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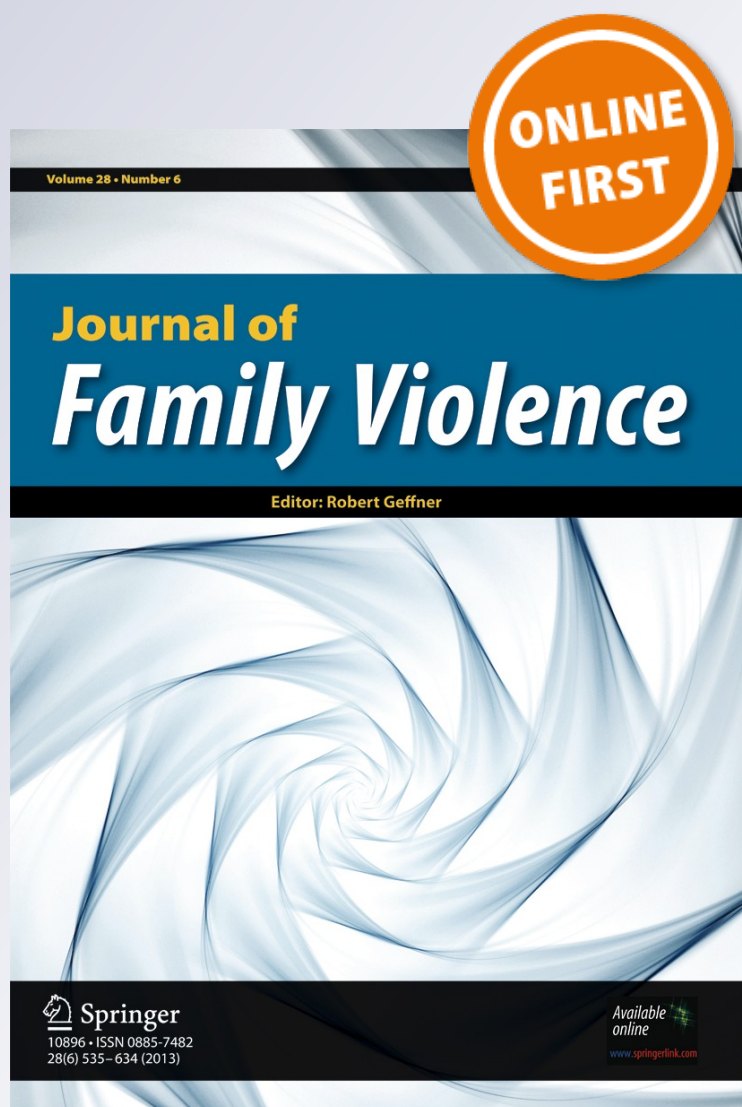
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**Journal of Family Violence**

ISSN 0885-7482

J Fam Viol

DOI 10.1007/s10896-013-9531-z



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# Development and Implementation of Trauma-Informed Programming in Youth Residential Treatment Centers Using the ARC Framework

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**Abstract** This project describes application of an evidenced-based, trauma-informed treatment framework, Attachment, Regulation and Competency (ARC), with complexly traumatized youth in residential treatment. The processes of implementing the ARC model into clinical and milieu programming at two residential treatment programs are described. Particular attention is paid to system-level processes and strategies for embedding ARC in a sustainable manner. Pilot data demonstrated a significant relation between use of ARC and reductions in PTSD symptoms, externalizing and internalizing behaviors, and the frequency of restraints used across programs. Preliminary findings contribute to an emerging empirical basis for the ARC model and are supportive of its clinical utility as a practice in the residential context. Next steps include: a) expanding the study findings by conducting controlled efficacy research, b) examining system level variables as mediators of change, and c) describing the full operation stage of implementation of the ARC framework.

**Keywords** Traumatized youth · Trauma-informed care · Residential services · Complex trauma · Evidence-based treatment

## Overview

Each year in the United States, millions of children experience maltreatment, violence and severe neglect, the majority of

which occurs within the family environment. In the most recent National Incidence Study of Child Abuse and Neglect (NIS-4; Sedlak et al. 2010), biological parents were identified as the perpetrators of 81 % of substantiated cases of child maltreatment in the United States, with nonbiological parents and their partners, and other family members, accounting for an additional 12 % and 4 % of cases. Despite the proliferation of state and federal family preservation initiatives over the past two decades, it remains an unquestionable fact that “family” continues to be a construct fraught with peril and “home” a dangerous place for far too many American children. With this reality in view, it is hardly surprising that in the latest annual incidence report compiled by the federal Children’s Bureau, nearly 134,000 U.S. child victims of maltreatment were documented to have been removed from their families and placed in substitute care (U.S. Department of Health and Human Services 2012).

One form of substitute care, residential treatment, is considered by some to be the “end of the road” for youth who have “failed out” of less restrictive environments such as foster homes, group homes, or kinship care (Rivard et al. 2004). Residential treatment can provide a level of structure, security and predictability unavailable in other settings while allowing youth to continue to attend school and receive therapeutic services. However, because of the high cost and comparatively restrictive nature of residential treatment, a relatively severe psychological and behavioral presentation is increasingly required for youth to qualify for this level of care (Briggs et al. 2012a, b).

The chronic and complex symptom presentation observed among youth in residential placement can often be linked directly to a history of abuse and neglect, exposure to violence in the community, and multiple placement transitions and attachment disruptions (Doyle and Bauer 1989; Zelechowski

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et al. 2013). Research examining rates of self-reported history of childhood trauma among youth in secure settings yields rates varying from 26 to 92% (Briggs et al. 2012a, b; Lewis and Shanok 1979), with rates varying depending on how “trauma” is defined. According to Briggs et al. (2012a, b), youth in residential placement, when compared to youth receiving other types of care, have a greater number of trauma exposures ( $M=5.8$  exposures vs.  $M=3.6$  exposures, respectively) and are more likely to report experiencing multiple traumatic events (92 % of youth in residential vs. 77 % of youth not in residential), contributing to a cumulative or “dose–response” relationship of trauma to functioning. Multiple placement transitions are also a common experience, with one study finding an average of six previous out of home placements and three inpatient hospitalizations among youth in residential care (Rivard et al. 2004).

Not only do youth in residential placement have highly complex trauma histories and many placement disruptions and transitions, they also display greater functional impairment when compared to youth receiving services in non-residential settings. A recent study by Briggs and colleagues (2012a, b) compared rates of functional impairment among a national sample of children and adolescents receiving mental health services from providers who are part of the National Child Traumatic Stress Network (NCTSN). The study findings indicated that youth in residential placement had higher rates of impairment across a range of domains including academic problems, behavior problems, attachment problems, runaway behavior, substance abuse, suicidal ideation, self-injury, and criminal behavior. In addition, whereas both groups demonstrated significant improvements after receiving treatment, a third of youth in residential placement continued to display difficulties in one or more domains.

It is clear that trauma is a core issue for many youth entering residential treatment, and is likely a major contributor to their emotional disturbance including trauma-related mental health problems (Zelechowski et al. 2013; Knoverek et al. 2013). Indeed, in a survey conducted of a national sample of residential treatment centers, 84 % indicated that posttraumatic stress disorder (PTSD) was one of the primary psychological disorders present among youth upon admission (National Association of Psychiatric Health Systems 2011). However, youth in residential placement rarely have access to trauma-informed treatment. This is despite recognition in the field for several decades that trauma-sensitive services are beneficial and necessary for youth in residential placement (see Doyle and Bauer (1989) for an early example of trauma informed programming in residential placement).

