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DOI 10.1007/s10896-013-9538-5

CONCEPTUALIZATION & TRAUMA-INFORMED ISSUES

Systemic Self-Regulation: A Framework for Trauma-Informed Services in Residential Juvenile Justice Programs

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Abstract Most youth detained in juvenile justice facilities have extensive histories of exposure to psychological trauma. Traumatic stress plays a key role in their mental health and behavioral problems and needs, and in their safety and rehabilitation and the security and effectiveness of detention facilities. We provide an overview of the barriers to successful provision of mental health services for youths in juvenile justice facilities, including those involving youth, parents, and juvenile justice residential facility staff and administrators. Next, we discuss the relevance and potential utility of approaching mental health needs using posttraumatic stress disorder (PTSD), and more broadly posttraumatic dysregulation, as an organizing framework. Examples of how a posttraumatic dysregulation perspective can enhance juvenile justice residential facility milieus and services are presented, with an overview of traumatic stress intervention models that have shown promise, or potentially could be deployed, in developing and sustaining trauma-informed juvenile justice facilities.

Keywords Traumatic stress · Posttraumatic stress disorder · Juvenile justice · Residential programs · Adolescence · Evidence-based practices

Approaches to addressing psychological trauma and PTSD in juvenile justice services have been described and reviewed previously (Ford et al. 2012a, 2007, 2006; Ko et al. 2008). In one large-scale study, 92.5 % of a sample of detained youth had experienced at least one type of psychological trauma at some point in their lives, and over 50 % of the sample—youth with an average age of 14—had been exposed to six or more potentially traumatic adversities by the time of detention (Abram et al. 2004). The detained youth in that large and representative sample who had experienced psychological trauma often developed posttraumatic stress disorder (PTSD) or other psychiatric disorders or associated problems with anxiety, dysphoria, anger, grief, or guilt (Abram et al. 2007)—persistent negative emotions that are core elements in PTSD in the American Psychiatric Association's *Diagnostic and Statistical Manual* Fifth Revision (www.dsm5.org). In this paper we focus on the impact that psychological trauma and PTSD have on the mental health and behavioral needs and problems of youth in residential juvenile justice facilities, and on the staff and milieu of those facilities and their ability to successfully achieve their safety and rehabilitation goals.

Barriers to Addressing Mental Health Needs in Residential Juvenile Justice Programs

Juvenile justice programs have long struggled with best practices for addressing the needs of detained and adjudicated youth (Grisso 2007; Williams et al. 2005). Juvenile justice residential facilities have historically had three primary goals: increasing safety in the facilities and in the community; bringing about justice for crimes committed; and rehabilitation, or the prevention of recidivism. Increasingly, however, it has been recognized that many youth in these programs have serious mental health problems (Teplin et al. 2002), and a fourth goal has emerged: addressing youths' mental health needs in order to enable juvenile justice programs and facilities to successfully achieve their original goals of safety, justice, and rehabilitation (Grisso 2007; Koppelman 2005;

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Published online: 28 August 2013

Morrissey et al. 2009; Stathis and Martin 2004; Steinberg 2009; Wasserman et al. 2003; Williams et al. 2005).

Despite efforts to foster collaboration between mental health and juvenile justice leaders, programs, and providers (Morrissey et al. 2009; Stathis and Martin 2004; Wasserman et al. 2003), numerous barriers have impeded the progress of mental health initiatives in juvenile justice facilities (Gallagher and Dobrin 2006, 2007; Grisso 2007). Funding for mental health services often is better in the juvenile justice system than in the community (Pottick et al. 2008; Wasserman et al. 2008); yet, only approximately one in three youths come to juvenile probation or are identified by juvenile probation officers as needing mental health services (Wasserman et al. 2008)—about half of the approximately 70 % of youth in juvenile detention who have a psychiatric disorder, and fewer than the approximately 45 % who have two or more comorbid psychiatric disorders (Abram et al. 2003; Teplin et al. 2002. Similarly, less than half (18 %) of the approximately 40 % who reported substance abuse in a sample of youths on "community orders" (i.e., juvenile probation) received a referral for drug or alcohol abuse treatment (Lennings et al. 2006). The importance of providing treatment for these youths is underscored by findings that, 5 years after being assessed in detention, 40 % of boys and 30 % of girls still had psychiatric or substance abuse disorder (Teplin et al. 2012).

Although juvenile detention residential facilities tend to provide more comprehensive services than community juvenile justice programs, they infrequently have staff with professional training in mental health or substance abuse services (Grisso 2007; Henderson et al. 2007). Very few (<2 %; 53 of the approximately 3,500) juvenile justice residential facilities in the United States have received accreditation for facility health care from the National Commission on Correctional Health Care, which includes mental health as well as medical services (Gallagher and Dobrin 2007). Juvenile justice programs that have direct linkages to community behavioral health providers and programs are more likely to provide evidence-based services, but this is the exception rather than the norm (Henderson et al. 2007). Staff and administrators in juvenile justice programs vary in their willingness to acknowledge the existence of or need for services to address mental health and other disabilities (Caldwell 2007). In contrast to attitudes of adults in the community (Scott et al. 2006) and the prevailing views of behavioral health scientists and professionals (Steinberg 2009), juvenile justice program staff and administrators do not consistently view youth offenders as needing (or deserving) assistance in overcoming lags and deficits in psychosocial development and maturation (e.g., reducing impulsivity, increasing mature judgment) (Caldwell 2007; Williams et al. 2005).

