



Dyadic and systemic trauma-informed care in adolescent residential settings: A systematic review of outcomes for staff, youth, and relationships

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ABSTRACT

Objective: This systematic review evaluated the effectiveness of dyadic and systemic approaches to trauma-informed care (TIC). The study aimed to identify TIC-based models in adolescent residential care and evaluate their effects on staff development, youth well-being, and the quality of staff–youth relationships.

Participants and setting: The studies focused on adolescents aged 10–19 years in residential care settings and the staff responsible for their direct care.

Methods: Following PRISMA 2020 guidelines, a comprehensive search across 12 databases and two registers yielded 19 eligible studies. These studies were appraised using the Mixed Methods Appraisal Tool (MMAT).

Results: Findings suggest modest but promising effects of trauma-informed care (TIC) interventions on staff development, youth well-being, and adult–youth relationships. Interventions that integrated dyadic strategies (e.g., emotional attunement, reflective functioning) with systemic support (e.g., supervision, organizational coherence) showed the most consistent improvements. However, methodological quality was generally low, and only higher-quality studies demonstrated sustained outcomes.

Conclusions: This review supports a shift toward relationship-centered practice models that align daily care with organizational coherence and reflective structures. While promising patterns are evident, more robust, theory-driven research is needed to clarify mechanisms and long-term impacts across diverse residential care settings.

1. Introduction

Most children and adolescents feel safe and supported in their everyday family interactions. However, others face serious challenges such as neglect or abuse, which may result in the need for out-of-home care. *Residential care* refers to structured, out-of-home placements for children and adolescents who are unable to live safely with their families. These settings typically provide 24/7 care by trained staff and are designed to address the complex developmental and psychological needs of youth, many of whom have experienced multiple forms of adversity. Although models and regulations vary internationally, residential care commonly includes therapeutic, educational, and social components to support recovery and development.

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Trauma-informed care (TIC) is an organizational framework that acknowledges the pervasive effects of trauma and seeks to integrate this understanding into all aspects of service delivery. Its core principles include ensuring physical, psychological, and emotional safety, fostering empowerment, and building relational trust (SAMHSA, 2014). In residential care settings, TIC aims to mitigate the effects of trauma on young people.

Adolescents in residential care often have complex trauma histories (Baker et al., 2017), which may result in long-term developmental consequences, including neurobiological changes (Wan et al., 2022), as well as elevated risks for mental health disorders and substance use (Allen et al., 2021). Their overall developmental, social and mental health outcomes are concerning (González-García et al., 2023), with difficulties frequently persisting into adulthood (Bhargava et al., 2018). Staff working with this population may face relational challenges, especially when adolescents display intense emotional reactions and challenging behaviors. Without trauma-informed awareness and relational sensitivity, staff responses can unintentionally exacerbate youth distress. Furthermore, residential care workers are at risk of vicarious trauma and burnout themselves (Ireland et al., 2022), highlighting the need for reflective and supportive work environments (Van Ijzendoorn et al., 2020).

Within trauma-informed residential care, two core approaches can be distinguished: *dyadic* and *systemic*. Dyadic approaches emphasize the healing potential of the relational bond between youth and caregivers, focusing on trust, attunement, and attachment (Morais et al., 2023). Systemic approaches extend this focus to include organizational culture, leadership, staffing, supervision structures, and interprofessional networks (Whittaker et al., 2015), aiming to embed trauma-informed principles into every level of the care system.

1.1. Core dyadic concepts relevant for staff development, youth well-being, and relationships in residential settings

Attachment theory (Ainsworth et al., 1978; Bowlby, 1969) provides a framework for understanding how early relationships shape children's later emotional bonds and socio-emotional development. In residential care, secure attachment relationships with direct care staff have traditionally been viewed as a foundation for relational healing (Harder et al., 2013). However, youth with attachment-related trauma often face difficulties forming or utilizing secure relationships (Muzi & Pace, 2022). A meta-analysis suggests that over half of children in institutional care display disorganized attachment patterns (Lionetti et al., 2015), which are linked to developmental risks such as dissociation and borderline personality development (Liotti, 2004). Thus, trauma-informed dyadic models aim to repair these developmental injuries by enhancing the emotional availability and attunement of adult caregivers. Equally central to dyadic care is the concept of mentalization, or reflective functioning (RF), which enables individuals to interpret their own and others' behavior in terms of mental states (Fonagy et al., 2016). In caregivers, strong RF has been associated with improvements in youth attachment, social cognition, and emotion regulation (Forbes et al., 2021). Strengthening staff members' reflective capacities not only improves the quality of adult–youth relationships but also supports staff well-being and emotional regulation, key factors in reducing burnout and promoting stable caregiving. The emotional quality of the caregiver–youth relationship is therefore not only a protective factor but a mechanism for promoting developmental resilience (Santos et al., 2023), positioning dyadic processes as central to TIC's impact on both staff and youth outcomes.

1.2. Core system-level approaches relevant for staff development, youth well-being, and relationships in residential settings

Systemic trauma-informed care approaches embed trauma awareness and relational safety into organizational routines, policies, and cultures. In contrast to individual-focused interventions, these models aim to transform entire systems to reduce practices that may inadvertently retraumatize youth (Whittaker et al., 2016). By doing so, they can mitigate toxic stress (Anda et al., 2010), enhance youth resilience (Fratto, 2016), and reduce the use of coercive measures (Kelly et al., 2016). Moreover, these system-level changes contribute to staff development by promoting shared values, supervision structures, and consistency in trauma-informed practices.

Therapeutic and dialogical care models represent particularly promising systemic applications of TIC in residential settings. These approaches integrate families and external networks, promote relational learning, and emphasize participation and transparency (Assouline & Attar-Schwartz, 2020; Whittaker et al., 2016). A dialogical orientation fosters joint meaning-making and shared reflection between youth and staff, aligning with trauma-informed principles while offering supportive structures for emotionally sustainable caregiving (Whittaker et al., 2015). These frameworks not only support the development of trustworthy staff–youth relationships but also improve organizational coherence and staff resilience, which are essential for maintaining emotionally safe environments for youth recovery.

1.3. Prior reviews and rationale for the present study

Prior reviews and meta-analyses have underscored the importance of systemic and organizational factors in adolescent residential care, suggesting that trauma-informed care (TIC) is the most effective when supported by leadership engagement, staff training, and organizational alignment (Bryson et al., 2017; Kim et al., 2019; Purtle, 2020). At the same time, dyadic factors including relational attunement and empathy-based participatory models have been highlighted as key mechanisms linking TIC to youth recovery and developmental change (Bath, 2008; Bryson et al., 2017; Bunting et al., 2019; Castro et al., 2023; Santos et al., 2023). However, their impact on staff outcomes is less understood (Zhang et al., 2021).

Despite the centrality of both dyadic and systemic components in trauma-informed residential care, their comparative effects and potential integration have not been systematically reviewed. Our study addresses this gap by synthesizing evidence from dyadic, systemic, and integrated TIC models incorporating attachment theory, reflective functioning, and dialogical/therapeutic practices, and

examining their reported impact on three domains: staff development, youth well-being, and staff–youth relational quality.