Why the gap in trauma informed residential care when the youth served in such settings would benefit greatly from such an approach? Recent research has demonstrated successful implementation of trauma-informed programming in residential settings with complex youth (Ford and Hawke 2012).

However, there are two interrelated barriers to implementing such a practice. First, most current available trauma treatments have been developed for the individual or group therapy context. Residential treatment, by nature, is ongoing 24 hours a day, 7 days a week, 365 days a year and cuts across all contexts through which youth move (e.g., school, milieu, social, and clinical), and therefore a circumscribed trauma treatment (i.e., one that is delivered only via individual or group therapy sessions) is less likely to be effective. Additionally, the most commonly used trauma treatment for youth, Trauma Focused Cognitive Behavioral Therapy (TF-CBT), is contraindicated for youth who have: (a) current self-harm or suicidal behaviors (a common problem for many youth in residential care), (b) lack a family system that can provide empathic support during trauma processing (youth in residential care often have unstable family connections, if any at all), and/or (c) are at risk for further trauma exposure (youth in residential care are at increased risk for revictimization due to higher rates of run-away behaviors).

A second barrier is that, given limited resources and high need to establish safety, most residential treatment facilities prioritize training for line staff in management of “problem behaviors” over trauma-informed practices. Risky behaviors such as self-harm, suicidal, and run-away that contribute to the youth’s placement and often continue beyond admission are necessarily a focus of intervention. However, the very behavior management techniques and safety procedures that are designed to reduce unsafe behavior (i.e., use of restraint) are triggering for traumatized youth, leading to increased dysregulation and reactivity. This paradox points to a need to integrate trauma-informed approaches in the milieu that go beyond individual or group therapy because milieu staff are often on the “front lines” in helping youth to manage the high levels of dysregulation that lead to reactive aggression, self-harm and run-away behaviors.

Treatment of trauma-impacted youth in residential settings requires an overarching trauma-informed treatment approach or framework that is accessible enough to be taught to a variety of staff (e.g., administrators, clinicians, and residential counselors) and flexible enough to be applied across contexts (e.g., school, therapeutic, and milieu). Creating a trauma-informed therapeutic milieu that extends beyond the individual therapy hour is critical for traumatized youth who require ongoing support in their day to day interactions with the world.

## Current Project

The approach utilized to develop trauma-informed programming at the residential settings described in this paper is based on the Attachment, Self-regulation and Competency (ARC) framework (Blaustein and Kinniburgh 2010; Kinniburgh et al. 2005), an evidence based practice (EBP) recognized by the Substance Abuse and Mental Health Services Administration.



The development of the ARC framework was informed by both the available research evidence and clinical expertise in defining the core components of child complex trauma intervention, thereby qualifying it as an EBP as defined by the APA task force on evidenced based practice (Levant 2005). Complex trauma exposure has been linked to disruptions across multiple domains of development spanning attachment, biological processes, self-regulatory capacity, cognition and self-concept (Cook et al. 2005; Knoverek et al. 2013; van der Kolk 2005). These disruptions in individual development are then expressed by a range of emotional and behavioral problems including internalizing and externalizing problems (Manly et al. 2001), poor affect regulation, disrupted attention and concentration, negative self-image, lack of impulse control and increased aggression (Spinazzola et al. 2005). ARC is a framework for intervention with youth and families who have experienced complex trauma, focusing on three core domains frequently impacted among complexly traumatized youth and relevant to future resiliency: Attachment, Self-Regulation, and Competency. Within these domains, nine core targets or “building blocks” of intervention are delineated, along with a tenth target, Trauma Experience Integration, which integrates and applies key skills from the primary domains to the processing of traumatic experience (Fig. 1).

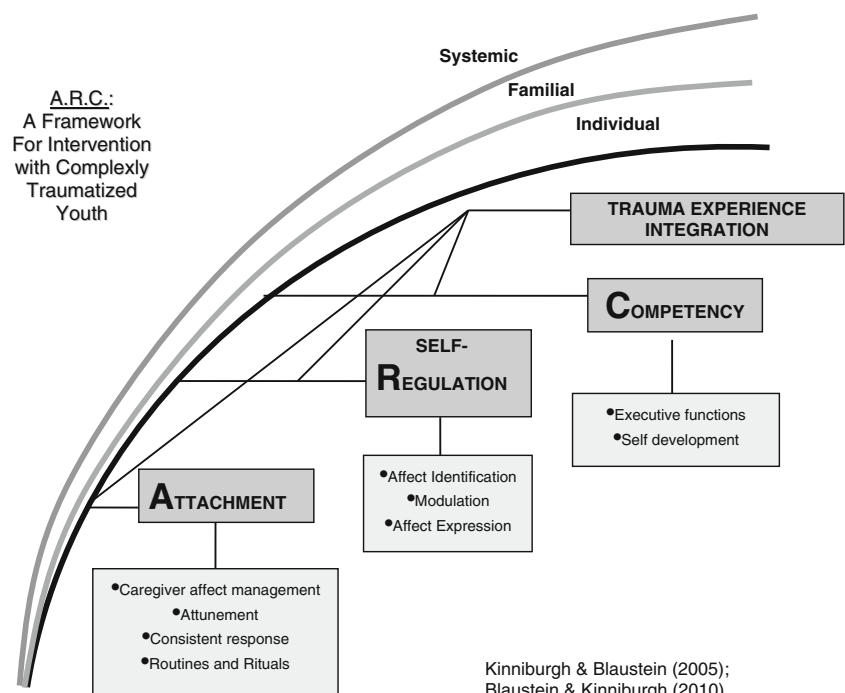
The ARC framework offers a guiding structure for providers working with trauma-impacted youth and their caregivers, while allowing significant flexibility in application (i.e. offers “flexibility within fidelity” as defined by Kendall and Beidas 2007). ARC is designed for youth ranging in age from

early childhood to young adulthood and their caregivers/caregiving systems and allows for adaptation to a particular setting, such as a residential treatment center, school, or outpatient clinic. The ARC framework has demonstrated initial empirical support via examination of program evaluation and clinical outcome data among diverse samples of trauma-impacted children and families.

An independent cross-site evaluation of the NCTSN Core Data Set (CDS) identified ARC as the second most frequently utilized treatment among a national clinical sample of children across several treatment settings who had experienced a wide range of traumatic experiences such as emotional, physical and sexual abuse, traumatic grief, exposure to domestic and community violence, and neglect (ICF International 2010). Notably, in this evaluation use of ARC over a 6-month intervention period with children ages 6 to 18 was linked to significant reductions in PTSD symptoms as well as on overall scores on the Child Behavior Checklist (CBCL; Achenbach and Rescorla 2001). Elsewhere, a program evaluation of a child welfare-involved sample of complex trauma-exposed Alaskan children ages 3 to 12 years revealed that 92 % of children completing ARC treatment achieved placement permanency compared with a less than 40 % annual permanency rate for the state overall (Arvidson et al. 2011). Further, ARC treatment completers exhibited a 17.2 drop in CBCL Total T-scores, with a marked reduction from 85th to 49th percentile in Behavioral Concerns.