Youths in the juvenile justice system and their parents also report attitudes and practical barriers that limit their willingness and ability to access behavioral health services. Most detained youth—85 % in a recent survey of a representative sample—did not perceive mental health services as important or (particularly for boys) accessible (Abram et al. 2008). Incarcerated girls similarly prioritized immediate health needs as more important than longer-term mental health or substance use problems (Douglas and Plugge 2008). Parents of detained youths surveyed in another study reported feeling a general sense of hopelessness, inadequacy, and stigma that may reduce their confidence in or willingness to seek mental health services for their child (Bradshaw et al. 2006). Consistent with this view, another study found that parents of detained youths with mental health problems tended not to define their child's problems in mental health terms despite seeking (but often not accessing) other services for their child and family (Watson et al. 2009).

Left unaddressed, or inadequately treated, mental health and substance abuse problems can be detrimental to the safety and health of the youth (Gallagher and Dobrin 2006; Steinberg 2009; Wan et al. 2006), of other youths and staff in juvenile justice residential facilities (Grisso 2007), and society at large (Cuellar et al. 2004; Fagan and Piquero 2007; Keene et al. 2003; Trupin et al. 2004). In view of the extensive prevalence of past traumatic victimization and current PTSD in juvenile detention populations, and the documented relationship between psychological trauma exposure and PTSD with mental health and substance abuse problems, traumatic stress could provide an organizing framework to increase the receptivity of programs, youth, and parents, and their willingness to offer or participate in, mental health services.

Posttraumatic Dysregulation: Relevance to Residential Juvenile Justice Programs

By their own account, youth in juvenile justice residential programs describe violence and victimization as pervasive in their lives and associated with severe mental health and substance abuse problems (Douglas and Plugge 2008; Shelton 2004). Researchers estimate that between 67 % (Teplin et al. 2002; Washburn et al. 2008) to 90 % (Drerup et al. 2008) of detained and adjudicated youth meet criteria for at least one mental health diagnosis, and almost half for two or more comorbid psychiatric disorders. The prevalence of PTSD in juvenile justice residential facilities (Abram et al. 2004, 2007) is as much as 10 to 15 times higher than in the general population (Copeland et al. 2007a), and may be significantly under-diagnosed in facility records (Mueser and Taub 2008). Many detained youth meet criteria for a wide range of affective, anxiety, behavioral, and substance use disorders (Abram et al. 2003), but a history of psychological trauma exposure or current PTSD appear to place youth at increased risk of complexity, with rates of comorbidity (the presence of

multiple diagnoses) substantially higher for youth with PTSD (Abram et al. 2007) and for youth with a reported history of maltreatment (Drerup et al. 2008).

Exposure to psychological trauma, particularly in childhood while the brain and mind are rapidly developing (Steinberg 2009), can lead to a negative cascade that begins with involuntary self-protective shifts in the brain ("survival mode;" Ford 2009), continues as a preoccupation with detecting and surviving threats (Pine 2007), and becomes a chronic condition of allostatic load (McEwen 2004) that can take the form of physical or psychological illness or symptoms as a result of dysregulation in the body's nervous systems (Neumeister et al. 2007).

Survival-oriented biological changes are necessary for the traumatized child's coping and self-protection but, when they persist despite no longer being functional, compromise three key self-regulation systems in the brain (Thayer et al. 2009): the *reward/motivation* systems (centering on midbrain areas responsive to the neurotransmitter dopamine), the *distress tolerance* systems (centering on limbic brain areas responsive to neurotransmitters, e.g., serotonin and adrenaline), and *"executive"* systems for emotion and information processing (centering on medial and dorsolateral prefrontal cortices in the brain). Thus, youth in residential juvenile justice facilities who have experienced traumatic stressors, often for prolonged periods in primary relationships as well as in school and the community, are likely to have to cope with biological adaptations that impair their ability to delay of gratification and make them prone to anhedonia, labile and extreme (both excessive and blunted) emotional reactions, and rigid, impulsive, and disorganized thinking and coping styles (Ford 2009; Steinberg 2009).

Consistent with this view, it has been definitively established that exposure to multiple adversities in childhood increases risk for many negative outcomes in childhood and adolescence (Finkelhor et al. 2007; Ford et al. 2010a; Ford et al. 2009), and throughout adulthood (Felitti et al. 1998). The negative outcomes include alcohol and substance use, health risks such as smoking and obesity, mental health outcomes such as depression and suicidality, and social risks such as engaging in violent relationships and teen pregnancy and paternity. Not coincidentally, many of these problems are predictive of engaging in delinquent (Ford et al. 2010a) or criminal behavior (Copeland et al. 2007b.

The pathways from psychological trauma exposure to confinement in juvenile justice residential facilities are multidetermined (Ford et al. 2006). Two factors are crucial to understanding how traumatic stress can contribute to youthful offending and recidivism. These are an unstated code of behavior—often a "survival code"—that differs from the established rules of majority society, and the impact of traumatic stress on emotional, physiological, and behavioral factors which place youth at increased risk of committing offenses. The experience of traumatic victimization, in many ways, violates the "social contract" that lies at the heart of societal laws and structures: the contract that suggests that good deeds and behavior are rewarded, that perpetrating harm should and will be punished, and that maintaining order is mutually beneficial. For youth who have experienced repeated violence and violation in their homes and communities, often in the absence of societal response (e.g., note the relatively low rates of prosecution of child abuse cases as compared with other felonies; Cross et al. 2003), this is a direct, immediate life experience that violates this implicit social contract. It is little wonder, then, that multiply psychologically traumatized youth may apply different standards in decision-making and in action (Fagan and Piquero 2007. For these youth, the rubric of *survival* ("What will get my needs met?") is likely to trump *legality* ("Is this behavior appropriate within the laws of our society?").