2. Methods

This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines (Page et al., 2021). The study protocol was pre-registered in the International Prospective Register of Systematic Reviews (PROSPERO). The registration number is withheld to preserve anonymity during peer review.

2.1. Search strategy and study selection

Eligible studies met the following criteria (Table 1): (a) they focused on trauma-informed care (TIC), attachment-, mentalizing/reflective functioning (RF)-based, or therapeutic/dialogical models in adolescent long-term residential care settings; (b) included a measure of effectiveness or a pre–post follow-up design; (c) were published in English; and (d) included participants aged 10–19 years currently placed in professional long-term residential care within child protection services and/or their professional caregivers. No restrictions on publication date or geographic location were made. Both published and unpublished (grey) literature was included. English was chosen for resource constraints and language proficiency of the raters.

Systematic searches were conducted across the following databases: PsycINFO, MEDLINE, PubMed, Scopus, Web of Science, PsycArticles, EBSCO, ProQuest, ERIC, CINAHL, EBM Reviews, Cochrane Reviews, PROSPERO, and Epistemonikos. Reference lists of all included studies and relevant reviews were hand-searched to identify additional literature. Search queries were developed in consultation with two external experts in trauma-informed care (names removed for anonymity).

The search was initially performed on August 31, 2023. Search was updated twice on July 31, 2024, and June 16, 2025, to ensure coverage of recent publications. No automated filters were applied. A full description of the search terms, Boolean combinations, and grey literature sources is provided in Supplementary Material Appendix 1.

A total of 11,230 records were initially identified. All records were uploaded to the Rayyan web tool (Ouzzani et al., 2016). Rayyan is a web-based application developed to support systematic review workflows by streamlining the title, abstract, and citation screening process. It allows blinding, independent screening by multiple reviewers and offers features such as keyword highlighting, tagging, and real-time conflict resolution. The platform enhances transparency and efficiency by enabling reviewers to mark inclusions, exclusions, and undecided records, while also documenting decision justifications and facilitating consensus discussions. A detailed PRISMA flow chart documenting the selection process, including reasons for full-text exclusions, is presented in Fig. 1. After removing duplicates, the first and the last author independently screened all titles and abstracts. Full texts of potentially eligible articles were then reviewed, and inclusion decisions were made through discussion. Disagreements were resolved through negotiation. After removing duplicates ($n = 3772$), 7458 records were screened by title and abstract, of which 57 were selected for full-text screening. Through the citation search, 44 additional full-text papers were identified.

2.2. Data extraction and quality appraisal

Data extraction was carried out independently by three authors using a structured form based on the study's aims. To enhance reliability, all stages of extraction and appraisal were conducted collaboratively by the same three reviewers. Although our preregistered protocol included systematic reviews and meta-analyses, we excluded these from the outcome synthesis due to their limited analytical contribution to the core research questions. For transparency, the synthesis of previous systematic reviews and meta-analyses as well as their quality assessment are presented in Appendix 2.

All intervention studies were appraised using the Mixed Methods Appraisal Tool (MMAT, version 2018; Hong et al., 2018), which enables parallel quality assessment across qualitative, quantitative, and mixed-methods studies. The MMAT is specifically designed for systematic reviews including diverse methodological designs and has demonstrated acceptable content validity, reliability, and efficiency in evaluating methodological quality (Hong et al., 2018). Its structured criteria support transparent and consistent appraisal, particularly valuable in reviews synthesizing evidence from heterogeneous study types.

Table 1
Search terms for systematic review.

Concept	Search terms (truncated and full)
Core concepts	Attachment*, trauma*, mentali*, dialog*, interact*, relation*, therapeutic*, trauma informed, attachment based
Orientation	Inform*, base*, focus*
Type of approach	Intervention*, program*, practice*, procedure*, method*, model*, service*, train*, counselling model
Care setting	Resident*, substitute*, congregate*, institution*, foster*, out-of-home*, trauma informed residential care
Target population	Adolescen*, youth*, young*, teen*, child*, adolescent residential care
Professional actors	Professional*, care*, counsel*, protect*, steer*, guid*, professional counselling, professional residential care, child protection, trauma informed counselling
Outcome indicators	Effect*, effectiveness*, efficacy*, change*, evidence-based, effective residential care
Exclusion terms (NOT)	Short-term, juvenile*, in-patient care, covid*, medic*, patient*, case*, pilot*, study protocol, retrospective*, report*, book review
Search field	.mp. (multipurpose field: title, abstract, subject headings, etc.)