Success in implementation of a trauma-informed treatment approach in residential settings requires not only an evidence

Fig. 1 The ARC framework



based framework from which to work, but also a structured implementation plan. For this project, the implementation strategy was based on the stages of implementation defined by Fixsen et al. (2005). The six stages of this model span initial exploration and adoption to long-term sustainability. During *exploration and adoption* (Stage 1), match between the needs of the system and the proposed practice or program is assessed and support for the program is established within the system. During *program installation* (Stage 2), activities needed to establish the practice within the system, including creating structural supports, are conducted before the first client receives the designated service. During *initial implementation* (Stage 3), the new practice begins within the system and adjustments are made in order to manage inertia or resistance to change encountered within the system. During *full operation* (Stage 4), new learning of the practice is integrated across all levels of the system, including practices, policies, and procedures.

Note that for this paper, the focus will remain on describing the beginning stages of applying the ARC framework in residential settings. While the full operation stage of applying ARC has been attained, its realization will be discussed in a future paper in order to have sufficient ability to describe changes in policies and procedures that occurred. During *innovation* (Stage 5), the impact and fidelity of the practice is evaluated and needed changes are identified. Finally, during *sustainability* (Stage 6), strategies to maintain the established practice are undertaken in order to anticipate, prevent or mitigate such challenges to sustainability as staff turnover, changes in funding, and emergence of new program policies. Modifications were made to these steps in order to individualize the implementation plan to accommodate aspects specific to the ARC model itself, as well as the residential systems being targeted. As such, eight steps towards implementation were identified, broadly following the stages described above.

## Stage 1: Exploration and Adoption

### Step 1: Identify Key Stakeholders

This project was funded by SAMSHA as part of the National Child Traumatic Stress Network (NCTSN) initiative. The mission of the NCTSN is to improve the quality of services provided to children and adolescents exposed to trauma. As part of this Network the Trauma Center at Justice Resource Institute (JRI) developed a proposal to adapt and implement the ARC framework to treat complex adaptations to trauma among clients in residential settings.

Two residential treatment programs in Massachusetts serving female youth ages 12 to 22 years were selected for this project, an intensive residential treatment program (IRTP) and a residential school. A significant number of youth served in

these programs were also served by the Department of Children and Families (child welfare) because of substantiated reports of abuse and neglect as well as ongoing protective concerns. In the period between January 2006 and August of 2007, more than 90 % of the children served presented with a documented history of exposure to multiple traumas in early childhood and multiple out-of-home placements because of emotional difficulties. Average length of stay across programs ranged from 6 to 9 months.

### Step 2: Conduct Trauma-Informed Needs Assessment

Both “top down” and “bottom up” approaches were used to assess the needs of each program. The top-down approach consisted of initial assessments conducted by key agency administrators in order to identify specific residential programs that demonstrated interest in and commitment to implementing trauma-informed programming. Once programs were identified, a bottom-up approach was employed, assessing needs from the perspective of clients, families (when possible), and program staff. The needs assessment process took between 3 to 6 months to complete and involved client and staff interviews as well as a thorough review of program materials (charts, policies, etc.). Key areas examined included atmosphere, physical environment, program practices and policies, consumer privacy and information, community building, assessment and service planning, services and trauma-specific interventions, and consumer representation. Programs were asked to indicate which evidence-based practice, from a list of several that were offered, would best address the needs of their clients.

The results from the needs assessment identified five core areas (environment, training, staff support & self care practices, integration of services, and milieu/program culture) that required attention in order to increase readiness for implementation of ARC, the selected intervention:

- I. **Environment.** In a trauma-informed setting, the physical environment should reflect key principals of trauma-informed programming and be a “safe space.” One key challenge identified at the IRTP was the physical plant itself which was located at a state hospital and was dark and uninviting. The environment did not feel safe let alone warm and reminiscent of a home residence. Additionally, both programs identified a need for visuals to prompt staff and clients to utilize trauma-informed skills.
- II. **Training.** Minimal access to training about the trauma-impacted populations was identified as a key challenge to effectively implementing trauma-focused interventions. The NCTSN training model, which includes didactics along with ongoing consultation to increase knowledge and competence in applying key skills, was applied in the current project. Didactic trainings were provided on: the

developmental impact of trauma, the assessment of trauma, and the trauma-informed intervention (ARC). In addition, experiential training and ongoing clinical consultation to support the application of trauma-informed interventions were also provided.

- III. **Staff Support & Self Care Practices.** Milieu staff members are exposed to critical incidents including assaults and violence, suicide attempts of varying lethality, runaway behavior, and child maltreatment, on an ongoing basis. Additionally, they often bear witness to their clients' stories. The combination of direct and indirect traumatic exposure results in milieu staff experiencing both vicarious and direct traumatic stress. Milieu staff indicated experiencing the full range of traumatic stress responses, such as nightmares and reactivity to triggers such as loud noises, certain language and sudden movements. Staff trauma responses impact staff and clients, as staff may be less able to effectively support and intervene with clients who are experienced as frightening or particularly difficult, as well as difficulty intervening with *all* clients, because of hypervigilance/hyperarousal.
- IV. **Integration of Services.** At the heart of trauma is the experience of powerlessness, helplessness, and fragmentation. A core assumption of many traumatized clients is that the world is dangerous and unpredictable. The expectation of fragmentation and unpredictability is often reinforced within daily program life by a lack of unity and consistency among staff members and the departments within a given program (administration, clinical, milieu). The programs involved in this project consistently identified a lack of integration and unity as a key challenge in serving their clients. One essential element of increasing programmatic consistency is the establishment of regular and routine forums for communication such as staff meetings or clinical team meetings that include time for client focused discussion. Another vital facet of integrated residential services involves the consolidation of a unified treatment plan for each client than enables treatment goals to be addressed out across programmatic divisions or departments though delineation of shared or department-specific therapeutic objectives that are tailored to setting (e.g., dining facilities, classroom, residential area) and context (e.g., therapy-sessions; recreational programming; transition time between program components).
- V. **Milieu/Program Culture.** Milieu intervention is often grounded in a behavioral approach to client problem behaviors, maladaptive coping mechanisms and daily living skills. Historically, milieu interventionists have been taught to understand behaviors through a medical "lens" and have been trained to extinguish behaviors. A trauma-informed system requires a shift in understanding problem behaviors, reframing "bad behavior" as adaptive

responses to adverse life events. For example, non-compliance would be viewed as a means of gaining control in the face of overwhelming powerlessness, rather than oppositionality. This approach changes the intervention strategy from punishing unwanted behavior to teaching and supporting alternative skills in order to increase a client's sense of control and mastery. In addition, it is essential that a milieu have a clearly defined structure that includes programmatic rules and expectations and associated rewards/consequences and daily routines. The structure must be explicitly stated and accessible through visual cues posted within the milieu. Core areas of need that emerged during the needs assessment were addressed in the implementation of steps three through eight, which focused on building a trauma-informed system with the capacity to support trauma-focused interventions, thereby increasing efficacy.

