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A naturalistic evaluation of parent-child interaction therapy (PCIT) and PCIT with trauma-directed interaction (PCIT with TDI) in Australian children exposed to abuse and neglect

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A B S T R A C T

Background: To optimize PCIT treatment with children exposed to abuse and neglect, PCIT with Trauma-Directed Interaction (PCIT with TDI) was created.
Objective: The current study was a quasi-experimental cohort study (PCIT and PCIT with TDI treatment groups) with pre/post-treatment comparisons. The study was conducted in a statutory child protection agency and was a naturalistic evaluation of the outcomes achieved by this service. The outcomes under investigation included caregiver and child posttraumatic stress symptoms, child behavior problems, parenting stress, caregiver mental health, child protection notifications, and placement permanency goals.
Participants and setting: Children were included in the study if they were aged between 2 and 7 years, had behavioral difficulties or trauma symptoms and/or their caregivers were experiencing parenting stress.
Methods: Families were allocated to treatment group by clinician availability/preference (i.e., preference allocation). Caregivers were asked to report on child posttraumatic symptoms and behavioral issues; and to self-report on posttraumatic stress, general stress, parenting stress, and depression and anxiety at prescribed points in treatment.
Findings: Sixty-eight children and their caregivers were treated with either PCIT ($n = 22$) or PCIT with TDI ($n = 46$). Statistically significant changes were observed for both treatment conditions for some of the outcomes of interest for both children (i.e., child behavioral problems, posttraumatic stress) and their caregivers (i.e., general stress, posttraumatic stress). There was no significant main effect of treatment on any of the outcomes of interest.
Conclusion: Future research should include a randomized controlled trial to adequately determine the efficacy of PCIT versus PCIT with TDI with this population.

1. Introduction

Globally, abuse and neglect of children is highly prevalent. A systematic review of prevalence across 96 countries showed that approximately one billion children aged 2–17 years experienced abuse and neglect in 2014 (Hillis et al., 2016). This equates to half of all children worldwide. In Australia, 531,884 child protection notifications were received and 178,800 children (1 out of every 32 children) received child protection services in the 2020–2021 financial year. This was an increase of 152,000 notifications and 10,000 occasions of service provision since 2016–2017 (Australian Institute of Health and Welfare [AIHW], 2022). In 2020–2021, 11,515 children were admitted to out of home care (OOHC), with approximately 64.2% of this cohort being under the age of 9 years. Further, younger children are at greatest risk of child abuse and neglect and of greatest risk of child abuse and neglect-related fatalities (Center for Disease Control, n.d.; NSW Child Death Review Team, 2022).

Children with a history of abuse and neglect can experience a range of deleterious sequelae. Children may present with attachment and interpersonal difficulties, poor affect regulation and behavioral control, cognitive and learning issues, poor self-concept, dissociative issues, and physical issues (e.g., delays in fine and gross motor skills, and sensory issues; Cook et al., 2005; Hu et al., 2017; Zeanah & Humphreys, 2018). For children in the OOHC system, these deficits and difficulties are often worse or more complex (Hu et al., 2024; Larsen et al., 2018; Tarren-Sweeney, 2006). Up to 60% of these children meet threshold for a diagnosis of a mental health disorder and have higher rates of diagnoses such as posttraumatic stress disorder (PTSD), conduct disorder (CD), attention-deficit hyperactivity disorder (ADHD), generalized anxiety

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disorder (GAD), and depression (Tarren-Sweeney, 2006; Tarren-Sweeney, 2008). Consequences of abuse and neglect for young children can be distinctively impactful. Given young children's smaller physical size and dependence on their caregivers to meet majority of their physical and emotional needs, they are particularly vulnerable when risk is present (Osofsky et al., 2017).

1.1. Parent-child interaction therapy

Parent-Child Interaction Therapy (PCIT; Eyberg & Funderburk, 2011), a therapeutic treatment for children aged 2–7 years, is a widely used evidence-based parent management training program in the treatment of significant disruptive and oppositional behavior problems (Cooley et al., 2014; Niec, 2018). PCIT has two treatment phases: Child-Directed Interaction (CDI) and Parent-Directed Interaction (PDI; Eyberg & Funderburk, 2011). The first phase of treatment aims to improve parent-child relationships whilst improving problematic behavior through the use of positive behavioral support. The second phase introduces safe, fair, and consistent positive discipline techniques, which support the caregiver's implementation of compliance boundaries and reduce remaining problematic behaviors.

Empirical support for PCIT is considerable. A meta-analysis of 11 studies by Cooley et al. (2014) highlighted the significant impact PCIT has on various treatment outcomes for children and caregivers. Majority of studies found larger effect sizes for overall child behavior problems with a mean effect size of −1.06. Medium to large effect sizes were observed for parenting stress attributed to the child (d = −0.80), parental distress (d = −0.73) and due to parent-child dysfunctional interactions (d = −0.94; Cooley et al., 2014).