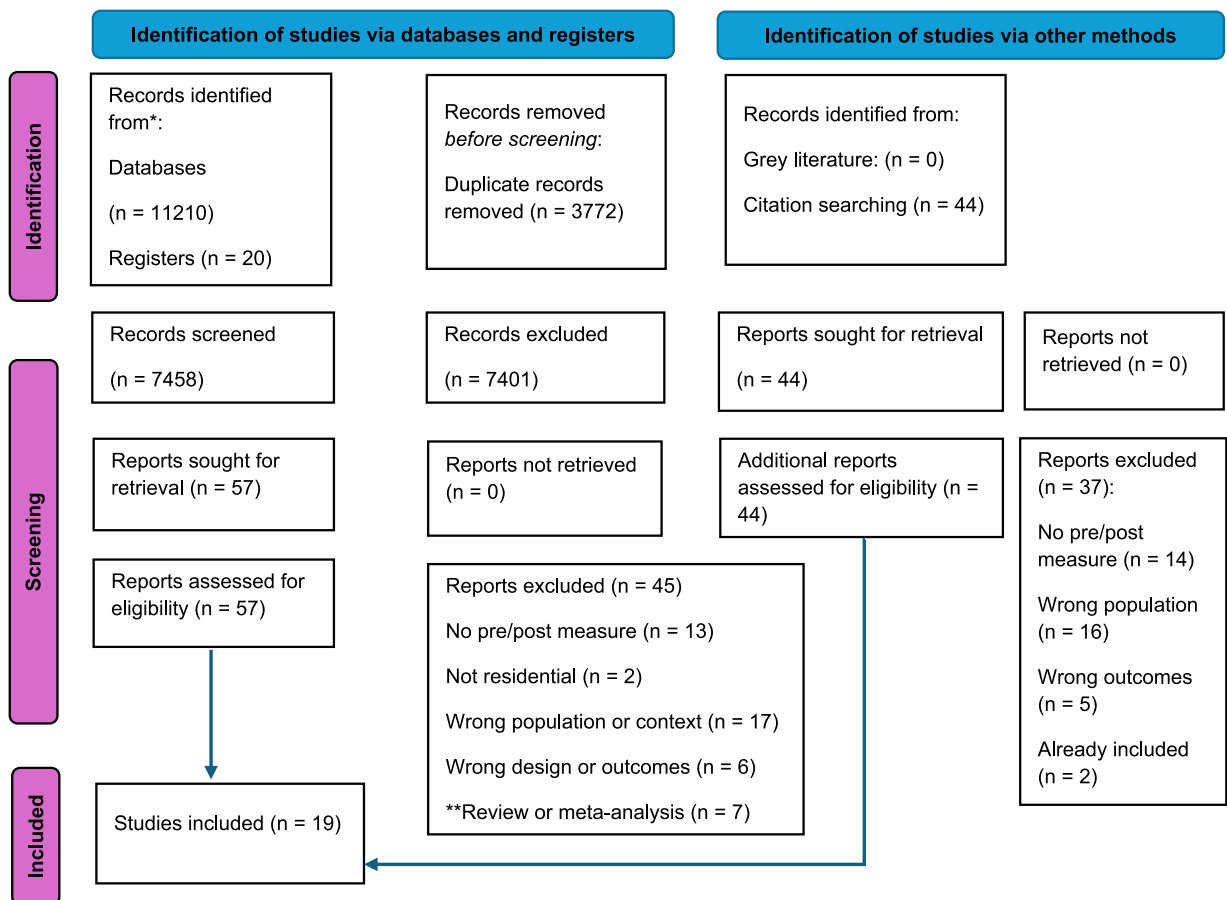


Fig. 1. Prisma flow chart.

*Records (n = 11,230) identified from: 12 databases: PsycINFO (n = 1932); OvidMedline®ALL (n = 1986); PubMed (n = 160); Scopus (n = 283); Web of Science (n = 1967); PsycArticles (n = 976); EBSCO (n = 1681); ProQuest (n181); ERIC (n = 470); CINAHL (n1286); EMBASE (n = 289); Cochrane (n = 0), and 2 registers: PROSPERO (n = 18); Epistemonikos (n = 1).

**Reviews (n = 6) and meta-analysis (n = 1) left out from synthesis due to limited input for this review.

Each study was evaluated against five core MMAT criteria appropriate to its design (e.g., sample representativeness, measurement validity, completeness of outcome data). Based on the number of criteria met, studies were categorized as having low (0–1 criteria), moderate (2–3), or high (4–5) methodological quality. Quality ratings were independently assigned by three reviewers. Discrepancies were resolved through team discussion. Although inter-rater agreement statistics were not calculated, this process helped ensure methodological consistency across assessments.

3. Results

A total of 101 full-text articles were assessed for eligibility. Of these, 19 intervention studies (Table 2) met the inclusion criteria and were included in the synthesis. These studies evaluated 16 distinct trauma-informed care models (Table 3) implemented in adolescent residential care settings. Model characteristics and classification (dyadic, systemic, or integrated) are summarized in Tables 2 and 3.

These 19 included studies employed diverse designs: three were randomized controlled trials (Carvalho et al., 2024; Crable et al., 2013; Santos et al., 2023), 15 applied quasi-experimental approaches, and one study used a mixed-methods design (Addy et al., 2023). Eight studies included follow-up assessments, ranging from three to 36 months.

3.1. Dyadic models

3.1.1. Staff development

Two dyadic models focused on attachment- and mentalization-based approaches: the Essential Tools for Positive Behavior Change Training (Crosland et al., 2008) and the Care Me Model (Carvalho et al., 2024). The Care Me model reported improvements in staff relational caregiving and interactional sensitivity, although standardized effect sizes were not reported.

Table 2

Data extraction — models and interventions.

General information	Theoretical framework	Intervention	Execution	Study characteristics	Participants	Measure of change	Results
Model: Essential Tools for Positive Behavior Change training provided by the Behavior Analysis Services Program (BASP) Author(s) & publication year: Crosland et al. (2008)	Dyadic: Attachment	Positive reinforcement, non-contingent attention and proactive strategies for the reduction of problematic behaviors, enhancing the quality of interactions between staff and youth in group home settings.	Five 3-h sessions over a 5-week period	Design: Quasi-experimental Data points: Pre-/post training Control group: –	Staff: n = 22 Youth: – Location(s) of data collection: Two residential facilities for youth aged 12–17 years.	Observations of interaction between staff and youth.	Effectiveness on staff: Positive interactions (baseline 15.4%) increased to 75% and negative interactions (baseline 17.3%) decreased to 1.8% in Group Home 1. Group Home 2 averaging 63.7% positive (baseline 29.2%) and 3.4% negative (baseline 10.1%) interactions post-training.
Model: Care Me model Author(s) & publication year: Carvalho et al. (2024)	Dyadic: Attachment Reflective functioning (RF)	Enhancing residential youth workers' RF and their ability to provide autonomous/secure support. Focus to reflect on their own attachment histories, increase sensitivity to the emotional and mental states of youth.	Ten sessions lasting 90 min (seven sessions were delivered online due to COVID over 3 months).	Design: Randomized control trial (RCT). Data points: Pre-/post-training. Control group: Standard care residential units.	Staff: n = 212 Youth: – Location(s) of data collection: 21 adolescent residential care units (age not specified).	Reflective Functioning Questionnaire (RFQ) Group Care Worker Intervention Checklist (GICL)	Effectiveness on staff: Improved staff reflective functioning, particularly in reducing hypermentalization ($p = .009$) Adult-Youth relationships: Enhanced staff ability to provide secure base support and autonomous care for youth ($p = .011$).
Model: The Sanctuary Model Author(s) & publication year: Rivard (2005)	Systemic: Trauma-informed Therapeutic/Dialogical	Therapeutic framework that promotes healing through a safe, supportive community. Focus on four key areas: Safety, Emotional management, Loss, and Future (SELF), helping youth develop healthy coping skills.	Daily community meetings, psychoeducation, and open dialog to foster emotion regulation, democratic decision-making, and relationship-building between staff and youth	Design: Quasi-experimental Data points: Youth at baseline, 3 months, and 6 months. Staff at 4–6 month intervals. Control group: Standard care residential units ($n = 8$).	Staff: Not specified Youth: n = 158 Location(s) of data collection: 16 residential units for children and adolescents aged 12–20 years.	Staff: Community Oriented Programs Environment Scale (COPEs) Youth: Child Behavior Checklist, Trauma Symptom Checklist, Rosenberg Self-Esteem Scale, Nowicki-Strickland, Inventory of Parent and Peer Attachment, Youth Coping Index, Social Problem-Solving Questionnaire. Youth Problem Rating Scale (PRS) Treatment duration	Effectiveness on staff: Sanctuary units reported higher COPEs scores than controls ($p = .001$). Youth well-being: Significant improvements in coping skills, particularly a reduction in incendiary communication and improved tension management ($p < .05$).
Model: Fairy Tale model Author(s) & publication year: Greenwald et al. (2012)	Systemic: Trauma-informed	Staff trained to apply trauma-informed strategies across both individual and milieu treatment, enhancing the safety and emotion regulation of youth	Three full-day sessions monthly. Follow-up: three bimonthly half-day sessions.	Design: Quasi-experimental Data points: Pre-/post training Control group: Youth in the same unit (pre-intervention).	Staff: n = 88 Youth: n = 48 Location(s) of data collection: Residential treatment facility for youth aged 10–21 years.		Youth well-being: problem reduction with large effect size $r^2 = 0.73$, reduction especially in aggressive behavior and emotional dysregulation. 39% reduction in treatment duration, medium effect size $r^2 = 0.10$.