## Stage 2: Program Installation

### Step 3: Build an Implementation Team

Each program created a "Trauma Team" that was responsible for overseeing the implementation of ARC within their program. These Implementation Teams shared specific characteristics that ensured that key areas identified in the needs assessment were addressed. These included: 1) The team was initially facilitated by a trauma-informed consultant; 2) Meetings were organized around a general work plan or agenda that was based on the Needs Assessment and agreed upon by the trauma-informed consultant and key administrative staff; 3) A name and mission statement was developed to provide guiding principles; 4) The team members were from multiple disciplines and departments to ensure integration and overall consistency; and 5) All members of the team had an equal voice, and decision making followed a democratic process. An example mission statement comes from the team "Project Impact":

"The mission of this project is to teach youth and program staff about the impact of trauma on the clients that we serve and about how to recognize the role that trauma plays in their day to day lives in order to create a trauma informed culture that will promote positive change in the lives of traumatized youth by:

- I. **Creating** a validating environment where both staff and kids feel safe and supported;
- II. **Rebuilding** secure attachments by acting as the "caregiving system" and replacing early working models of caregivers as punitive, unavailable, and rejecting with supportive, consistent and predictable models;
- III. **Normalizing** behavioral expressions of distress as adaptations that youth make in the interest of surviving chronic life adversity;

- IV. **Replacing** “survival behaviors” with healthy tools for coping with strong emotion in order to increase an internal sense of control and decrease the need for external controls such as use of physical restraint;
- V. **Encouraging** kids to think beyond survival so that they can imagine and realize possibility in their future; and
- VI. **Believing** in the possibility of change for our clients and in our ability to contribute to the change process.”

Trauma teams were responsible for developing and carrying out interventions that specifically targeted building a trauma-informed milieu. ARC-based milieu activities were designed to parallel and support clinical group and individual intervention on multiple fronts, including initiatives such as creating psychoeducational bulletin boards in the residential common areas and classrooms, changing behavior systems, and modifying program policies.

#### Step 4: Train Program Staff on the Impact of Trauma, Assessment and Intervention

Programs implemented a program-wide trauma training, emphasizing education about trauma impact and the ARC framework for all staff including administrators, clinicians, nurses, teachers, residential counselors, and administrative support staff. The goal was to address educational needs as well as the need for all program staff to utilize a shared lens to understand client presentations and to select appropriate intervention strategies. The content of the training was co-developed by program clinical directors and the trauma consultants in order to be relevant to the program and the clients served. Therefore, training modules included, but were not limited to, the ARC framework; information and intervention strategies that were already central to programming were also included.

For example, the clinical program at the IRTP program had received previous training in a Dialectical Behavior Therapy (DBT) approach for adolescents and had been running DBT groups for a period of 5 years. Program milieu staff, however, identified concerns over their lack of understanding of DBT and specific skills that their clients were expected to utilize in their day to day functioning. Because DBT was a large part of the existing culture at this program, it was determined the training would include content that focused on selected DBT skills and their relationship to the core domains of ARC. Similarly, the training created for the residential school integrated components of the ARC model with components Child-Adult Relationship Enhancement (CARE; NCTSN 2008; Pearl 2008). The CARE model is an adaptation of Parent Child Interaction Therapy (PCIT; Eyberg et al. 1995) developed for general usage by non-clinical personnel that interact with traumatized children within milieu settings.

A key part of systems-wide training was ensuring that training was accessible for all staff. Therefore, training was divided into modules to ensure that all staff would have the opportunity to participate and that shifts would have the staffing needed to provide a safe environment for the clients. The modules focused on the developmental impact of trauma, building secure attachments, increasing self regulation and competency, and self-care and vicarious trauma. The training was both didactic and experiential, including practice of various self-regulation techniques. In order to enhance application of skills, ongoing consultation was provided to clinical and milieu staff on a weekly basis.

#### Stage 3: Initial Implementation

##### Step 5: Implement Milieu Behavioral Enhancement Initiatives

The Attachment domain of the ARC framework is designed specifically for intervention with clients and the caregiving system. Within a residential treatment facility, the primary caregivers are the milieu counselors who provide a safe environment within which the development of specific social, emotional, cognitive, and behavioral competencies is supported. Milieu behavioral enhancement initiatives focused on implementation specific goals designed to address the key principles of the Attachment domain outlined below (Table 1):

Specific goals and objectives chosen to enhance the milieu were selected by the implementation teams at each site based on the organizational needs assessment. Programs implemented key interventions that targeted enhancement of the milieu and the stability of the attachment system. The first key target focused on increasing *caregiver affect management skills* and decreasing vicarious trauma. The initial goal was to build a culture that accepted discussion about caregivers' emotional responses to clients. Administrative personnel were therefore supported in asking staff members about their emotional responses to various situations and in modeling tolerance by sharing their own experiences while interacting in various forums. This effectively began the culture to change to one of acceptance. The programs further identified the need to directly address this target with a two pronged approach: 1) Rapid response: Debriefing in the aftermath of a critical incident; and 2) Ongoing interventions.

As discussed earlier in this paper, critical incidents such as assaults, suicide attempts, and self injurious behaviors, are common occurrences in residential settings. It is also common for these incidents to be viewed as par for the course rather than as critical incidents. In the absence of this definition, milieu staff members typically rely on informal debriefings with colleagues rather than formal debriefings. The redefining of such incidents was a central focus, and formal debriefing and follow up was integrated as part of standard procedure for



**Table 1** Components of the attachment blocks of the ARC framework

<p>Caregiver affect management</p> <ul style="list-style-type: none"> <li>• Goal is to increase the caregivers' ability to recognize and regulate their own emotional experience.</li> <li>• Results in effective responses to client behaviors rather than reactive responses.</li> <li>• Emphasis is on increasing self-awareness and self-care as well as external resources.</li> </ul>	<p>Attunement</p> <ul style="list-style-type: none"> <li>• Goal is to build caregivers' ability to recognize and respond to underlying emotional needs of behaviors and symptoms.</li> <li>• Results in increased capacity of caregivers and youth to accurately read and respond to each other's cues, as well as supporting affect regulation.</li> <li>• Emphasis is on identifying youths' triggers, and trauma responses, and practicing reflective listening techniques.</li> </ul>
<p>Consistent response</p> <ul style="list-style-type: none"> <li>• Goal is to increase predictability and consistency in the youths' environment and interpersonal interactions.</li> <li>• Results in increased sensitivity of caregivers to the relationship between trauma triggers and traditional behavioral interventions (i.e., praise, limit setting, ignoring).</li> <li>• Emphasis is on teaching strategies for increasing the effectiveness of behavioral approaches with a traumatized population.</li> </ul>	<p>Routines and rituals</p> <ul style="list-style-type: none"> <li>• Goal is to develop routines around key-trouble spots for traumatized youth, such as bedtime, transitions, and activities of daily living (ADLs).</li> <li>• Results in increased predictability of daily tasks for both youth and staff.</li> <li>• Emphasis is on building reliable and realistic expectations and structure.</li> </ul>

addressing critical incidents and therefore caregiver affect management. In regards to ongoing intervention strategies, the programs implemented ongoing Wellness initiatives to improve the overall physical and emotional health of program staff. Examples of initiatives designed to improve overall physical and mental health included weight loss programs ("The Biggest Loser" contest), smoking cessation, healthy eating, lunch breaks, and exercise groups.

To increase *attunement*, all program staff participated in the training described under Step four. Staff learned to identify client triggers and trauma responses and to practice two key skills: 1) Reflective listening skills; and 2) Supporting youth self-regulation. For example, in order to support self-regulation within the milieu, one program created "the comfort zone" on the unit. This space was designed to be used by clients (with the support of staff) to practice various up- and down-regulation skills including the use of movement, deep pressure, breathing, and a range of other techniques. Staff members were trained to identify and facilitate the use of these strategies in order to address the specific needs of each client.