In addition to shifting social paradigms and violating the social contract of fairness and justice, psychological trauma—particularly when chronic and experienced early in life—has a core impact on regulatory processes, or the capacity to effectively manage behavior, emotions, body sensations, and interpersonal relationships (Ford 2005). As a result, youth who have experienced multiple forms of developmentally adverse interpersonal trauma are at risk for substance use, violent or impulsive behaviors, vulnerability to negative social influence, and high-risk activities (Finkelhor et al. 2007; Ford et al. 2010a). These factors both coincide with the presence of diagnosable mental health conditions, and leave youth vulnerable to engaging in criminal activity. In prospective studies of youth examining factors increasing risk for committing crime in young adulthood, childhood psychiatric disorder—even excluding conduct disorder—substantially increases the likelihood of later involvement with the criminal justice system (Copeland et al. 2007a). Even as compared with youth with other significant psychiatric disturbances, those with PTSD are at higher risk of demonstrating delinquent behavior and of risks such as running away from home (Mueser and Taub 2008).

These two factors—the altered social paradigm and the dysregulation of core self capacities—influence not just the behaviors leading to detention and adjudication of youth, but also to their behaviors and experiences while in care, along with a parallel influence on staff and programs. Consider, for instance, the influence of these factors on a detained adolescent living in close quarters with a member of a rival gang, who has nonetheless been advised by staff of the importance of following programmatic rules. It is not difficult to appreciate that, for this adolescent, "street rules"—those which have previously dictated survival—will at times trump program rules. Imagine a situation in which the adolescent perceives some threat signal from his historical rival—a direct stare, a hand gesture. In the lives of these youth, threat signals are

often subtle yet significant, and survival has been predicated on early detection of and strong response to these cues. In the face of this perceived danger, the adolescent enters "survival mode" ("If I am to survive, I must react to this threat,"), triggering a cascade of physiological arousal and behavioral responses that are biologically driven and experientially reinforced.

Witnessing his increased agitation and aggressive posturing, a staff member—whose own mandate includes maintaining order and safety—approaches the adolescent, ordering the youth to calm down. The adolescent perceives the staff member as an increased threat and escalates. The staff member—who now similarly perceives threat—also enters survival mode, leading to increased arousal and diffuse distress, decreased awareness of adaptive alternatives, and limited inhibition of survival-based behavioral responses. As the staff member enters further into the adolescent's space, in an effort to gain psychological and behavioral control, both staff and youth experience the other's presence as a danger, leading to heightened arousal and efforts at self-empowerment. Ultimately, the ensuing crisis will reinforce for each the importance of his or her own set of rules: for the adolescent, the importance of maintaining vigilance and survival at all costs; and for the staff member, the importance of exerting control and authority in service of security and order.

As illustrated by this example, juvenile justice facility staff recurrently interact with detained youth around the issue of how to balance self-interest with respect for other persons, individually and collectively. When staff or administrators adopt a stance of requiring that youths behave the way they (the adults) require without any meaningful validation of youths' preferences or best interests, this can communicate a message and model that, "people who have authority and power can make other people do whatever they want," and "people who do not have authority or power have no say," and "it doesn't matter what people feel or think, only the rules are important." If a class teaches that it is important to take other people's perspectives seriously (i.e., empathy), or a twice-weekly group emphasizes that youths should express themselves honestly and be open to feedback about ways in which they can improve themselves, these rehabilitative/therapeutic approaches to responsible community participation and self-improvement may be inadvertently contradicted by the example set and messages sent by the day-to-day behavior of the adult role models in the detention milieu. This discrepancy could introduce cognitive dissonance interfering with adoption of new learning as well as the perception of threat and loss of control, which tends to elicit emotional distress in youths who already are affectively volatile as a result of both being in the adolescent stage of development and typically experiencing many life stressors (e.g., past or current family or peer group rejection of conflict, school and financial pressures).

This dilemma—a divergence between what adults do versus what they say (and hold youths accountable for)—is understandable in light of the often incompatible and contradictory requirements that working in a detention facility places on staff and administrators. On the one hand, detention staff are required to ensure safety and prevent harm from occurring to detained youth, other staff, and the general public—with groups of youths who often behave unsafely and are capable of causing substantial harm to one another and to staff and community members. On the other hand, they typically hope that the detained youths they supervise will do better in their lives, and see and appreciate the good qualities and strengths in these youths that all too often have gone unrecognized or not been supported by other adults in the youths' lives. Thus there can appear to be an imperative need to impose control on the youths' lives so that they will learn how to be more responsible by obeying the rules and directives of people and a justice milieu/system that is better able to "know what's best for them" than what they (the youths) know themselves.

The Trauma-Impacted Juvenile Justice Facility

As can be seen in the above example, overwhelming stress is a factor not just for adjudicated and detained youth, but for the staff and program milieus in which they are detained. Juvenile justice residential programs, like many other organizations, become institutionalized in order to survive. When stressed by scarce resources (e.g., diminishing government funding, staff turnover) or threats (e.g., lawsuits, sentinel incidents involving injuries or deaths), juvenile justice facilities (and the larger systems in which they are embedded) and staff can become trapped in a similar survival mind-set to that of the complexly traumatized child. Preservation of the *status quo* may become valued over and above continual growth and improvement. Punitive or pathologizing correctional philosophies can be understood as defensive survival responses on the part of policy-makers, judicial officials and professionals, administrators, and staff who often have the best interests of children and families at heart—but who have become dysregulated as a result of a combination of vicarious trauma (Pearlman and Caringi 2009), direct exposure in the line of duty to traumatic stressors (e.g., assault, homicide, suicide), and political and economic pressures, constraints, and (real or perceived) threats (Ford et al. 2007).