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Table 2 (continued)

General information	Theoretical framework	Intervention	Execution	Study characteristics	Participants	Measure of change	Results
Model: Gender-specific trauma-informed training Author(s) & publication year: Crable et al. (2013)	Systemic: Trauma-informed Therapeutic/Dialogical	Equips staff with skills in trauma recognition, effective communication, empowerment, and fostering therapeutic environments to better support adolescent girls, particularly those with histories of sexual trauma.	Four-hour session, comprising eight modules	Design: Randomized controlled study (time series factorial design) Data points: Pre-/post-training Control group: 20 staff in the same unit, not receiving the intervention.	Staff: n = 40 Youth: – Location(s) of data collection: Adolescent females' residential group care facility (age not specified).	Survey of Knowledge: awareness of the essential characteristics of trauma and retention of the trauma-informed curriculum.	Effectiveness on staff: Non-significant difference in knowledge scores between the treatment and control groups post-training.
Model: Trauma Systems Therapy (TST) Author(s) & publication year: Murphy et al. (2017)	Systemic: Trauma-informed	Combines emotion regulation with a systems-based approach. Focus on helping children manage trauma-triggered emotions while addressing the influence of their environment, particularly caregivers.	An initial in-person session (duration not specified), followed by trauma assessment training and book reviews via the Internet. Staff received ongoing support online. Training was role-specific, with practical examples and breakout sessions.	Design: Quasi-experimental Data points: Baseline at entry to care (pre-training), quarterly every 90 days for up to five quarters (~15 months) post-training Control group: –	Staff: not specified Youth: n = 1499 Location(s) of data collection: Private child welfare agency providing care to trauma-impacted children (mean age 11.98 years).	Child and Adolescent Functioning Assessment Scale (CAFAS): behavioral regulation Child Ecology Check-In (CECI): emotional regulation	Youth well-being: Greater TST exposure led to significant gains in children's overall functioning ($r = -0.37$, $p < .001$) Emotional regulation improved early on, with TST exposure ($r = -0.23$, $p < .001$). Behavioral regulation improved with consistent TST application by staff ($r = -0.17$, $p < .05$).
Model: Attitudes Related to Trauma-Informed Care (ARTIC) Author(s) & publication year: Black et al. (2022)	Systemic: Trauma-informed	A 35-item self-report instrument designed to assess changes in professionals' attitudes that are informed by an understanding of trauma.	Initial in-person training of 6 to 12 h. Six 2 h small-group coaching and supervision sessions every 4 to 6 weeks for 6–9 months (12 h total).	Design: Quasi-experimental Data points: Pre-/post-training and follow-up Control group: –	Staff: n = 429 Youth: – Location(s) of data collection: 50 residential care units for children aged 3–20-years.	Attitudes Related to Trauma-Informed Care (ARTIC) — questionnaire.	Effectiveness on staff: Significant positive shifts in staff attitudes toward problematic youth behavior from pre- to post-training ($\beta = 0.32$, $p < .001$). Increased ability to acknowledge the impact of secondary work-related trauma after 1 year ($p < .05$).
Model: Compassionate Mind Training (CMT) Author(s) & publication year: Santos et al. (2023)	Systemic: Therapeutic/Dialogical	Compassion Focused Therapy-based program for residential youth caregivers. Cultivates compassion, self-compassion, and emotion regulation, aims to reduce staff burnout, anxiety, and depression, and to improve quality of life	Twelve structured sessions, each lasting 2.5 h, weekly over approximately three months.	Design: Cluster randomized trial Data points: Baseline pre-training; post-training; 3-month follow-up; 6-month follow-up. Control group: Yes, standard care in residential units.	Staff: n = 127 Youth: no Location(s) of data collection: 12 residential care homes for youth aged 12–25 years.	Professional Quality of Life Scale, Depression, Anxiety, and Stress Scales, Self-Compassion Scale	Effectiveness on staff: Significantly reduced burnout, anxiety and depression of caregivers, with effect sizes $d = 0.30$, $d = 0.60$ and $d = 0.49$ respectively, improvements lasting up to 6 months. Non-significant change in stress, compassion satisfaction, or secondary traumatic stress.

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Table 2 (continued)

General information	Theoretical framework	Intervention	Execution	Study characteristics	Participants	Measure of change	Results
Model: Trauma-informed care (TIC) Author(s) & publication year: Schmid et al. (2020)	Systemic: Trauma-informed	Creates a safe, supportive environment for both staff and clients by integrating an understanding of trauma's effects into care practices. Emphasizes physical and emotional safety, self-care for staff, and trauma-sensitive interventions, aiming to reduce client aggression and staff burnout.	Six 3-day training blocks for management and eight 2.5-day blocks for the rest of the youth welfare staff over three years.	Design: Quasi-experimental Data collection points: baseline pre-intervention; after 12, 24, and 36 months of implementation. Control group: Standard care in residential units (n = 9).	Staff: 47 Youth: – Location(s) of data collection: 18 long-term residential care units for youth aged 7–25 years.	Survey: Client Physical Aggression Hair Cortisol Concentration (HCC; stress). Questionnaires: Perceived collective efficacy; Sense of coherence; Self-care; Job satisfaction; Personal boundary violation; Symptoms of post-traumatic stress, secondary traumatic stress, and burnout.	Effectiveness on staff: Significant reduction in physiological stress (HCC) in the intervention group compared to the control group with an effect size $\eta^2 = 0.61$, ($p = .002$). Adult-Youth Relationships: Less physical aggression from youth toward staff in the intervention group ($p = .02$), effect size not calculated (small sample). Effectiveness on staff: Over 90% of participants reported that the EQ2 intervention helped them to better understand how a young person's trauma history affects their behavior, equipped them with skills to respond to challenging young people's behavior, and improved conflict resolution.
Model: EQ2-Empowering Direct Care Staff to Build Trauma-Responsive Communities for Youth Author(s) & publication year: Griffing et al. (2021)	Systemic: Trauma-informed	Psychoeducational intervention designed to enhance staff effectiveness in working with trauma-impacted youth. The model integrates trauma-informed care, mindfulness, and restorative justice practices to help staff develop their emotion regulation and self-awareness skills.	Six-session- training delivered over six weeks. Each session lasted between 60 and 90 min.	Design: Quasi-experimental Data points: Pre-/ post-training Control group: -	Staff: n = 31 Youth: - Location(s) of data collection: 4 diverse youth-serving agencies (youth ages not specified).	Questionnaires on Occupational Stress, Trauma-Responsive Attitudes. Skills for De-escalation and Conflict Resolution	Effectiveness on staff: Reported that the EQ2 intervention helped them to better understand how a young person's trauma history affects their behavior, equipped them with skills to respond to challenging young people's behavior, and improved conflict resolution.
Model: SECURE STAIRS Author(s) & publication year: Addy et al. (2023)	Dyadic: Attachment Systemic: Trauma-informed Therapeutic/ Dialogical	Positive and sustainable change for young people mediated primarily through the therapeutic relationship between care staff and youth. SECURE refers to the need for staff to possess skill set, emotional resilience, and a strong understanding of psychological theories, especially those related to attachment and trauma.	Monthly reflective one-hour-sessions for 12-month period.	Design: Quasi-experimental Data points: Pre-/post training Control group: –	Staff: n = 21 Youth: – Location(s): Residential care unit for adolescents aged 10–17 years.	Maslach Burnout Inventory (MBI) Reflective Practice Questionnaire (RPQ)	Effectiveness on staff: Reported burnout levels increased (increased awareness). Improvements in staff confidence in practice and communication with colleagues and children ($p < .05$), and reflective ability ($p < .001$).
Farooq et al. (2021)			2-day training.	Design: quasi-experimental Data points: pre-/post training Control group: –	Staff: n = 58 Youth: – Location(s): Residential care unit for adolescents aged 10–17-years.	Questionnaires on knowledge acquisition regarding attachment and trauma and confidence in one's ability to work in a trauma-informed way.	Significant improvements in staff knowledge on attachment theory and styles ($p < .001$) and developmental trauma ($p < .001$). Enhanced confidence in applying trauma-informed approaches ($p < .001$). Effectiveness on staff: Significant increases in
Model: Risking Connection (RC)	Dyadic: Attachment	Therapeutic relationship as a primary mechanism for	Two different trainings: 1) RC Basic: a 3-day module;	Design: Quasi-experimental	Staff: n = 261 Youth: –	Knowledge on RC concepts: The Risking	Effectiveness on staff: Significant increases in