For example, if a client report feeling "keyed up," a staff would support the client in the use of down regulation skills, or strategies to decrease arousal, such as the use of deep pressure. Conversely, if a client appeared withdrawn, they would be encouraged to practice an up regulation strategy,

or skills to support re-engagement such as a rhythmic, interactive activity like throwing a ball back and forth. Staff members were trained in how to help clients understand why they might select a particular strategy given their current arousal state. This was reinforced by: 1) providing visual cues (posters) throughout the unit to prompt the use of various skills, 2) use of laminate cards listing skills so they could keep a record of skills with them to utilize at any time, and 3) integration of the skills in developing process sheets for clients to complete with staff.

To increase *consistent responses* to problematic risk behaviors as well as positive behaviors, programs created specific initiatives to increase the use of praise and effective communication skills (e.g., avoiding negative statements, strategic ignoring, and giving good commands). For example, one program created an "On Track Action" wall which was implemented on a weekly basis to reinforce positive steps that each client could take toward a specific individual goal. The goal of the wall was to provide clients with weekly and monthly incentives for positive behaviors and to provide staff members with a systematic tool for consistently giving praise. Another program developed goals for staff members focused on the use of praise and effective communication skills. Specifically, staff members encouraged each other's use of skills by providing reinforcement (giving a fellow staff member a chip) when they observed a skill being used with a client. At the end of a 2-week period, the staff with the most chips was recognized in staff meeting and also earned an incentive.

#### Step 6: Implement Evidence Based Practice—Individual and Group Treatment

In this section we describe ARC individual and group treatment adaptations, which varied by program. At the IRTP, specific clients were selected by their clinicians to participate in ARC individual treatment. Those cases were reviewed in ongoing consultation with the program consultant and fidelity was tracked using the ARC session checklist. There were specific components of ARC that all individual ARC clients received. For example, clinicians implemented an explicit ritual with regulation strategies practiced at the beginning and end of session. Additionally, all ARC individual clients received psychoeducation about triggers and the trauma response. Specific treatment targets within the framework were selected based on individualized assessment of client needs.

In addition, a group of clients at the IRTP who had a history of successful participation in group treatment were selected for an ARC group. Eligible clients were asked to voluntarily participate and therefore self-selected into the treatment. The ARC group, named "Grow Strong" was a 16 session group that addressed the impact of prolonged early childhood trauma on female adolescents. The group was developed by the trauma consultant and the clinical director and included

components of DBT in order to reinforce skills already learned by many of the group members. The group was co-facilitated by the trauma consultant and clinical director. In the interest of sustainability, all clinical staff members were trained to lead the group through participation in a staff version of the group itself.

Each ARC group followed a structure with the following components presented in a specific order: 1) self-regulation exercise, 2) self-appraisal and rating of physiological/emotional response to the exercise, 3) snack, 4) homework review, 5) psychoeducation about a specific ARC skill, and 6) self-regulation exercise followed by self-appraisal and rating of emotional response. Self-regulation exercises were incorporated into all sessions of the group, offering repetitive experiential practice of regulation skills and self-appraisal. In addition, homework was an integral part of each group to support ongoing practice and generalization of skills to the milieu and community settings. Milieu counselors were provided with information about the content of the group and homework assignments in order to support group members in successfully implementing specific skills as part of their homework expectation.

A similar approach was implemented at the residential school with both individual and group programming, named "Stepping Stones," incorporating techniques, psychoeducation, and activities from several treatment models including ARC, Structured Psychotherapy for Adolescents Responding to Chronic Stress (SPARCS; DeRosa et al. 2005; Habib et al. 2013), and Urban Improv-Intensive Protocol for Middle School Children Exposed to Trauma and Violence (Zucker et al. 2006). Group and individual programming was developed by the trauma consultant and clinical director. All clinical staff at each program were trained in both the group and individual Stepping Stones curriculum (described below) and received ongoing weekly consultation from the trauma consultant.

As in the IRTP, clients were deemed eligible for the group based on a history of successful participation in group treatment and were asked to voluntarily participate (i.e., were self-selected into the treatment). Stepping Stones was a 22 session group designed for complexly traumatized adolescent females. Each group session had specific components including: 1) initial check in and self-appraisal rating of distress and control, 2) mindfulness activity, 3) snack, 4) review of prior week, 5) psychoeducation/content, 6) experiential activity, 7) sharing of progress with personal goal, 8) homework review, and 9) ending self-appraisal using same distress/control scale as used at the start of group. Stepping Stones addressed self-regulation, cooperative relational engagement, and competency building skills in each session, offering repetitive experiential practice of skills, techniques, and activities. Core concepts covered during the 22 weeks included: trust; boundaries; affect identification, modulation and expression; understanding triggers; effective coping; identity; communication; problem solving; and goal

setting. Homework was also an integral part of each group, to support ongoing practice and generalization of the skill to the milieu and community settings as well as the integration of several community building activities that were implemented in milieu setting.

Clients who participated in the Stepping Stones group also received the Stepping Stones individual intervention. Following every group session, each client would meet with his or her individual therapist for a 1-h session focused on the components of the group. Each session had a specific structure, starting with a feelings check-in, mindfulness activity, goal activity from the session (client could choose from a group of activities, all of which would be covered throughout the course of the treatment), and ending with a grounding exercise and review of the session. The individual Stepping Stones component relies heavily on the ARC domains of attachment, self-regulation, and competency. The overall principles of the individual component include: being developmentally tailored, self-enhancement focused, integrates consistent response and routines and rituals, and co-regulation of affective states.

## Stage 5: Innovation

### Step 7: Evaluate Outcomes

Program evaluation data were derived from secondary chart review of routine clinical quality improvement data, reflecting a naturalistic study design. Primary outcome measures were assessed every 3 months by the core data set (CDS) of the National Child Traumatic Stress Network (NCTSN). The CDS contains data collected between 2004 and 2010 on 14,088 children from 56 participating NCTSN centers on youth served, treatments received, and outcomes (Briggs et al. 2012a, b; Pynoos et al. 2008). Information collected in the CDS includes demographics, placement history, family characteristics, service use, trauma exposure, functioning, and standardized assessments of emotional/behavioral problems.

*Study Sample* For the present study, primary hypotheses were tested on a subsample of youth in the CDS ( $N=126$  females) who received services at one of the two residential centers described above.

*Measures* The Child Behavior Checklist (CBCL; Achenbach and Rescorla 2001) is a parent or caregiver report, consisting of 118 items scored on a 3-point scale ranging from 0 (not true) to 2 (often true). The CBCL yields scores on two broad band scales (Internalizing and Externalizing), as well as scores on DSM-IV oriented scales and empirically based syndrome scales that reflect emotional and behavioral problems and symptoms. The CBCL has sound psychometric properties

**Table 2** Descriptive information across sites

Total N	126
Characteristic	
Age, M (SD, min–max)	16.1 (1.3, 12.7–19.8)
Ethnicity, N (%)	
Hispanic or Latino	22 (18)
Not Hispanic or Latino	97 (77)
Unknown	7 (5)
Race, N (%)	
White	87 (69)
Black	19 (15)
Asian	1 (1)
Indian	1 (1)
Unknown	18 (14)
No. traumas (definitive), M (SD, min–max)	6.2 (2.99, 1–14)
No. traumas (probable), M (SD, min–max)	7.1 (2.5, 2–12)
No. of years trauma endorsed M (SD, min–max)	11.2 (5.4, 0–19)

with respect to reliability and validity across racially and ethnically diverse samples.