Compounding this is the nature of juvenile justice residential facilities themselves. First, juvenile justice systems, as with any other state-level system, operate with significant mandates from larger governmental bodies that mandate the facilities to provide interventions—for instance, for substance use, for sexual offending, and for anger management. These mandates typically focus on reduction of negative behaviors,

rather than increasing youth competency. On the youth level, these treatments may miss the mark by addressing an *outcome*, rather than a core disturbance—for instance, substance use among trauma-impacted youth is frequently a tool for managing dysregulated emotion and physiology (Kaminer et al. 2010). On the staff level, these interventions emphasize the ultimate role of youth responsibility and liability, and may increase and highlight an emphasis on behavioral control and consequences, rather than on relationship building and fostering resilience.

Second, the position of correctional staff members is intense and constant. As in many other residential programs, juvenile justice staff are "on" at all times. As with youth on the street in violence-impacted neighborhoods, staff in such programs must maintain a relatively constant vigilance to potential danger. Job descriptions for these staff include multiple, intense demands encompassing behavior management, peer conflict mediation, daily living support, and at times minute-to-minute monitoring and violence prevention. Exposure to actual, often highly dangerous, stressors in juvenile justice facilities is a moment-to-moment reality, with staff exposed on a frequent basis to serious and high-risk behaviors, including self-harm and assaults. Efforts at increasing self-care and increasing time for breaks, supervision, and stepping away from conflict may fly in the face of realistic program demands and staffing constraints.

Third, in addition to exposure to actual potentially traumatic stressors, juvenile justice staff are exposed to the intense behavioral and emotional needs of a highly trauma-impacted population. It is increasingly understood that working with such a population may result in vicarious or secondary traumatization (McCann and Pearlman 1990; Hodgdon et al. 2013). Research on vicarious trauma speaks strongly to the key role played by staff supervision, support, and education in preventing and addressing these responses (McNamara 2010); even in the presence of positive coping skills and personal resources, the experience of burnout and secondary trauma will be strongly influenced by perception of effectiveness, structural job factors and coworker and administrative supports (Koeske and Koeske 1989; Stevens and Higgins 2002). Conversely, positive workplace factors such as perceived coworker support and workplace justice are protective, predicting decreased burnout and staff turnover and increased job satisfaction (Ducharme et al. 2008).

As has been observed in other congregate care settings serving youth (Hodgdon et al. 2013), staff members of juvenile justice residential facilities are frequently primarily trained in behavior management and disciplinary techniques, rather than in interpersonal communication, influence, and engagement. Staff may have little awareness or understanding of youths' histories and mental health or traumatic stress issues, and limited training in how to respond to youth in distress. Staff in these programs are frequently provided minimal supervision, and program meetings typically emphasize logistics and objective information (i.e., critical incidents, schedule, staffing) over process, education, and support. Taken in combination with often limited funding, limited time for staff support and training, and strong emphasis on minimization of critical incidents, it is little wonder that there are high levels of burnout and staff turnover, leading to increasing challenges for an already-strained system.

Self-Regulation: A Framework for Trauma-Informed Juvenile Justice Residential Facilities

If the dilemmas faced by trauma-impacted youth and by vicariously and directly traumatized program staff and milieus are viewed as the result of a dysregulation of core self-regulatory competences (Ford 2005), then enhancement of self-regulation can provide a focus for trauma-informed juvenile justice residential services at all levels. Self-regulation is acquired through social learning, that is, by modeling (observational learning) and reinforcement (consequences that enhance the motivational value of behavior) from key persons in youths' support systems. Specific educational or mental health services (e.g., groups, classes, counseling, therapy) can provide youths with preparation and guidance for self-regulation (e.g., teaching basic concepts or skills, coaching to facilitate practice and application of skills, enhancing motivation and trust, medications that reduce affective, cognitive, or biological instability). However, the primary source of social learning for youth in detention is the example set by adult staff and the milieu, which in turn substantially sets the tone for a second critical influence—peer role modeling.

Staff in juvenile justice facilities either acquire, or fail to develop, job-relevant self-regulatory capacities through similar mechanisms. The actions of supervisors and administrators, and the formal and informal performance expectations and evaluation processes, and policies and procedures, in place in juvenile justice residential facilities provide powerful sources of modeling and reinforcement for staff as they respond to work stressors and challenges. When these sources consistently set an example that encourages self-regulation (e.g., modeling mindful responses to stressful events, providing meaningful recognition of staff when they manage challenges in a self—regulated manner) they increase staff capacity to manage the at-times dysregulating nature of the juvenile justice environment. Specific educational practices (psychoeducation, supervision, and skills development) can increase staff capacity to apply concrete skills including self-regulatory coping strategies along with youth support, coaching, and de-escalation strategies.

A self-regulation framework for correction and rehabilitation of detained juveniles is compatible with two contemporary criminal justice philosophies that have evolved as

credible alternatives to the punitive retribution (Monterosso 2009) or viral quarantine (i.e., confinement as a way to prevent "carriers" from spreading the pathology of crime; Dripps 1996) models. The *criminogenic risk/needs* model focuses on identifying and modifying attitudes, circumstances, and behaviors that increase the risk of or need for juvenile crime involvement (Andrews et al. 2006). Self-regulation can reduce the tendency to reflexively, rigidly, impulsively, and over-emotionally or unemotionally (i.e., callously or indifferently; Frick and White 2008) espouse criminogenic attitudes, choose criminogenic circumstances, and engage in illegal or dangerous behaviors. The *restorative justice* model emphasizes redressing the harm to victims and society caused through criminal acts by having those who violate the social contract (by committing crimes) take responsibility and make restitution to victims so as to restore justice in the society-at-large (Crawford and Newburn 2003). Enhancing juvenile offenders' ability to self-regulate can enable them to meaningfully engage in honest self-reflection and empathic dialogue with victims, as well as to successfully assume the responsibilities of citizens in society. From a parallel perspective, enhancing juvenile justice program's and staff's capacity to self-regulate can decrease reflexive, impulsive, and over- or under-emotional responses to youth behaviors, and increase their capacity to empathically and planfully support youth in engaging in desired skills.

