapy with Prolonged Exposure; TR-DB = teacher rated disruptive behavior.

of promising interventions that address the core emotion regulation problems that link traumatic stress and aggression—but that have not yet been scientifically tested with incarcerated youth. Further scientific and field studies of TARGET and other promising interventions are needed to develop an adequate menu of empirically supported interventions for traumatized reactively aggressive youth in residential justice facilities.

RESEARCH EVIDENCE-BASE FOR TREATMENT OF TRAUMATIZED YOUTH

The most extensively tested intervention for traumatized youth is trauma-focused cognitive behavior therapy (TF-CBT), which teaches coping and cognitive reappraisal skills and then helps youth construct and share with a caregiver a narrative account of specific traumatic event(s) (Cohen, Mannarino, & Deblinger, 2006). TF-CBT has been found to be efficacious (in three large independent studies) in reducing PTSD and depression symptoms with sexually abused children, including a sizable subgroup of adolescents with complex trauma histories (Table 2). However, TF-CBT has been evaluated primarily with children with histories of sexual abuse, only a minority of whom are adolescents, and not with juvenile justice-involved youth (Table 2). Moreover, TF-CBT generally has been found to be less efficacious for youth with severe externalizing problems (e.g., aggression; Cohen, Mannarino, Deblinger, & Berliner, 2009). TF-CBT also recommends (with some empirical support; Lang, Ford, & Fitzgerald, 2010) that a stable supportive caregiver participate, but this often is not possible with youth in justice settings. There are no published reports of TF-CBT with juvenile-justice-involved youth or with youth in residential facilities. Consistent with Cohen et al.'s (2009) call for empirical testing of adaptations of TF-CBT for youth with externalizing behavior problems, feasibility and outcome studies are needed to guide the adaptation of TF-CBT with youth in juvenile justice residential programs.

Three variants of CBT have been shown to have promise with traumatized youth. Cognitive Behavioral Intervention for Traumatized Students (CBITS) involves ten 60-min weekly group sessions (with six to eight children in each group) and one to three individual sessions to prepare the child for a group session in which the youth describes a trauma memory (Kataoka et al., 2003; Stein, Jaycox, Kataoka, Wong, et al., 2003). Parents (and teachers) are not directly involved in the memory recall sessions but are provided with education so that they can support the child(ren) involved in the group. Although aimed at the age group in juvenile justice programs (10-15 years old), and having been shown to reduce PTSD and depression symptoms in a randomized clinical trial study and in an independent quasi-experimental design study with an ethnoculturally diverse urban sample of children, CBITS has not been specifically tested in juvenile justice settings (Table 1).

Cognitive behavior therapy with prolonged exposure (CBT-PE) involves helping youth to identify specific events that were traumatic and to repeatedly recall them as vividly as possible in imagination, with particular attention to trauma-related thoughts reflecting self-blame, helplessness, pessimism, and fearfulness. CBT-PE with youth usually includes preparatory education about trauma and posttraumatic stress for the parent as well as the child, and instruction in coping and relaxation skills, similar to TF-CBT. A key difference is that CBT-PE relies on repeated retelling of a vividly imagined traumatic event, whereas TF-CBT involves the incremental construction of a story-like trauma narrative that is

repeatedly reviewed with the therapist before being shared with a parent. Two randomized clinical trial studies that were conducted with small samples of children and youth who primarily had experienced single-incident rather than complex traumas found that CBT-PE was efficacious in ameliorating PTSD and reducing depression and anxiety symptoms (Gilboa-Schechtman et al., 2010; P. Smith et al., 2007; Table 2). However, youth with serious behavior problems were either excluded or did not enroll in the studies, leaving the utility of the intervention for youth in residential juvenile justice facilities uncertain without replication in that population.

Eye Movement Desensitization and Reprocessing (EMDR) is delivered as an individual therapy and (like TF-CBT) involves the recall of trauma memories. EMDR differs from TF-CBT in having the youth retell the traumatic experience orally without constructing a story-like narrative. It also adds a distracting activity that the youth does while recalling the trauma memory (e.g., saccadic eye movements). EMDR does not provide the extensive preparation for memory processing that is done in TF-CBT, but does include assistance by the therapist in recalling personal strengths or social resources that can help the youth feel more confident in her or his ability to cope with any future traumatic events or unwanted memories of past ones. Case studies have reported promising findings for EMDR with traumatized youth, but no scientific outcome studies have been conducted testing EMDR with traumatized or justice-involved youth (Spates, Koch, Cusack, Pagoto, & Waller, 2009).