The UCLA PTSD Reaction Index (PTSD-RI; Steinberg et al. 2004) measures exposure to traumatic events and PTSD symptoms in youth, assessing the frequency of PTSD symptoms during the past month, rated from 0 (none of the time) to 4 (most of the time). The items map directly onto the DSM-IV criterion B (intrusion), criterion C (avoidance), and criterion D (arousal) symptoms for PTSD. Twenty items directly assess PTSD symptoms, whereas two items assess

associated features: fear of recurrence and trauma-related guilt. Scoring algorithms permit tabulation of total PTSD-RI total score, and B, C, and D symptom subscale scores. Psychometric properties are robust and have been previously described (Steinberg et al. 2013).

*Behavioral Data* Additionally, at the program level, the overall volume of physical restraints performed on youth was tracked at both sites across the course of the project.

*Data Analytic Approach* Multilevel regression analyses (i.e., random-effects regression) were conducted to examine changes in the outcome variables from the baseline assessment through the first three follow-up assessments (e. g., Singer and Willett 2003) using the software program Hierarchical Linear and Non-linear modeling (HLM6; Raudenbush et al. 2005) with full maximum likelihood estimation. The most notable advantage of this powerful analytic framework over more traditional approaches to examining change over time, such as a repeated measures analysis of variance (ANOVA), is its efficacy in dealing with unbalanced data structures. Participants only need to have data at one assessment occasion to be included in the analyses (i.e., listwise exclusion of a participant is used if they are missing data at one or more assessment occasion). Other advantages include powerful and accurate estimation procedures and increased flexibility allowing for the inclusion of a variety of predictors and covariates (e.g., time varying or time invariant, categorical or continuous). Dummy-coded variables were used to model change over time in the outcomes, and the time effects were modeled as fixed-effects. This method of modeling time sets up an analysis that is analogous to repeated measures ANOVA conducted in a multilevel regression framework.

**Table 3** Descriptive information for the PTSD reaction index across assessment occasion and summary of analyses

Outcome	N	Time effect R <sup>2</sup>	Baseline		Follow up 1		Follow up 2		Follow up 3		Maximum decrease	
			M	T-score (SD)	M	T-score (SD)	M	T-score (SD)	M	T-score (SD)	Value	%
PTSD overall (n)				(101)		(69)		(43)		(24)		
	107	0.06*	33.22	(14.61) <sup>a</sup>	29.46	(13.79) <sup>b</sup>	29.67	(16.46) <sup>b</sup>	29.53	(19.85)	3.77	11.3
PTSD crit B raw-score				(5.79) <sup>a</sup>		(5.01) <sup>b</sup>		(6.89) <sup>b</sup>		(6.07) <sup>b</sup>		
	107	0.09*	9.66	(5.79) <sup>a</sup>	8.13	(5.01) <sup>b</sup>	8.03	(6.89) <sup>b</sup>	7.54	(6.07) <sup>b</sup>	2.13	22.0
PTSD crit C raw-score				(5.99)		(6.67)		(7.87)		(11.61)		
	107	0.04	12.56	(5.99)	11.60	(6.67)	11.05	(7.87)	10.92	(11.61)	1.64	13.1
PTSD crit D raw-score				(4.54) <sup>a</sup>		(4.75) <sup>b</sup>		(5.52) <sup>a</sup>		(6.09) <sup>a</sup>		
	107	0.05*	10.98	(4.54) <sup>a</sup>	9.69	(4.75) <sup>b</sup>	10.54	(5.52) <sup>a</sup>	11.25	(6.09) <sup>a</sup>	1.29	11.7

\**p* < .05; superscripts a and b denote statistically significant difference between time points

R<sup>2</sup> values of .01, .06, and .16 are commonly used to indicate small, medium, and large effect sizes, respectively

(n) indicates the sample size of each outcome measure at each assessment occasion (only presented for the first scale/subscale of each measure)

**Table 4** Descriptive information for the CBCL across assessment occasion and summary of analyses

Outcome	N	Time effect R <sup>2</sup>	Baseline M (SD)		Follow up 1 M (SD)		Follow up 2 M (SD)		Follow up 3 M (SD)		Maximum decrease	
			Value	%	Value	%	Value	%	Value	%	Value	%
CBCL aggressive behavior T (n)			(121)		(95)		(55)		(31)			
	124	0.06*	65.41	(8.91) <sup>a</sup>	62.61	(8.37) <sup>b</sup>	62.35	(12.84) <sup>b</sup>	64.16	(17.70)	3.06	4.7
CBCL anxious depressed T												
	124	0.09*	68.38	(11.04) <sup>a</sup>	66.23	(10.94) <sup>b</sup>	63.54	(13.59) <sup>c</sup>	64.18	(16.66) <sup>b</sup>	4.84	7.1
CBCL attention problems T												
	124	0.05*	65.03	(9.31) <sup>a</sup>	62.95	(10.72) <sup>b</sup>	62.56	(12.52) <sup>b</sup>	65.30	(17.22) <sup>a</sup>	2.48	3.8
CBCL externalizing behavior T												
	124	0.13*	65.43	(7.57) <sup>a</sup>	61.85	(8.74) <sup>b</sup>	60.87	(11.79) <sup>b</sup>	61.48	(15.24) <sup>b</sup>	4.56	7.0
CBCL internalizing behavior T												
	124	0.11*	66.85	(7.83) <sup>a</sup>	64.28	(10.05) <sup>b</sup>	62.17	(11.32) <sup>b</sup>	63.55	(12.21) <sup>b</sup>	4.68	7.0
CBCL rule breaking T												
	124	0.19*	64.76	(7.68) <sup>a</sup>	60.79	(7.77) <sup>b</sup>	59.39	(9.29) <sup>b</sup>	59.60	(12.07) <sup>b</sup>	5.38	8.3
CBCL somatic complaints T												
	124	0.06*	60.46	(8.34) <sup>a</sup>	57.59	(8.70) <sup>b</sup>	57.33	(9.17) <sup>b</sup>	59.00	(12.25)	3.13	5.2
CBCL social problems T												
	124	0.04	64.78	(8.86)	63.83	(9.09)	62.19	(9.31)	62.38	(12.50)	2.59	4.0
CBCL thought problems T												
	124	0.20*	66.26	(8.27) <sup>a</sup>	62.83	(9.28) <sup>b</sup>	59.85	(11.57) <sup>c</sup>	59.36	(12.67) <sup>c</sup>	6.91	10.4
CBCL total T												
	124	0.14*	67.49	(5.95) <sup>a</sup>	64.24	(8.77) <sup>b</sup>	63.02	(9.32) <sup>b</sup>	63.95	(11.95) <sup>b</sup>	4.46	6.6
CBCL withdrawn/depressed T												
	124	0.10*	66.30	(9.51) <sup>a</sup>	64.82	(10.52) <sup>a</sup>	61.67	(12.41) <sup>b</sup>	62.24	(11.85) <sup>b</sup>	4.63	7.0

\**p* < .05; superscripts a, b, and c denote statistically significant difference between time points

R<sup>2</sup> values of .01, .06, and .16 are commonly used to indicate small, medium, and large effect sizes, respectively

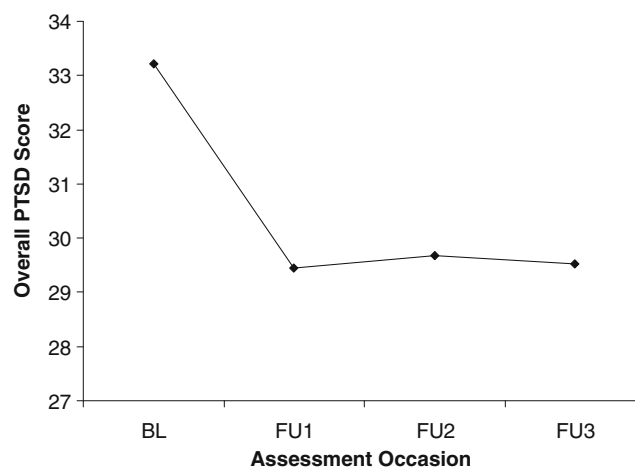
T indicates T-score, (n) indicates the sample size each outcome measure at each assessment occasion (only presented for the first scale/subscale of each measure)

**Results** Table 2 provides demographic information as well as a summary of the trauma history of participants. All participants experienced at least one trauma at some point in their lives.