Self-regulation involves the ability to deploy several basic psychobiological competences in order to achieve "allostatic" (homeostasis-promoting; McEwen 2004) balance in body state, psychological state, and relationship to the physical and interpersonal environment. Buckner et al. (2009) define self-regulation as, "an integrated set of abilities or skills that draw from both executive function and emotion regulation capacities, which are … interrelated and act in a collaborative manner when an individual engages in goal-directed behavior" (p. 19); their research points to the pivotal role of self-regulation in increased adaptive functioning across a wide range of outcomes (e.g., social competence, academic achievement, maintaining or regaining emotional equilibrium). Markers of successful self-regulation in youth are not just superficially or transiently compliant behavior but an enhanced ability to cope with stressors without self-defeating (e.g., impulsive, perseverative, aggressive) or interpersonally ineffective (e.g., callous, manipulative, defiant) attitudes and behavior (Compas 2006).

Self-regulation requires the intentional deployment of attention to gathering and processing information so as to selectively and successfully pursue goals (Thayer et al. 2009) that, when achieved, increase the overall well-being of both the individual and her or his social and physical environment. Active pursuit of goals requires a complex harnessing of self-organizational and emotion regulation capacities. In order to effectively organize behavior so as to achieve goals, it is necessary to shift from being either passive (unresponsive) or reflexively reactive ("automatic response tendency") to finding and selectively activating a planful action strategy ("contextually appropriate response") that is not interrupted or distorted by habitual reactions ("automatic response tendencies") but draws on the person's past successful responses ("general response bias") (Sherman et al. 2008). Put more basically, to be self-regulated is to be able to: (1) "stop and think," (2) "learn from past experiences," and (3) "ready and aim, before firing."

Self-regulation thus involves the ability to: (1) consciously focus attention, (2) be aware of the environment and one's own physical and emotional body states; (3) draw on memory in order to learn from the past and adapt effectively in the present; and, (4) maintain or regain emotion states that provide a genuine sense of well-being and lead to further self-regulation. Although these competences may seem obvious, they are deceptively difficult for traumatized youth to actually achieve on a reliable basis. Structuring juvenile justice residential programs to elicit, support, and foster the independent use of these self-regulation competences by detained youths therefore is a direct way to both help youths recover from complex trauma and to make the milieus—and the communities and families to which youths return—safer and healthier.

Self-regulation begins with the selective and sustained deployment of *attention* (Ayduk et al. 2000). Children (Turner et al. 2010) and adolescents (Ford et al. 2010a) who have experienced complex traumatic stressors often have pervasive problems with concentration (a hallmark of posttraumatic stress disorder, PTSD) that can be difficult to distinguish from (and may be misdiagnosed as) attention deficit disorder symptoms (Ford and Connor 2009. ADD is a common comorbidity of PTSD in children and adolescents (Ford and Connor 2009, and the attentional focusing problems in both of these disorders can put adolescents at risk for more severe disruptive behavior disorders (e.g., oppositional-defiant disorder; Ford et al. 2000). Therefore, whether the source is ADD or PTSD or a combination of both inborn and stress-related difficulties, enhancing attention focusing skills is a key first step in addressing the complicated self-regulation deficits of many detained youths.

A second critical component of self-regulation is *awareness* of sensory-perceptual input from the environment and sensorimotor (e.g., kinesthetic and vagal tone/heart rate rhythym feedback; Porges 2007) information from within the body. Sensory-perceptual awareness enables the person to consciously select and accurately perceive relevant information from the environment (Ford 2005). Instead of developing a healthy awareness of the environment and of their own emotions and body states, children who have experienced complex traumatic stressors such as maltreatment tend instead to either hypervigilantly scan for danger and become flooded with too much sensory-perceptual information, or have

blunted awareness (e.g., dissociation) of important information from their bodies and the environment (Cicchetti and Curtis 2005).

Several related forms of *memory* are a third component of self-regulation. These include working (short-term processing), declarative (verbal), and narrative (autobiographical) memory. Retrieving, holding in mind, and analyzing or modifying useful information from past experience is an essential precursor to planful action (McEwen 2004). Translating sensory-perceptual input and prior experiences into words in working memory requires a second type of memory, verbal or declarative memory. Verbal memory is susceptible to interruption or inaccuracy when trauma or other stressors occur (Elzinga et al. 2005). Processing information in words (verbally) is an essential modulator of stress reactivity (McEwen 2004). Verbal memory also provides the raw material for another more integrative kind of memory, "narrative" memory. Memory that draws on past experience as a guide for goals and plans is most useful if it includes not just the scattered details but meaningful "stories" or "narratives" that represent how things have happened (and therefore, how events may occur or can be influenced in the future). A sub-type of narrative memory involves one's own personal experiences, so-called "autobiographical memory." Autobiographical memory enables a person to make sense of, learn from and use what has been most important in her or his life experiences. PTSD involves impairment in all three types of memory, perhaps most evidently in autobiographical memory (Jelinek et al. 2009). For example, people with PTSD tend to report traumatic memories in response to cues that usually elicit positive memories (Sutherland and Bryant 2008). Posttraumatic impairment in autobiographical memory may undermine the child or adolescent's core sense of self, potentially contributing to a core sense of being "fragile in a dangerous world" and having experienced "permanent and disturbing change" (Meiser-Stedman et al. 2009, p. 232).