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Table 2 (continued)

General information	Theoretical framework	Intervention	Execution	Study characteristics	Participants	Measure of change	Results
Author(s) & publication year: Brown et al. (2012)	Systemic: Trauma-informed Therapeutic/ Dialogical	healing trauma. The training is designed to shift care practices away from control-oriented approaches toward a relational and trauma-sensitive approach.	2) Train-the-trainer component, 16–18 h; Units received different trainings.	Data points: Pre-/post training; Some groups trainer's training, additional pre- and post-measures. Control group: –	Location(s) of data collection: Five residential treatment agencies serving youth (age not specified).	Connection Curriculum Assessment (RCCA). Favorability of beliefs toward TIC: The Trauma-Informed Belief Measure. Staff behavior indicative of TIC: The Staff Behavior in the Milieu.	knowledge of TIC ($p < .001$), beliefs favoring TIC ($p < .001$) and self-reported staff behavior indicative of TIC ($p = .04$).
Model: Emotional Warmth Model Author(s) & publication year: Cameron & Das (2019)	Dyadic: Attachment Systemic: Trauma-informed	Empowering caregivers to provide nurturing, psychology-informed care to children. Emphasizing emotional warmth, understanding trauma, and helping children manage maladaptive behaviors, to improve emotional well-being and interpersonal skills.	Six half-day workshops spread over a year. Regular supervision and support.	Design: Quasi-experimental Data points: Pre-training (baseline), mid-training and post-training. Control group: –	Staff: Not specified Youth: $n = 53$ Location(s) of data collection: Two local authorities (eight residential homes South and three residential homes North) for children and youth (ages not specified).	Personal and Interpersonal Development (PID): Parental pillars. Reintegrative Emotional Adaptation (REA): stabilization, integration and adaptation. Progress and Development Checklist	Effectiveness on staff: Significant improvement on PID ($p < .003$). Significant improvements in REA ($p < .001$). Youth well-being: Significant increase in well-being and self-identity ($p = .014$, $p = .005$, for south and north units respectively), self-efficacy ($p = .001$, $p = .047$) and social interaction and responsibility ($p = .071$, $p = .008$).
Model: Mentalization-based Training Program Author(s) & publication year: Dumon- Archambault et al. (2020)	Dyadic: Attachment RF Systemic: Trauma-informed	Enhancing the capacity of staff to comprehend the mental states of both themselves, and the children in their care. Particular emphasis on the importance of secure attachment and mentalization.	Four three-hour initial sessions, and four three-hour peer supervision sessions.	Design: Quasi-experimental Data points: Pre-/post training Control group: –	Staff: $n = 9$ Youth: $n = 8$ Location(s) of data collection: Two residential homes for children aged 6–12 years.	Adapted Parent Development Interview-Revised (PDI-R); Empathy Quotient (EQ) questionnaire; Child Behavior Checklist (CBCL)	Effectiveness on staff: No significant improvements in staff empathy or reflective functioning Youth Well-being: Significant positive improvements in anxiety ($p = .02$), social behavior ($p = .03$), attention ($p = .02$), and internalized problems ($p = .02$).
Model: Children and Residential Experiences (CARE) Author(s) & publication year: Izzo et al. (2016)	Dyadic: RF Systemic: Trauma-informed Therapeutic/ Dialogical	Promoting six core principles: relationship-based care, trauma-informed practices, developmental alignment, family involvement, competence-building, and an enriched therapeutic environment. Aims to improve child-adult interactions and systemic care by focus on reflective practices and organizational changes that support	5-day manualized training program for agency leadership, supervisors, and key staff. Quarterly visits by CARE consultants. Ongoing Mentoring 36 months.	Design: Quasi-experimental stepped-wedge designs Data points: Baseline data collected monthly for 12 months pre-training for cohort 1 and 2. During implementation (36 months) annually for both cohorts. Control group: Yes, two successive cohorts as comparison.	Staff: An average of 13 staff members per agency Youth: An average of 24 youth per agency Location(s) of data collection: 11 residential care agencies serving youth aged 7–18 years.	Monthly counts of Behavioral Incidents (property destruction, aggression, self-harm, runaway). Organizational Social Context (OSC): culture (proficiency, resistance, rigidity) and climate (stress, engagement, functionality) at the agency level.	Effectiveness on staff: Significant decreases in incident rates of 4–8% per month observed for all outcomes in cohort 1 ($p < .01$). Youth well-being: Significant reduction in aggression toward peers ($p < .01$), aggression toward staff ($p < .01$), property destruction ($p < .01$), and self-harm ($p < .01$). No cohort differences.