Pharmacotherapy does not have an established evidence base for treating pediatric PTSD (Connor & Fraleigh, 2008). One study found that the selective serotonergic reuptake inhibitory (SSRI) antidepressant sertraline did not enhance the efficacy of TF-CBT with sexually abused girls, except children receiving the medication had somewhat better overall functioning (despite no less severe PTSD symptoms; Cohen, Mannarino, Perel, & Staron, 2007). No scientifically rigorous tests of pharmacotherapy have been reported with pediatric PTSD, although SSRIs (including paroxetine as well as sertraline) are approved by the Food and Drug Administration for adult PTSD. Medications that have shown effectiveness in open-label studies with pediatric PTSD include second-generation atypical antipsychotics (clozapine, quetiapine, risperidone), mood stabilizers (carbamazepine), alpha-adrenergic agents (clonidine, guanfacine), beta-blockers (propranolol), and antidepressants (citalopram, imipramine, nefazodone; Connor & Fraleigh, 2008). These medications may have some beneficial effects on complex trauma-related problems such as emotion dysregulation and reactive aggression, but scientific tests are needed before pharmacotherapy can be recommended except as an adjunct to psychosocial treatments for children and adolescents with complex trauma histories (Connor, Glatt, Lopez, Jackson, & Melloni, 2002).

RESEARCH EVIDENCE BASE FOR INTERVENTIONS WITH REACTIVELY AGGRESSIVE YOUTH

Although problems with aggression are prevalent among youth in the juvenile justice system, no randomized clinical trial or quasi-experimental outcome studies could be located that evaluated interventions for aggression with youth in juvenile justice residential facilities. However, several interventions that are delivered in the youth's home or in community clinic settings have been developed and scientifically tested for reducing aggression and related conduct problems. The best validated interventions for adolescent aggression

and conduct problems are in-home family-based therapy models. These include MST and Multidimensional Family Therapy (MDFT), which have been shown to reduce general recidivism among severe as well as early-stage delinquent youth by reducing substance use, aggression, psychiatric symptoms, and sex offending (Henggeler, Clingempeel, Brondino, & Pickrel, 2002; Henggeler et al., 2003; Letourneau et al., 2009; Liddle, Dakof, Turner, Henderson, & Greenbaum, 2008; Liddle, Rowe, Dakof, Henderson, & Greenbaum, 2009). Multidimensional Treatment Foster Care (MTFC) provides similar in-home therapy and behavior management skills to delinquent youth and specially selected foster parents, with reductions in incarcerations and recidivism, and improved school functioning, observed over a 2-year follow-up period (Chamberlain, Leve, & Degarmo, 2007; Leve & Chamberlain, 2007).

One school-based group therapy intervention designed to reduce aggressive behavior has been reported: The Anger Coping Program (ACP) was tested in a randomized clinical trial study with fourth- to sixth-grade boys who were identified by teachers as having problems with aggressive behavior (Lochman, 1992). Over a 3-year follow-up period, ACP participation was associated with less drug and alcohol use and improved problem-solving skills and self-esteem. However, ACP did not result in reduced delinquency or teacher-rated aggression or conduct problems, except for boys who received six "booster sessions" during that period and who continue to be nonaggressive in school.

These home-, clinic-, and school-based interventions for conduct problems and aggression have been found to have broad-based benefits in several studies, including improvements in parent and family functioning as well as child behavior and functioning (Chamberlain et al., 2007; Forgatch, Patterson, Degarmo, & Beldavs, 2009; Henggeler et al., 2003; Kazdin & Wassell, 2000; Liddle et al., 2009). Therefore, they may have an impact on the self-regulation problems associated with complex trauma, although no study has explicitly tested this hypothesis. With the exception of exploratory adaptation of a family therapy variant of the TARGET intervention based on MDFT (Ford & Saltzman, 2009), no intervention has been developed to systematically focus simultaneously on traumatic stress symptoms and reactive aggression. Nor have any interventions addressing traumatic stress and aggression been adapted and tested with incarcerated or residentially detained juvenile-justice-involved youth. TARGET has shown promise both as a clinic- or school-based therapy with delinquent girls and as a group and milieu intervention with boys and girls in juvenile detention facilities, but its impact on reactive aggression has not been directly evaluated.