Finally, emotion regulation (Goldsmith et al. 2008 and social connectedness (attachment; Lyons-Ruth et al. 2006) are essential higher-order capacities that enable the person to achieve an overall positive adaptation in life. When a youth's attention is focused, she or he needs to be able to translate sensory-perceptual/sensorimotor and cognitive/memory information into emotion states and relational connections that reinforce and sustain the continued use and development of those other self-regulatory competences. Emotion regulation involves being able to sustain euthymic emotion states (e.g., a balance of feeling calm and energized, satisfied and motivated) and to recover from dysthymic emotion states (Ford 2005). Relational connectedness involves a parallel combination of being able to sustain secure attachment "working models" (i.e., trust, closeness, affection) while recovering from insecure attachment working models (e.g., viewing relationships as abandoning, betrayals, exploitive, rejecting, unloving, or worthless). Developmentally, emotion regulation competences are learned through interactions from the first days of life with primary caregivers who are responsive, attuned, and reliable (Lyons-Ruth et al. 2006)—i.e., through modeling of emotion regulation in caring relationships (Ford 2005). While internalization of the skills and feeling-tone modeled by primary caregivers enables children to become progressively more autonomous, the ability to seek and benefit from interpersonal connectedness continues to be an essential element in emotion regulation throughout the lifespan.

Before discussing specific interventions that can be implemented in juvenile justice residential programs in order to enhance detained youths' self-regulation, we first take a closer look at how self-regulation can be used as the theme for residential juvenile facilities in order to enhance their ability to address criminogenic risks/needs and achieve restorative justice.

Juvenile justice residential programs have unique opportunities to educate youth about traumatic stress reactions and begin to equip them with self-regulation skills while they are a "captive audience," thus averting many of the barriers faced by youth in the community that can interfere with attendance, compliance, and successful completion of PTSD psychotherapy (e.g., competing activities, inadequate transportation, real or perceived stigma from peers or family). For youths whose traumatic stress reactions are not sufficiently severe to warrant a traumatic stress disorder diagnosis, or who do not have stable and responsive parental/family involvement (Lang et al. 2010), scarce treatment resources may be better spent on less intensive prevention interventions rather than PTSD psychotherapy. Even for those youths who require and can benefit from PTSD psychotherapy, stays in juvenile justice residential facilities often are too short (e.g., less than a month) and are complicated by too many stressors (e.g., separation from family and friends, potentially traumatic conflicts with other detained youths) to permit full engagement in and benefit from PTSD psychotherapy while detained.

For example, in Connecticut, a program of trauma-informed education and self-regulation skill-building was implemented sequentially in successive juvenile justice residential facilities over a several-year period. Buy-in from administrators and staff was a first priority. Therefore, before youth received any educational or milieu interventions, administrators and staff were provided with an adapted version of the same education and skill-building program that youths would receive, and key staff were identified to serve as the screeners, educators, and skill-building coaches for youths. Staff and administrators were shown how the education and skill-building could enhance their existing safety, disciplinary, and milieu management systems. Staff and administrators next observed the expert facilitators as they: (1) taught the education and skill-building classes with youths and (2) interacted informally with youths in the residential milieu while modeling and reinforcing the use of the education

concepts and skills. Tangible cues were introduced into the residential milieu to incorporate the concepts and skills into daily interactions (e.g., posters for the walls, wallet-sized cards, scripts for use in daily "check-ins" and community meetings). Incrementally, with ongoing modeling, coaching, and support for administrators, staff and youths, trauma-informed concepts and self-regulation skills were integrated into the milieu (i.e., practices, routines, and language) of each juvenile justice residential facility. Anecdotal evidence of benefits observed by each constituency was highlighted in the ongoing supportive consultation: for youths, these included more freedom to determine their own schedules and activities as they demonstrated that they could do so with appropriate self-regulation; for staff, benefits included fewer violent incidents and extreme sanctions, as well as a greater sense of "getting through to" and being treated with respect by the youths and fellow staff members; for administrators, benefits included less need for corrective supervision or disciplinary actions with staff, reduced staff absenteeism, sick leave, and turnover, and an improved safety record. An evaluation of the first 2 years of the program in detention centers confirmed several of the key systemic benefits (Ford and Hawke 2012).

A composite case example (i.e., based on several youth, with no identifying information regarding any individual) can illustrate the potential benefit this systemic approach to enhancing juvenile justice residential facility milieus with trauma-informed interventions. A physically small but explosively angry Latina adolescent was detained after a series of assaultive and threatening incidents with peers, teachers, family, and the police. Detention staff believed that she was too aggressive and defiant to respond to any approach except intimidation, and therefore consistently verbally and physically confronted her in an attempt to establish authority and deter physical and verbal assaults. The facility's behavior management program included penalties for unacceptable behavior (which unfortunately also included most forms of autonomous decision-making) and few rewards or acknowledgement of prosocial behavior (e.g., empathy, cooperation, courtesy, responsible problem solving). Milieu crisis prevention/intervention programs included verbal tactics to calm angry youth, and restorative justice activities for youths to complete after assaultive or threatening behavior, but no approaches to engage youths in reflective thinking and problem solving in the early stages of potential crises or in their aftermath.