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Table 2 (continued)

General information	Theoretical framework	Intervention	Execution	Study characteristics	Participants	Measure of change	Results
Izzo et al. (2020)		children's healing and development.		Same design as Izzo et al. (2016) Data points: Baseline (pre-CARE): Cohort 1: 2010; Cohort 2: 2010 (pre-baseline) and 2011 (baseline). During CARE: Year 1, Year 2, Year 3 for both cohorts.	Staff: exact numbers were not specified Youth: n = 668 Location(s) of data collection: 13 residential care agencies with youth mean age 14.8 years.	Youth Perceptions of Relationship Quality (YPRQ) Inventory of Parent and Peer Attachment (IPPA). Social-Emotional Adjustment (SDQ — Strengths and Difficulties Questionnaire)	Effectiveness on staff: Significant improvements in staff knowledge related to child trauma, developmental needs, and relational caregiving practices (Cohen's d, ranged from 0.21 to 0.35). Adult-Youth relationships: Significant improvement in child-adult relationship quality (Cohen's d 0.40). Youth well-being: Improved behavior and emotional regulation (Year 1 $p = .001$; Year 2 $p = .044$; Year 3 $p = .013$).
Izzo et al. (2022)				Same design as: Izzo et al. (2016, 2020) Data collection points: Cohort 1 started implementation in 2010 and was assessed in Years 1, 2, and 3 (2011–2013). Cohort 2 started implementation in 2011 and was assessed in Years 1, 2, and 3 (2012–2014)	Staff: n = 786 Youth: – Location(s) of data collection: 13 residential care agencies with youth mean age 14.8 years.	Staff Knowledge of CARE curriculum. Staff Beliefs about relational caregiving. Staff Practices: frequency of trauma-informed and relational caregiving behaviors.	Effectiveness on staff: Significant improvements in staff knowledge related to child trauma, developmental needs, and relational caregiving practices (standardized effect size 0.67). Staff beliefs about relational childcare practices shifted toward a more trauma-informed, relational approach (standardized effect size 0.97). Self-reported use of trauma-informed, relational caregiving practices improved by the third year of CARE implementation, although not as consistently across all agencies (standardized effect size 0.13). Youth well-being: Significant decreases in symptoms across all PTSD domains (intrusion, avoidance, negative
Model: Developmental Trauma and Attachment Program (DTAP)	Dyadic: Attachment Systemic:	Focuses on reducing trauma responses, fostering trust, and enhancing attachment. Emphasizes child-caregiver relationships and family	Execution: Not specified	Design: Quasi-experimental Data points: Pre-/post intervention	Staff: – Youth: n = 61 Location(s) of	Youth PTSD Reaction Index (PTSD-RI)	(continued on next page)

Table 2 (continued)

General information	Theoretical framework	Intervention	Execution	Study characteristics	Participants	Measure of change	Results
Author(s) & publication year: Lenz et al. (2022)	Trauma-informed	involvement, supports emotional regulation and healing.		Control group: –	data collection: Residential facility for children and adolescents (mean age 13.23 years).		cognitions, and arousal/ reactivity) from admission to discharge ($p < .01$, $d = -0.75$).

Table 3

Categorization of the included models (dyadic, systemic or integrated).

Category and subcategory	Models	Study
Dyadic: Attachment-based	Essential Tools for Positive Behavior Change Training (BASP)	Crosland et al., 2008
Dyadic: Attachment and mentalization-based	Care Me Model	Carvalho et al., 2024
Systemic: Therapeutic/dialogical	Compassionate Mind Training (CMT)	Santos et al., 2023
Systemic: Trauma-informed (5 models)	Fairy Tale Model, Trauma Systems Therapy (TST), EQ2, ARTIC, Trauma-Informed Care (TIC)	Greenwald et al., 2012; Murphy et al., 2017; Griffing et al., 2021; Black et al., 2022; Schmid et al., 2020
Systemic: Trauma-informed and Therapeutic/Dialogical (2 models)	Sanctuary Model, Gender-specific Trauma-informed Training	Rivard, 2005; Crable et al., 2013
Integrated: Attachment and Trauma-informed (2 models)	Emotional Warmth Model, Developmental Trauma and Attachment Program (DTAP)	Cameron & Das, 2019; Lenz et al., 2022
Integrated: Attachment, Mentalization, and Trauma-informed	Mentalization-based Training Program	Domon-Archambault et al., 2020
Integrated: Attachment, Trauma-informed, and Therapeutic/Dialogical (2 models)	SECURE STAIRS, Risking Connection (RC)	Addy et al., 2023; Farooq et al., 2021; Brown et al., 2012
Integrated: Mentalization, Trauma-informed, and Therapeutic/Dialogical	Children and Residential Experiences (CARE)	Izzo et al., 2016, 2020, 2022

Total 16 models.

3.1.2. Youth well-being

The Care Me model additionally reported improvements in youth emotion regulation and behavioral functioning, but outcome measures and follow-up periods were limited, restricting generalizability.

3.1.3. Adult–youth relationships

Relational quality was a key focus in both dyadic models. The Care Me study noted improved staff–youth interactions, and the Essential Tools model emphasized behavior change through relationship-based strategies, though direct relational outcomes were not quantified.

3.2. Systemic models

3.2.1. Staff development

Systemic models included therapeutic/dialogical approaches (e.g., Compassionate Mind Training; Santos et al., 2023) and other trauma-informed frameworks (e.g., ARTIC, EQ2, TIC Framework, Sanctuary Model). Positive outcomes were observed in trauma understanding, team communication, and psychological well-being. For instance, Compassionate Mind Training and the Trauma-Informed Care Framework were associated with moderate-to-large reductions in staff stress and burnout (Cohen's $d = 0.30$ – 0.61). EQ2 and ARTIC improved trauma knowledge and reflective supervision practices. However, some models such as Gender-Specific Trauma Training reported no significant change in staff empathy or reflective functioning.

3.2.2. Youth well-being

Three studies using systemic models evaluated youth outcomes. The Fairy Tale Model, TST and the Sanctuary Model reported improvements in emotion regulation, trauma symptoms, and aggressive behavior. While most studies reported moderate-to-large effects, heterogeneity in design and measures limited comparability.

3.2.3. Adult–youth relationships

Only one systemic model, the Trauma-Informed Care Framework (Schmid et al., 2020) explicitly measured relational outcomes. The study reported moderate gains in staff provision of secure-base behavior and youth autonomy support ($\eta^2 = 0.61$).

3.3. Integrated models

3.3.1. Staff development

Integrated models such as CARE, SECURE STAIRS, Risking Connection, DTAP, and Mentalization-Based Training combined elements of dyadic (e.g., attachment, mentalization) and systemic approaches (e.g., organizational scaffolding, coaching). CARE and EQ2 showed significant improvements in staff trauma knowledge, conflict resolution, and reflective capacity. The CARE model uniquely reported standardized longitudinal effect sizes for practice ($d = 0.30$), knowledge ($d = 0.67$), and beliefs ($d = 0.97$). Some models integrated supervision structures (e.g., SECURE STAIRS, Risking Connection) and coaching (e.g., CARE), which were associated with higher fidelity and staff coherence. Notably, SECURE STAIRS reported co-occurring increases in trauma awareness and staff burnout, suggesting potential strain from emotionally intensive practice.

3.3.2. Youth well-being

Integrated models such as Emotional Warmth Model, Mentalization Based Training Program, CARE and DTAP reported

improvements in youth behavioral regulation, trauma recovery, and placement stability. These effects were moderate to large but drawn from quasi-experimental studies, limiting causal inference. Only three studies employed randomized controlled designs, and none of them assessed youth outcomes or integrated models; instead, they focused on staff-level effects such as reflective functioning, trauma awareness, and caregiver well-being (Carvalho et al., 2024; Crable et al., 2013; Santos et al., 2023). Thus, the evidence base for youth-level impact remains methodologically weak.