Tables 3 and 4 summarize the results of the analyses examining change over time in the outcome variables, and Figs. 2 and 3 visually depict these changes for two representative outcomes (Overall PTSD score and CBCL Thought problems subscale). The majority of outcome variables (13 out of 15) demonstrated statistically significant change over time, with effect size estimates (i.e., R<sup>2</sup>) indicating that the largest change over time occurred in the Thought Problems and Rule Breaking subscales of the CBCL. Statistically significant changes in the Overall PTSD scale, as well as the criteria B (reexperiencing symptoms) and criteria D (hyperarousal symptoms), but not criteria C (avoidance and numbing symptoms), were observed.

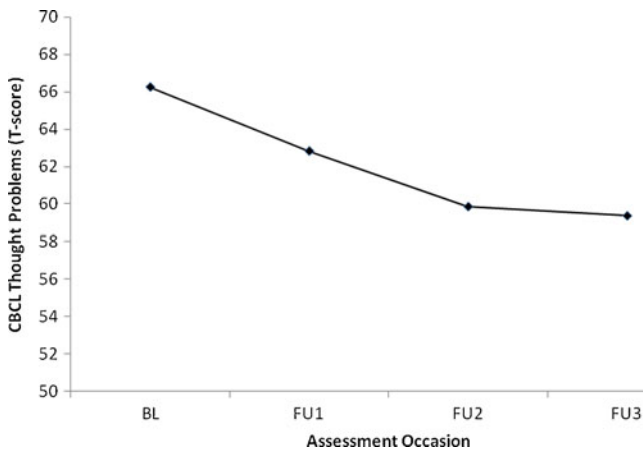
For variables exhibiting statistically significant change over time, several patterns emerged. For all outcomes, there was a significant decrease from the baseline to the first follow-up period. The most common pattern consisted of the significant

decrease between the baseline assessment and the first follow-up assessment with no further changes across the follow-up assessments (i.e., the initial decrease was maintained; e.g., overall PTSD, see Fig. 2). The second pattern of change only



**Fig. 2** Change over time in overall PTSD score





**Fig. 3** Change over time in CBCL Thought Problems Subscale

emerged for the CBCL Anxious-Depressed and Thought Problems subscales (see Fig. 3). For these two measures, the initial decrease continued through the second follow-up assessment and leveled off (but maintained) by the third follow-up assessment.

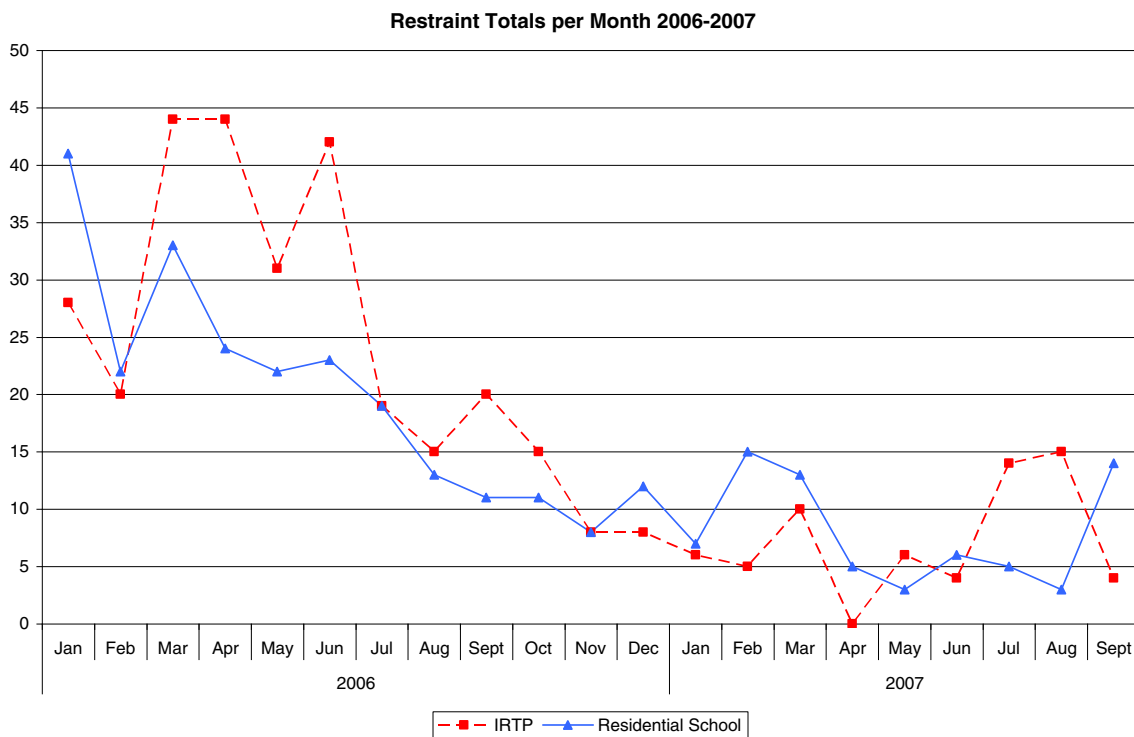
Finally, restraint utilization was examined in both programs. Over the course of the intervention period, significant decreases in the number of restraints used per month were observed for both programs (see Fig. 4). The residential programs demonstrated an average 54 % reduction in restraints during the project period, in comparison with a 20 % increase in restraint use among other residential programs

administered by the same organization that did not receive the ARC intervention (see Fig. 5). Although neither of these programs specifically targeted restraint reduction, both programs incorporated components of the ARC framework focused on increasing staff attunement and training; increasing staff capacity to support youth modulation; and increasing youth affect identification, modulation, and expression skills.

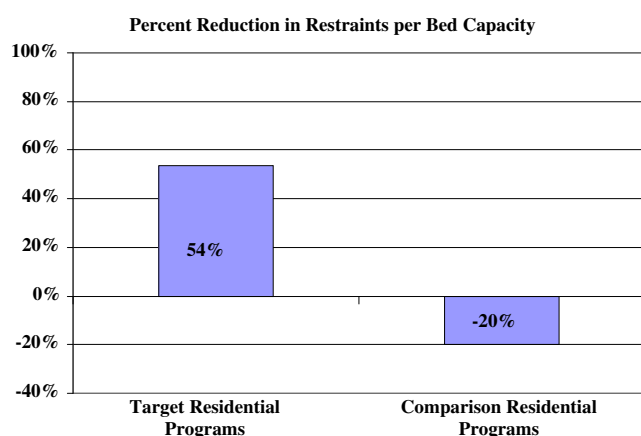
**Stage 6: Sustainability**

**Step 8: Sustain Trauma Informed Services**

Four key areas were identified as crucial to sustaining trauma informed services: 1) trauma team leadership and focus; 2) policy and procedure; 3) orientation and ongoing training; and 4) ongoing evaluation. First, there must be leadership to continue to emphasize the importance of maintaining trauma-informed programming. Toward this end, in the current project, prior to completing time on site, the trauma consultants and team participants selected a new facilitator to lead the trauma teams. The new facilitator identified new staff members to join the team (when applicable) and developed an agenda and work plan with an emphasis on sustainability of current practices. Trauma teams continued to meet on a bi-weekly basis to monitor sustainability and to develop new trauma-informed programming.