TRAUMATIZED AGGRESSIVE GIRLS IN JUVENILE JUSTICE RESIDENTIAL FACILITIES

Although boys are more likely to be incarcerated in juvenile justice facilities than girls, there is a growing number of juvenile-justice-involved and incarcerated girls—and both complex trauma and aggression are potentially of high importance in rehabilitating these girls. In the past two decades, the incidence of juvenile justice involvement among girls has risen substantially, compared to relatively stable levels for boys (Chamberlain & Leve, 2004). Between 70% and 90% of girls who are placed in secure juvenile justice settings

report trauma histories, usually with multiple ongoing incidents consistent with complex trauma (Abram et al., 2004; Cauffman et al., 1998; Steiner et al., 1997). These girls often are involved in the child welfare system and are at risk for severe problems with substance abuse, risky sexual behavior, teen pregnancy, intergenerational family and domestic violence, community violence, physical illness, unemployment, school failure, and adult incarceration (Kerr, Leve, & Chamberlain, 2009; D. K. Smith, Leve, & Chamberlain, 2006). Girls in detention are 8 to 10 times more likely than boys to report sexual abuse (Abram et al., 2004; Ford Hartman, et al., 2008); 33% more likely to have PTSD (Abram et al., 2004), report more severe problems (Hussey, Drinkard, Falletta, & Flannery, 2008), and use more mental health services (Hussey et al., 2008); and 11 times more likely to die while incarcerated (Teplin, McClelland, Abram, & Mileusnic, 2005).

Studies with girls have found them to be less likely to be overtly aggressive than boys (Card, Stucky, Sawalani, & Little, 2008) but equally or more likely to be persistently physical aggressive (Lynne-Landsman, Graber, Nichols, & Botvin, 2010), especially if they had been victimized (Cullerton-Sen et al., 2008; O'Leary, Smith Slep, Avery-Leaf, & Cascardi, 2008). Girls also have been found more frequently than boys to use covert forms of "relational" aggression such as intentionally humiliating or rejecting other persons (Bowie, 2007; Ostrov & Godleski, 2010), particularly if they had been sexually abused (Cullerton-Sen et al., 2008). In a 2-year prospective study, emotion regulation problems were associated with the use of relational aggression only for girls, and children who had limited social skills and engaged in relational aggression were likely to behave in socially deviant ways (Bowie, 2010). Relational aggression was found to predict future substance use among girls but not boys in another study (Skara et al., 2008). Thus, reactive aggression in defense of self or others—including relational as well as physical forms of aggression—may be a substantial problem legally and interpersonally for traumatized girls. Self-directed aggression (i.e., self-harm) also is more common among traumatized girls than boys (Bilen et al., 2010; Muehlenkamp, Williams, Gutierrez, & Claes, 2009; Olfson, Gameroff, Marcus, Greenberg, & Shaffer, 2005). Therefore, screening and interventions addressing relational and self-directed aggression are warranted with girls in juvenile justice residential facilities who have histories of victimization or other forms of complex trauma.

The 1992 Reauthorization of the Juvenile Justice Delinquency Prevention Act required states receiving federal funding to "identify gaps in their services to female offenders and develop gender-specific programs" (Physicians for Human Rights, 2009). Efforts are under way (e.g., Ford et al., 2007) to redesign secure juvenile justice facilities to increase their capacities to provide trauma-informed services, including "comprehensive gender-specific programs . . . [with] education, job training, family support services, counseling and health services . . . ideally focusing on individual empowerment and competency-building"(Physicians for Human Rights, 2009)—however, attention is needed to address the link between traumatic victimization (in the past as well as during residential placement) and relational and self-directed (as well as overt) aggression with girls. In addition, when girls in secure settings re-enter the community, psychosocial intervention is needed for the sequelae of complex trauma. For example, MTFC with justice-involved or at-risk girls has been shown to be efficacious in reducing future arrests or incarceration, pregnancy, school failure, and delinquent peer affiliations (Chamberlain et al., 2007; Kerr et al., 2009).

TRAUMA, AGGRESSION, AND ETHNORACIAL MINORITIES IN JUVENILE JUSTICE RESIDENTIAL FACILITIES

Youth from ethnoracial minority backgrounds are a second special population that is overrepresented in the juvenile justice system and in secure settings specifically (Iguchi, Bell, Ramchand, & Fain, 2005). Incarceration of minority youth not only potentially perpetuates societal stigma and cultural trauma, but places them at risk for illness (Iguchi et al., 2005) and violent death (Teplin et al., 2005). Cultural norms and practices are likely to influence how youth and families define what they believe constitutes a traumatic event and posttraumatic symptoms (Pole, Gone, & Kulkarni, 2008). Therefore, although two independent studies reported few differences between youth of different ethnoracial backgrounds in likelihood of trauma or trauma-related psychological and behavioral problems (Abram et al., 2004; Ford, Hartman et al., 2008), it is not clear whether the apparent absence of ethnoracial differences reflects a genuine transethnoracial effect of exposure to traumatic stressors or ethnoracial differences in perception and reporting of trauma exposure by detained youth.