When a trauma-informed education program was provided to administrators and staff, they recognized that much of this girl's anger escalation and assaultive behavior occurred when she was trying to establish respect for herself and her family, and to protect the interests and safety of other youths who she perceived as being victimized by bullies (including some staff). Staff and administrators decided to approach this girl, and all the girls on her residential unit, with a different message, emphasizing interest in and respect for the girls' goals and their ideas for constructive solutions to what they viewed as key problems (i.e., ensuring fairness, preventing bullying). They also recognized that the girl's initial responses were likely to be defiant and aggressive, as it were "testing" the willingness of staff to not just "talk the talk" but to "walk the walk" by seeing how they would react if she was not a model citizen immediately. Using a self-regulation framework, they focused their attention on showing her that they "got," and respected and supported, her basic goals of being treated with respect and not letting others be victimized. They encouraged her to also "walk the walk" by acting according to her values and treating them and her peers with the same fairness and respect that she demanded of them. Interaction between staff and the adolescent became progressively less conflictual, and more based on a competition to see who could be most consistently true to the core values of mutual fairness and respect.

The trauma-informed education also explained the difference between reactive and proactive aggression, based on research showing that maltreated youth are more likely to engage in reactive than proactive aggression (Ford et al. 2010c). Reactive aggression involves defensive/avoidant attempts to reduce anxiety by warding off or retaliating against perceived threats. Proactive aggression, in contrast, involves indifference to or an active interest in causing suffering or destruction. Maltreated children may appear indifferent and unemotional because of an involuntary tendency to reduce arousal when stressed (Ford et al. 2010b), and as a result their aggressive behavior may be misinterpreted as proactive when it is primarily reactive (Ford et al. 2010b). This profile fit what program staff knew about the assaultive Latina adolescent, whom they have viewed as "stone cold" and intentionally cruel. Her family history and extensive gang involvement suggested both a genetic and social learning risk of proactive aggression (Lahey et al. 1999). When interviewed she said, however, that she would "hurt anyone who tries to hurt me or my people—make them pay so they never disrespect me or try to [challenge] me. I don't care if they get hurt, I have to protect myself not let anyone think I'm weak." Her attitudes involve an endorsement of aggression that is pervasive and instrumental, but that appears to be primarily self-protective as a result of a sense of being threatened based upon a history of complex trauma (Dodge et al. 1997; Dodge et al. 1995) rather than a proactive desire to inflict harm on or control others. With this alternative view, program staff were able to shift their approach to working with this girl from confrontation and insisting that she learn to control her anger and violent impulses, to instead validating her core goals and values and helping her to begin to consider other ways of being strong, earning respect, and protecting herself and those she cared for than violence. From a self-regulation perspective, rather than increasing her sense of threat and aloneness by insisting that the girl more responsibly manage "her" anger, the staff aligned

themselves with her goal of being strong and protecting those whom she cared for. In so doing, they established themselves (gradually over time) as members of her protected circle, while also showing her that they could help to protect her and be responsible for protecting themselves without "setting her up" by either treating her like a vulnerable and weak victim or a dangerous and out-of-control perpetrator.

Self-regulation thus provides a context for re-configuring the basic beliefs and ways of interacting not only of detained youth but equally, if not more, importantly, of administrators, staff, and the entire mileu in juvenile justice residential facilities. When traumatic stress reactions are understood as motivated largely involuntarily by self-protective survival fears, then it makes sense for staff and administrators to focus on increasing detained youths' ability to manage these reactions by providing education and role modeling for how to regain emotional balance when stressed and how to build safe relationships with people who are able to regulate their emotions. With this emphasis on creating a milieu that models and reinforces self-regulation, confinement and rehabilitation thus can be more need-based and restorative than punitive or pathologizing.

It is a major paradigm shift to suggest that youths who have gotten into trouble with the law are most likely to think and behave safely, respectfully, and wisely if they are consistently provided with role modeling of self-regulation by adults whose focus is on being in control of themselves rather than exerting control over the youth. This presumes that most, if not all, of the youths in detention have the capacity to self-regulate, *or can develop this capacity* with modeling and consistent reinforcement. It also implies that supervision, monitoring, and discipline that is aimed at enhancing self-regulation will better motivate and lead to growth and change by youths than punitive, adversarial, intimidating, or coercive staff practices and milieu policies. However, this does not reduce or undermine the correctional nature of juvenile detention. Instead of simply correcting "bad" youths or behavior, the goal is to "correct" dysregulated thinking and behavior by increasing the frequency and consistency of self-regulated prosocial thinking and behavior.

Trauma-Informed Self-Regulation-Based Interventions in Juvenile Justice Facilities

Although a self-regulation framework represents a major paradigm shift not only in the juvenile justice field but also in the behavioral health fields, several intervention models have been developed and field tested for trauma-informed self-regulation-based services in juvenile justice residential facilities. These intervention models have been more extensively described elsewhere; therefore, we conclude with a brief overview of these interventions.

Attachment, Self-Regulation, and Competency (ARC) The ARC treatment framework (Blaustein and Kinniburgh 2010; Kinniburgh and Blaustein 2005; Kinniburgh et al. 2005; Hodgdon et al. 2013) is a flexible, components-based model of intervention which is designed to translate across service settings. The model identifies 10 core intervention targets, nine of which fall within the three domains of *attachment* (building and supporting a safe and responsive caregiving system by primary caregivers, providers, and milieus); *self-regulation* (supporting youth capacity to identify, modulate, and express emotional and physiological experience); and *competency* (building core self-reflective capacities including problem-solving skills and a coherent and positive understanding of self); the 10th core target involves processing and integration of life experiences, including but not limited to traumatic events. A core concepts framework guides the provider in using each target clinically, as well as in integrating them into systemic or milieu functioning, staff training, and other modalities. The framework emphasizes the importance of whole systems change in supporting youth competent development and caregiver safety, and has been applied in juvenile justice facilities, residential treatment programs, inpatient hospitals, group homes and therapeutic foster care, and outpatient treatment.