3.3.3. Adult–youth relationships

Among integrated models, only CARE (Izzo et al., 2020) measured and demonstrated a moderate positive effect on adult–youth relationship quality (Cohen's $d = 0.40$). Two other models, Care Me (Carvalho et al., 2024) and Trauma-Informed Care (Schmid et al., 2020) gained improvements in caregiving or reduced youth aggression toward staff, reflecting relational change, though these were dyadic or systemic rather than integrated models.

3.4. Methodological quality assessment of the intervention studies

The MMAT analysis (Table 4) revealed considerable variation in methodological rigor across studies. Altogether, few studies exhibited strong adherence to methodological standards through multi-method designs and validated outcome measures. Most studies faced methodological limitations due to small sample sizes, incomplete data reporting, or reliance on single or non-validated outcome measures. Some included no statistical testing at all. These factors introduce potential biases and may hinder generalization across contexts.

Studies rated as moderate quality ($n = 8$) more frequently employed validated measures, multiple data sources, and longitudinal designs, which enhanced their ability to capture complex, multifaceted outcomes. In contrast, most studies ($n = 11$) were rated as low quality, often lacking in follow-up protocols, standardized instruments, and comprehensive reporting, thereby limiting confidence in their findings.

Studies utilizing dyadic, systemic, and integrated models revealed differences in methodological quality (see Table 3). Dyadic models such as attachment- or mentalization-based interventions (e.g., Essential Tools, Care Me) were fewer in number and often focused on relational dynamics at the individual level. Most of these scored low on methodological quality. Systemic models, including trauma-informed frameworks and dialogical or therapeutic interventions such as SECURE STAIRS, EQ2, and TST, were more prevalent in the review but frequently received low MMAT ratings, with a few moderate-quality exceptions such as CARE and Risking Connection. Integrated models that combined dyadic and systemic elements such as CARE, SECURE STAIRS, and DTAP showed variation in quality ratings across studies, with some achieving moderate scores (e.g., CARE).

3.5. Heterogeneity and robustness of the results

Considerable heterogeneity was observed in the outcomes and methodological designs of the included studies, reflecting variation

Table 4
MMAT assessment for intervention studies.

Author	Year	Study design	Q1	Q2	Q3	Q4	Q5	Score (%)	Quality rating
Addy et al.	2023	Mixed methods	Y	Y	Y	CT	N	60	MQ
Carvalho et al.	2024	RCT	CT	Y	N	N	CT	20	LQ
Crable et al.	2013	RCT	Y	CT	Y	CT	Y	60	MQ
Santos et al.	2023	RCT	Y	Y	Y	CT	CT	60	MQ
Black et al.	2022	NON-RCT	CT	Y	N	Y	CT	40	LQ
Brown et al.	2012	NON-RCT	CT	CT	CT	N	N	0	LQ
Cameron and Das	2019	NON-RCT	CT	CT	CT	N	Y	20	LQ
Crosland et al.	2008	NON-RCT	CT	Y	N	N	Y	40	LQ
Domon-Archambault	2020	NON-RCT	CT	CT	CT	N	Y	20	LQ
Farooq et al.	2021	NON-RCT	CT	CT	Y	N	Y	40	LQ
Greenwald et al.	2012	NON-RCT	CT	CT	Y	N	N	20	LQ
Griffing et al.	2021	NON-RCT	CT	CT	Y	N	Y	40	LQ
Izzo et al.	2016	NON-RCT	Y	CT	Y	Y	Y	80	MQ
Izzo et al.	2020	NON-RCT	Y	Y	N	Y	CT	60	MQ
Izzo et al.	2022	NON-RCT	N	N	N	Y	CT	20	LQ
Lenz et al.	2022	NON-RCT	CT	Y	CT	Y	Y	60	MQ
Murphy et al.	2017	NON-RCT	Y	Y	CT	Y	CT	60	MQ
Rivard et al.	2005	NON-RCT	CT	Y	CT	N	Y	40	LQ
Schmid et al.	2020	NON-RCT	CT	Y	N	CT	CT	20	LQ

Y = yes; N = no; CT = can't tell.

Mixed methods studies: Q1: Rationale, Q2: Integration, Q3: Interpretation, Q4: Inconsistencies, Q5: Quality.

Randomized controlled trials (RCTs): Q1: Randomization, Q2: Baseline comparability, Q3: Outcome data, Q4: Blinding, Q5: Adherence.

Non-RCT studies: Q1: Representation, Q2: Measurement appropriateness, Q3: Outcome data, Q4: Confounders, Q5: Intervention administration.

Explanation for quality ratings (Hong et al., 2018): High Quality HQ: studies meeting all 100% of the MMAT criteria.

Medium Quality MQ: studies meeting 60–80% of the MMAT criteria. Low Quality LQ: studies meeting less than 60% of the MMAT criteria.

in trauma-informed models (dyadic, systemic, or integrated) and targeted domains (staff development, youth well-being, and adult–youth relationships). This heterogeneity affected comparability between studies and limited the ability to draw consistent conclusions across approaches.

Dyadic models were primarily associated with relational outcomes but were typically examined in studies with smaller samples and shorter follow-up periods. Systemic models more often targeted staff outcomes and sometimes employed larger samples or repeated measures, although study designs remained variable. Integrated models were few and varied considerably in both design and outcome. Across all intervention types, only three randomized controlled trials were identified (Carvalho et al., 2024; Crable et al., 2013; Santos et al., 2023) and these exhibited moderate or low methodological quality, limiting the strength of causal inferences.

Differences in study robustness were also noted across outcome domains. Staff-related outcomes were supported by a higher number of studies, some of which applied validated measures and longer follow-ups. In contrast, youth well-being and adult–youth relationships were assessed less consistently and with fewer high-quality studies. Problems with measurement tools, e.g., using non-validated tools, were common across all model categories.

4. Discussion

This pre-registered systematic review, conducted in accordance with PRISMA 2020 guidelines, addresses a critical gap in trauma-informed care (TIC) research by examining the integration of dyadic and systemic models within adolescent residential care. A total of 19 intervention studies met the inclusion criteria, encompassing diverse frameworks designed to promote TIC and evaluate its effects across staff, youth, and relational domains.

Overall, the findings indicate generally positive, though modest, effects of TIC interventions. Staff outcomes were most frequently examined, with improvements in trauma knowledge, relational caregiving, and communication (e.g., Carvalho et al., 2024; Crosland et al., 2008; Schmid et al., 2020), although gains in reflective functioning and emotional regulation were less consistent (e.g., Brown et al., 2012; Crable et al., 2013). Youth-level outcomes showed moderate-to-large improvements in emotional regulation, behavioral stabilization, and trauma-related symptoms (e.g., Greenwald et al., 2012; Lenz et al., 2022), but were assessed in fewer studies and often with weaker designs. Relational outcomes were least frequently examined, despite their conceptual centrality in TIC, echoing concerns that relational processes and service user engagement remain underexplored and difficult to measure empirically (Purtle, 2020; Santos et al., 2023; Zhang et al., 2021; Bunting et al., 2019). Notably, only three studies employed randomized controlled designs, all focusing on staff outcomes, highlighting a persistent evidence gap in youth and relational dimensions.