Possible evidence of differential exposure to traumatic stressors by ethnoracial minority youth in juvenile justice residential facilities was provided by the finding from the Ford, Hartman et al. (2008), study that Hispanic/Latino youth were approximately twice as likely as White or Black youth to report a history of traumatic loss, neglect, or community violence. In that study, however, White youth reported more severe suicidality and alcohol abuse risk that Black or Hispanic/Latino youth. It is not clear whether this reflects underreporting by ethnoracial minority youth, overreporting by White youth, or the effects of other risk (e.g., parental mental health or substance abuse problems) or protective (e.g., cultural norms or supports mitigating depression or substance use) factors.

Youth of different ethnoracial minority backgrounds have not been found to be more prone to either adolescent-limited and life-course-persistent aggression (Lynne-Landsman et al., 2010). However, results from two recent community epidemiological studies of urban adolescents suggest that African American youth may be more likely to chronically engage in physical aggression than youth of other minority groups or European American youth, as rated by teachers (Vazsonyi & Keiley, 2007) or as self-reported (Maldonado-Molina, Jennings, & Komro, 2010). These differences appear to be stable from as early as kindergarten and therefore have been hypothesized to begin with early childhood socialization rather than peer-group, school, family, or community influences in adolescence (Vazsonyi & Keiley, 2007). Given the overrepresentation of African American youth in the juvenile justice system, and the potential for negative expectancies by adults and the adolescents themselves based on stereotypic and stigmatizing views of youth from this subgroup, screening for complex trauma history and traumatic stress-related rehabilitative and therapeutic services in juvenile justice residential facilities could provide a critical counterbalance for adverse socialization and victimization which might enable some of these youth to reduce reactively aggressive behavior.

In addition, not only ethnicity per se but also the degree to which ethnoracial minority youth are assimilated into majority culture and acculturated (i.e., involved and identify with) their culture of origin may play a role in aggressive behavior. When ethnoracial minority adolescents are in ethnically heterogeneous settings (as is the case in most juvenile justice residential facilities), they may be more prone to engage in bullying as a defensive behavior

(Vervoort, Scholte, & Overbeek, 2010). When youth engage in cross-ethnicity bullying or aggression in juvenile justice residential facilities, it may be helpful to assess the potential influence of traumatic stress reactions (e.g., hypervigilance related to youth from other ethnocultural groups) and to provide youth who also have complex trauma histories with skills for managing stress reactions as a way to reduce reactive aggressive behavior.

Cultural norms and practices also greatly influence youth's and caregivers' expectations and acceptance or rejection of different types of services and treatments for youth who are experiencing distress or behavior problems secondary to past exposure to complex trauma (Pole et al., 2008; Vazsonyi & Keiley, 2007). Culturally relevant role models and practices to prevent exposure to complex trauma, and to assist youth in secure juvenile justice programs to recover from the after effects of complex trauma, are being developed nationally (Ko et al., 2008) and in several statewide juvenile justice systems (Chapman, 2010; Ford et al., 2007). Culturally adapted interventions for traumatized children (Jaycox et al., 2009; Morsette et al., 2009) and specifically for ethnoracial minority youth involved in the juvenile justice system (Ford & Hawke, in press) or at risk due to delinquency (Ford et al., 2012) warrant further research.