Sanctuary This model (Bloom 1997; Rivard et al. 2005) emphasizes the development of a trauma-informed culture which supports recovery from the impacts of traumatic stress, while simultaneously providing safety for clients, families, staff, and administrators. Seven key characteristics of the environment are addressed, with emphasis on building a culture of: *Nonviolence, Emotional Intelligence, Inquiry* & *Social Learning, Shared Governance, Open Communication, Social Responsibility,* and *Growth and Change*. Across intervention components, treatment is approached within an understanding of the core areas, or phases, of *Safety*, *Emotion Management, Loss,* and *Future* (SELF). Intervention components highlight the role of training, organizational development, development of collaborative teams which include clients, and trauma-informed and trauma-specific treatment. This model has been implemented extensively in inpatient and residential programs.

Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS) SPARCS (DeRosa and Pelcovitz 2008; Habib et al. 2013) is a group intervention designed to address the needs of adolescents who have experienced chronic trauma, and whose stress may be ongoing. The model integrates key concepts from three evidence-based treatment programs: Dialectical Behavior Therapy (DBT; Miller et al. 2007), Trauma Affect Regulation: Guide for Education and Therapy (TARGET; Ford and Russo 2006), and the UCLA Trauma/Grief Program (Layne et al. 2002). SPARCS targets

core areas known to be disrupted by chronic exposure to trauma, including challenges with self-regulation, relationships, self-perception, and future goals, and emphasizes the building of adolescent capacity to cope with current stressors, build effective relationships, and develop a sense of meaning and purpose. SPARCS has been successfully implemented in a wide range of child- and adolescent-serving programs and with ethnically diverse groups.

Trauma Affect Regulation: Guide for Education and Therapy (TARGET) TARGET (Ford and Russo 2006) is an educational and therapeutic intervention for trauma-impacted adolescents and adults, which may be implemented as an individual or group therapy, or as a milieu intervention (Ford and Hawke 2012). The model emphasizes an understanding of trauma-related dysregulation through the lens of the brain's emotion regulation and executive function systems, and reframes symptoms as adaptive responses. TARGET teaches a seven-step sequence of self-regulation skills summarized by an acronym (FREEDOM). The first two skills, Focusing and Recognizing triggers, provide a foundation for shifting from hypervigilance to mentalizing (Allen et al. 2008). The next four skills represent a dual-processing approach to differentiating stress-related and core value-grounded emotions, thoughts, goals, and behavioral options. The final skill teaches ways to enhance self-esteem and self-efficacy recognizing how being self-regulated Makes a Contribution to the world. TARGET is an empirically supported intervention for delinquent or justice-involved youth with dual diagnosis substance use and trauma-related disorders (Ford et al. 2012b), with evidence of effectiveness with detained or incarcerated youths provided by two quasi-experimental studies (Ford and Hawke 2012; Marrow et al. 2012).

Trauma Systems Therapy (TST) Trauma Systems Therapy (Brown et al. 2013; Saxe et al. 2006) is a framework for organizing intervention, with a simultaneous emphasis on the importance of (a) building the trauma-impacted child's capacity to regulate emotional state; and (b) building a self-regulating system, and able to support the child in managing emotions. TST actively targets the social environment, including the treatment system, and tailors treatment using a matrix system which identifies levels of the child's emotion regulation and the social environment's capacities to support this. Treatment is designed to encompass five phases: "Surviving, Stabilizing, Enduring, Understanding, and Transcending." Within each phase psychotherapy (e.g., cognitive processing and/or emotional regulation skills training, psychopharmacology) and home and community based services and advocacy are provided. TST has been successfully used with ethnoculturally diverse populations of troubled youths and families.

Conclusion

Trauma-focused interventions have the potential to change the entire milieu in juvenile justice residential facilities, in addition to providing youth and staff with skills for anticipating, coping with, and resolving posttraumatic stress and vicarious trauma reactions. Several models provide new options for juvenile justice policymakers, administrators and staff, and the mental health professionals who work with and in juvenile justice facilities—but they do not replace the array of existing programs, and must be designed and delivered so as to meet the three *sine qua non* criteria for effective juvenile justice interventions: "a "therapeutic" intervention philosophy, serving high risk offenders, and quality of implementation" (Lipsey 2009, p. 124). The first two criteria are inherent in all of the new trauma-informed services models, because their focus on self-regulation provides a therapeutic framework, and the youth whom they target—those who are impaired by traumatic stress reactions—are known to be at high risk for recidivism. The key challenge facing all of these innovative trauma-informed interventions therefore is to establish a replicable process for implementation that results in high levels of buy-in, fidelity, competence, and ongoing quality assurance and improvement in the context of the complex and challenging milieus of juvenile justice residential facilities.

Author Note The authors gratefully acknowledge the expertise and collegial support provided in Connecticut by Mr. William Carbone, Dr. John Chapman, Mr. Leo Arnone, Mr. Karl Alston, Ms. Catherine Foley-Geib, Ms. Julie Revaz, and the Court Support Services Division program and administrative staff, in Maine by Dr. Barry Stoodley, Dr. Susan Righthand, Ms. Roxy Hennings, Ms. Renna Hegg, and Ms. Beth Peavey, and the Department of Corrections program and administrative staff, and Dr. Monique Marrow and the Ohio Department of Youth Services program and administrative staff.

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