**Fig. 4** Number of restraints utilized per month across programs over the study period



**Fig. 5** Average reduction in restraint use across study period

Second, policies and procedures were modified to incorporate trauma-informed language. For example, one program changed their mission statement in order to incorporate both the acknowledgement of the impact of trauma on their clients and the importance of providing trauma-focused treatment. A number of procedural changes occurred including changes to program paperwork, such as master treatment plans, processing forms, and safety plans. Third, a “train the trainer” model was implemented at all the programs to ensure that the trauma training occurs for both new staff members and on an ongoing basis. The programs include trauma training in their orientation process and the language of trauma triggers and the danger response was incorporated into other state mandated trainings.

In order to reinforce the information learned during orientation, “refresher” trainings are conducted on a monthly basis. In addition to training, each program identified ongoing supervision for all staff members as a need and a future goal. The ability to use supervision as a critical forum for training continues to be a challenge for programs because of limited resources. Fourth, programs continue to administer measures of the CDS in order to engage in ongoing evaluation of the effectiveness of ARC individual and group treatment.

## Summary and Conclusions

This project examined the feasibility, utility and efficacy of applying an evidence-based, trauma-informed treatment framework, ARC, in residential treatment settings serving female youth with histories of complex childhood trauma. The ARC framework was integrated across both clinical and milieu programming in order to maximize the impact of the intervention by providing a consistent therapeutic environment for youth that extended beyond the individual therapy hour. System-wide training and long-term sustainability were a major focus of this project, as one of the primary goals was to ensure program-wide changes that could be maintained over time.

Preliminary findings were encouraging. Youth at the two targeted programs demonstrated a significant decrease in trauma-related symptoms over the course of the project period. Notably, youth receiving the ARC intervention evinced a significant decrease in their overall level of PTSD symptoms, driven by decreases in their Criterion B (reexperiencing) and D (hyperarousal) symptoms. Youth also displayed decreases in aggressive behaviors, attention problems, rule breaking behaviors, anxiety, depression, thought problems, and somatic complaints over the course of the project period, as measured by the CBCL.

Although the decline in PTSD, externalizing and internalizing symptoms were statistically significant, from a clinical perspective the overall degree of change was modest. This is likely as a result of two factors. First, the project was a naturalistic outcome evaluation, rather than an experimental study with tight controls on adherence to the ARC model. Second, the ARC individual, group, and milieu interventions were not universally employed across all clients at both programs. One site did not include ARC-focused individual treatment, but had the group and milieu interventions only. The second site had both individual and group ARC interventions, but only for a subset of students, although all students received the milieu based intervention. Had more stringent fidelity monitoring been employed and the individual and group ARC interventions had been made available to all students, one would expect more substantial clinical change.

In addition to the modest degree of clinical change observed in overall PTSD symptoms, there was no apparent impact on Criterion C (avoidance and numbing) PTSD symptoms. In light of the limitations to the current application of the ARC framework noted above, differences in subscale change of the PTSD Reaction Index should be considered provisional. Moreover, as a primary focus of the ARC framework is on self-regulation strategies, entailing the application of concrete skills, strategies, and techniques that are readily transferable to and assimilated by non-clinical milieu staff, it makes sense that reductions in the domains of reexperiencing and hyperarousal PTSD symptoms would be observed first. In addition, Criterion C symptoms, specifically numbing, are thought to be the most recalcitrant of those seen in PTSD (Asmundson et al. 2004) and would likely be difficult to address in a milieu based intervention.

One of the most notable findings from this study was the significant reduction in the use of restraints across both programs. Over the first 6 months of the project period, both programs displayed a 50 % reduction in restraint use and this downward pattern continued until the end of the project period. Restraint reduction was not an initial focus of this project, but it became apparent over the course of the project period that both programs were displaying drastic reductions in the use of physical management with youth.

There are several potential explanations for this observation. First and most obviously, is that the reduction in aggressive and rule-breaking behavior among study youth translated to a reduced need for the use of restraint. A second, complementary, interpretation is the training and utilization of skills from the attachment blocks of the ARC intervention, namely Caregiver Affect Management and Attunement, impacted the way that staff interpreted and reacted to youth behaviors. Providing venues for staff to seek and receive appropriate supports, such as through the implementation of incident debriefings, may have helped to shift the culture reflecting an underlying belief that staff members should be “tough” and invulnerable to emotions elicited during challenging interactions with their clients. Although we did not systematically measure changes in the residential counselors’ attitudes toward youth or ability to manage their own affect in the face of problematic or triggering behaviors, anecdotal observations by residential supervisors and program directors suggested that over the course of this initiative many residential staff members demonstrated improved capacity to effectively intervene with escalated youth and use therapeutic techniques to manage behaviors before resorting to physical management.

Among numerous future avenues for exploration, two major directions for subsequent research seem particularly worthy of note. The first is to study the impact of trauma-informed and trauma-focused training and education on program operation and “culture,” including upon residential program personnel members’ knowledge about traumatic stress, attitudes toward youth behaviors exhibited by trauma-impacted youth, and skill level for managing youth behaviors associated with symptoms of traumatic stress and reactivity to reminders of traumatic experiences. Changes in the knowledge, attitudes and therapeutic skill level of residential providers are potentially critical mediators of the observed positive effects of child trauma-focused interventions on youth symptoms, impairment and associated controversial staffing practices (e.g., use of physical restraint and seclusion). A second important future direction will be to conduct systematic treatment outcome research designed to evaluate the feasibility, acceptability, flexibility, efficacy and effectiveness of the ARC model as compared with, respectively, other established child trauma intervention modalities as well as prevailing intervention regimens routinely used in residential treatment settings.

**Acknowledgments** This project was funded in part by grant number 5U79SMO56175 from the Center for Mental Health Services, Substance Abuse and Mental Health Services Administration, U.S. Department of Health and Human Services. The authors thank the National Child Traumatic Stress Network’s Core Data Set team at Duke Clinical Research Institute for their seminal work in developing the database from which data for the present study were drawn; Johanna Greeson and Ernestine Briggs from the National Center for Child Traumatic Stress at Duke University for assistance with data coding and extraction; and Dr. Michael Suvak for assistance with statistical analyses and consultation. We acknowledge the staff of Glenhaven Academy, Cohannet Academy,

Walden Street School and the Susan Wayne Center for their collaboration in developing, implementing, evaluating and refining trauma-focused residential programming for youth impacted by complex trauma. We express our special gratitude to Kari Beserra, Douglas Brooks, Liz Carrigan, Mia DeMarco, Stacey Forrest, Rick Granahan, Brian Lary, Jenn Miguel, Sean Rose, and above all to Andrew Pond, for their unwavering openness, ingenuity, insight, and perseverance in partnering with us to advance trauma-focused residential systems of care.

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