IMPLICATIONS OF COMPLEX TRAUMA AND AGGRESSION FOR YOUTH CHARGED WITH SEXUAL OFFENSES

Finally, juveniles charged with sex offenses (JSOs) represent another key special population in secure juvenile justice settings (Andrade, Vincent, & Saleh, 2006) because they are considered to be at increased risk for nonsexual as well as sexual reoffending (Caldwell, 2007; Waite et al., 2005). Sexual offending is distinct conceptually and empirically from physical or relational aggression (e.g., JSOs often are found to be less physically or relationally aggressive than other juvenile offenders). However, JSOs at highest risk for recidivism (with sexual abuse as one of the risk factors) tend to be more aggressive (S. Smith, Wampler, Jones, & Reifman, 2005), and recidivism was found to be associated with impulsive and antisocial characteristics (Waite et al., 2005). This is consistent with results from a study of men from several ethnocultural groups in which an impersonal attitude toward sex and hostile masculinity were found to lead to sexual aggression in adulthood (Nagayama Hall, Teten, DeGarmo, Sue, & Stephens, 2005). Thus, sexual offending in adolescence places youth at risk for chronic sexual aggression when accompanied by attitudes that generally are interpreted as features of a callous and unemotional antisocial personality but that alternatively could reflect the sequelae of complex trauma (i.e., emotional numbing, dissociation, persistent anger, and hypervigilance).

Sexual offending in adolescence has been linked with complex trauma exposure in several studies. Interviews with the clinicians treating 40 JSOs found that 95% of these youth had a documented history of at least one past traumatic event, and 65% were determined to have met diagnostic criteria for PTSD (McMackin, Leisen, Cusack, LaFratta, & Litwin, 2002). Notably, clinicians viewed the trigger(s) for sex offending as related to a prior trauma in 85% of the youth, including intense trauma-associated fear for 37.5% of the youth, helplessness for 55%, and posttraumatic horror for 20% (McMackin et al., 2002). In another study, one in seven JSOs were found to meet criteria for a dissociative disorder, with physical abuse associated with elevated levels of dissociative symptoms (Friedrich, Gerber, et al., 2001).

Although sexual abuse has been hypothesized to place youth at risk for sex offending (Friedrich, 2000), studies have failed to find a relation between a history of sexual abuse with any specific features or types of sexual offending (Hunter, Figueredo, Malamuth, & Becker, 2003) or with risk of sexual reoffending (Worling, 2006). However, a recent meta-analysis found that juveniles charged with sexual offenses were substantially more likely (5.5 times) to have a history of sexual abuse than general offenders (Seto & Lalumiere, 2010). Consistent with Friedrich, Gerber et al.'s (2001) study, JSOs also were 1.6 times more likely than juveniles charged with other offenses to have experienced physical abuse in the past. Another recent meta-analysis similarly found that sexual abuse history was associated with a 1.5 time increase in the risk of sexual reoffending but that past sexual abuse did not increase the risk of general recidivism among JSOs (Mallie, Viljoen, Mordell, Spice, & Roesch, 2011). In the latter meta-analysis, physical abuse was not found to increase the risk of sexual or general reoffending among JSOs (Mallie et al., 2011). Thus, although there is no evidence that abuse causes juvenile sexual offending, it appears that sexual abuse may contribute to the risk of juvenile sexual offending and reoffending. Physical abuse may be a secondary contributor to initial sexual offending and may exacerbate posttraumatic symptomatology among JSOs, but physical abuse does not appear to play a role in persistent sexual reoffending by juveniles.

Further research clearly is needed to clarify how sexual and physical abuse—and associated traumatic exposures such as family violence (Ford, Hartman, et al., 2008) or other potentially traumatic events (e.g., community violence, caregiver death)—place youth at risk for sexual offending or reoffending. It is likely that complex trauma and its sequelae (e.g., dissociation) will exacerbate emotional, behavioral, and relational problems for JSOs in secure settings even if they do not contribute to risk of sexual offending per se. Programming is needed to enable JSOs to recognize trauma-related triggers and manage trauma-related episodes that increase the risk of sexual offending. Although most JSOs have not experienced sexual abuse, it is important to identify those who do have histories of sexual abuse to ensure they receive appropriate treatment services.

CONCLUSION

Youth in secure juvenile justice settings are at particularly high risk for histories of complex trauma, including polyvictimization, abuse and family violence, and losses that compromise core attachments with caregivers. The adverse effects of complex trauma on childhood development place the youth at risk for a range of serious problems that may lead to reactive aggression (e.g., dysphoria, oppositional-defiance, risk taking, substance abuse, diminished adaptive arousal reactions, episodic maladaptive hyperarousal, impaired information processing and impulse control, self-critical and aggression-endorsing cognitive schemas, and delinquent peer relationships). Trauma-informed models that address the sequelae of complex trauma are greatly needed but still in the early stages of development and evaluation for milieu management, rehabilitation, and treatment of youth in secure justice settings, as well as for facilitating postincarceration readjustment, reducing the risk of recidivism, and most fundamentally preventing juvenile incarceration.

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