Across outcome areas, interventions that combined relational caregiving practices with systemic supports, such as reflective supervision, staff training, and leadership engagement, appeared more likely to produce improvements. This pattern aligns with implementation science and trauma-informed literature emphasizing that sustainable change depends on coherence across relational and organizational levels (Bryson et al., 2017; Damschroder et al., 2009; Ko et al., 2008). Rather than identifying a single dominant model, the findings suggest that the effectiveness of TIC in residential environments is shaped by the interaction between dyadic caregiving practices and the organizational structures that support them.

This interpretation is further supported by prior research on relationship-based practice in residential care. Relationships between staff and young people have been conceptualized as reciprocal processes shaped by both the young person's developmental history and the personal and professional attributes of the care worker (Cahill et al., 2016). Young people's prior experiences of adversity and disrupted attachments may limit their readiness to engage relationally, while staff characteristics, authenticity, and theoretical competence influence the quality of engagement. Importantly, Cahill et al. (2016) highlight that relational work is enabled or constrained by structural conditions, including staff training, supervision, and the matching of workers and young people. Together, these findings reinforce the view that relational outcomes cannot be understood as solely dyadic phenomena but are fundamentally embedded within organizational contexts.

At the same time, the findings highlight a recurring paradox in trauma-informed implementation. Several interventions were associated with improved trauma awareness and relational caregiving, yet in some cases this coincided with increased burnout or emotional strain (Farooq et al., 2021). One possible interpretation is that trauma-informed training initially heightens professionals' awareness of the emotional and relational demands embedded in residential care work. In this sense, trauma-informed principles may need to be personally experienced and reflected upon by staff before they translate into sustainable practice change. Early increases in perceived strain may therefore represent a transitional phase in professional development, where greater insight into trauma dynamics precedes the consolidation of reflective coping strategies and supportive team practices. This interpretation is consistent with research indicating that staff members' relational sensitivities influence their readiness to engage with TIC, and that reflective supervision plays a critical role in processing emotional responses and sustaining practice (Bosk et al., 2020).

Taken together, these findings suggest that the effects of TIC interventions cannot be fully understood through immediate outcome changes alone but must be interpreted in relation to the relational and organizational processes through which care is delivered. Improvements in youth emotion regulation and behavioral stability may reflect not only specific techniques but also shifts in how staff interpret and respond to distress, conflict, and relational disruption. In this sense, trauma-informed approaches may operate less as discrete treatment components and more as organizing frameworks that reshape everyday relational practices within residential care systems.

Despite these promising directions, the current literature remains methodologically uneven. Many studies relied on non-validated or single-item measures, lacked fidelity monitoring, or did not account for contextual moderators such as staff turnover or organizational readiness. These limitations are consistent with earlier reviews highlighting the challenges of evaluating trauma-informed care at both relational and system levels (Bunting et al., 2019). More rigorous designs, particularly longitudinal mixed-method

approaches using validated relational measures, are needed to better understand how TIC operates, for whom, and under what conditions. Given the relational and contextual complexity of residential care, mixed-method designs are especially valuable in capturing both quantifiable changes and nuanced interpersonal dynamics (Bryson et al., 2017; Ko et al., 2008), while randomized controlled trials remain important for establishing causal effects where feasible.

These findings suggest that trauma-informed care in residential settings operates less as a discrete intervention model and more as a relational-systemic practice framework. Within this framework, dyadic approaches emphasizing relational attunement and systemic approaches focusing on organizational structures appear to be mutually reinforcing, with integrated models combining both dimensions showing the most consistent patterns of improvement across staff, youth, and relational outcomes. This raises an important question for future research: to what extent do relational practices shape systemic functioning, and conversely, how do organizational conditions enable or constrain relational safety in residential care?

4.1. Strengths and limitations

The strengths of this study include its preregistration, adherence to PRISMA 2020 guidelines, and comprehensive scope covering both staff and youth outcomes in adolescent residential care. Its conceptual contribution lies in synthesizing evidence from both dyadic and systemic trauma-informed care (TIC) models, a novel integration not previously evaluated in a systematic review. A broad range of intervention frameworks was included, allowing for a nuanced understanding of trauma-informed practices across relational and organizational levels. The quality appraisal was independently assessed by multiple reviewers to minimize bias.

However, the study also has some limitations. One major limitation is the absence of inter-rater reliability statistics, which restricts the transparency of reviewer consensus. Although three independent reviewers were involved in the screening and appraisal process, an inter-rater agreement was not formally calculated. Further, selection bias may have influenced inclusion due to the eligibility criteria, as the search was restricted to English-language studies, even though no geographical limitations were placed on study selection. Despite the effort to include grey literature, publication bias remains a concern, as studies with positive or significant findings are more likely to be published and retrieved. Relatively poor methodological quality among the included studies introduces the possibility of over- or underestimating intervention effects. The lack of standardized outcome measures further limits comparability across studies and highlights the need for more consistent evaluation tools in future TIC research.

4.2. Practice implications and conclusions

This review offers early evidence that integrated TIC models, grounded in both relational and structural change processes, may represent the most feasible and effective approach in adolescent residential care. For practice, this suggests that trauma-informed care is not simply what individuals do, but what systems enable through structures that sustain emotional labor, support reflective functioning, and foster coherent adult–adult and adult–youth relationships.

A key implication of these findings is recognizing the interdependence between dyadic and systemic dimensions in residential settings. Residential care environments differ from family-based care in that youth live among multiple caregiving adults working in rotating shifts, often within high-stress organizational cultures. In such contexts, the dyadic relational bond between a single adult and a youth is inherently fragile unless scaffolded by consistent team practices, shared trauma frameworks, and reflective structures (Pinheiro et al., 2022). Without these, the dyadic focus may become either diluted or, conversely, overburdened, potentially creating emotionally enmeshed dynamics or a “toxic bubble” around the adult–youth pair that impedes systemic functioning. Thus, the effectiveness of dyadic TIC approaches is contingent upon systemic coherence, including alignment of values, relational consistency, and institutional reliability (Morais et al., 2023).

This interdependence also suggests a need to reconceptualize what constitutes fidelity in trauma-informed practice. Rather than adhering strictly to a model protocol, effective TIC may be better understood as a context-sensitive logic that reorients relationships, routines, and reflection across levels. Models that engage both individual attunement and organizational systems appear the most promising in promoting relational safety and therapeutic stability, especially in settings where caregivers themselves may carry trauma histories, further complicating the relational field (Forrest et al., 2018; Robey et al., 2021).

CRedit authorship contribution statement

Veli-Matti Karhu: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Assi Peltonen:** Writing – review & editing, Methodology, Investigation. **Marjo Flykt:** Writing – review & editing, Supervision, Methodology, Investigation, Formal analysis, Conceptualization.

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Declaration of competing interest

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.chiabu.2026.108074>.

Data availability

No data was used for the research described in the article.

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