PCIT has been used extensively with diverse populations. The portability and efficacy of PCIT has been demonstrated for a variety of presentations including autism spectrum disorders (ASD; Scudder et al., 2019), anxiety (Phillips & Mychailyszyn, 2021), selective mutism (Catchpole et al., 2019), callous-unemotional traits (Kimonis et al., 2019), prenatal substance exposure (Egan et al., 2020), depression (Luby et al., 2020), and separation anxiety (Choate et al., 2005). PCIT demonstrates strong treatment effects with different cultural groups including families who identify as being Mexican-American (McCabe & Yeh, 2009), Native American (BigFoot & Funderburk, 2011), Chinese (Leung et al., 2009), and Puerto Rican (Matos et al., 2006).

1.2. PCIT and trauma

PCIT is a well-established therapeutic intervention for the treatment of traumatized children and has also been adapted and tailored to better meet the needs of children and families (Warren et al., 2022). Both standard PCIT and its heterogeneous adaptations have resulted in positive treatment outcomes for caregivers (i.e., parenting stress, caregiver mental health), children (i.e., externalizing and internalizing behavior, child behavior problems), and relational outcomes, and risk and recidivism of abuse and neglect (Warren et al., 2022).

PCIT was not designed to specifically treat trauma and studies reporting on clinician and caregiver attitudes towards some aspects of PCIT (i.e., time out) are incongruent with effective trauma treatment (Dadds & Tully, 2019; Woodfield et al., 2021). Concerns that time out is problematic for children with trauma histories rest in the potential for disruption in the attachment relationship and the possibility time out may serve as a trauma activator for children with abuse histories (Dadds & Tully, 2019). A study of clinician attitudes noted that several clinicians reported apprehension about implementing time out with a traumatized population, and some clinicians simply removed time out altogether (Woodfield et al., 2021). Similar caregiver concerns have been noted in the case study literature on trauma (e.g., Warren et al., 2021). However, the extensive literature on time out concludes that when it is used with safety, consistency, and composure as part of a larger parenting approach, it has the potential to reduce a child's traumatic stress response while also alleviating behavioral and emotional symptoms (Dadds & Tully, 2019). Moreover, a recent study (Xu et al., 2024) links appropriate implementation of time out to positive long-term mental health outcomes for those with a history of childhood adversity.

Several studies note for fuller resolution of trauma symptoms to occur, PCIT treatment may require modification or therapeutic adjuncts (i.e., Trauma-Focused Cognitive Behavior Therapy; TF-CBT; Gurwitch et al., 2017; Pearl et al., 2012, Thomas & Zimmer-Gembeck, 2011; Thomas & Zimmer-Gembeck, 2012; Warren et al., 2021). Other authors (Herschell, Scudder, Schaffner, & Slagel, 2017; Osofsky et al., 2017) assert that children with significant trauma symptoms (i.e., PTSD) should be excluded from PCIT treatment as PCIT does not provide the caregiver with sufficient techniques to treat these symptoms. In one study, caregivers expressed skepticism that PCIT would address childhood trauma through a therapeutic play medium (Woodfield & Cartwright, 2020).

Adaptations to standard PCIT are common when treating children who have a history of trauma. In a systematic review of peer reviewed literature on PCIT and trauma, 42.5% of the 100 studies involved treatment adaptation (Warren et al., 2022). Common adaptations included group-based PCIT (e.g., Foley et al., 2016), combining PCIT with a therapeutic adjunct (i.e., motivational interviewing, enhanced services; e.g., Chaffin et al., 2004), and delivering PCIT in the home (e.g., Galanter et al., 2012). All but one modified study reported significant treatment outcomes (Warren et al., 2022).

1.3. Trauma-directed interaction (TDI)

Trauma-Directed Interaction (TDI), developed by Gurwitch and Warner-Metzger (2019), is an enhanced and standardized protocol designed for treating children with histories of abuse and neglect. The TDI module is a phase of treatment, consisting of four sessions placed between the CDI and PDI phases of PCIT. It provides caregivers with psychoeducation regarding childhood trauma and its impacts, works with caregivers to identify child and caregiver trauma activators, and teaches emotional regulation skills (Gurwitch & Warner-Metzger, 2022; Warren et al., 2022). Table 1 summarizes the phases of both treatments,

Table 1
Content and structure of PCIT versus TDI.

Phase of Therapy	Treatment type	
	PCIT	PCIT with TDI
Dyadic Parent-Child Interaction Coding System-IV (DPICS-IV; Eyberg et al., 2014) and initial assessment	Observation of parent and child together in three different play scenarios: child-led, parent-led, and clean-up.	Observation of parent and child together in three different play scenarios: child-led, parent-led, and clean-up.
CDI Teach	Didactic presentation of CDI skills to parent	Didactic presentation of CDI skills to parent
CDI Coaching Session	Coaching sessions with parent and child together	Coaching sessions with parent and child together
TDI Teach		Didactic presentations of TDI skills
TDI Coaching Session		Coaching sessions with parent and child together
PDI Teach	Didactic presentation of PDI skills to parent: - Direct vs. indirect commands - Effectively stated commands - Time out procedure	Didactic presentation of PDI skills to parent: - Direct vs. indirect commands - Effectively stated commands - Time out procedure
PDI Coaching Session	Coaching sessions with parent and child together.The strategies of CDI are integrated in the PDI coaching sessions.	Coaching sessions with parent and child together. The strategies of CDI and TDI are integrated in the PDI coaching sessions.
Graduation	Repeat DPICS-IV observations and provide graduation certificates.	Repeat DPICS-IV observations and provide graduation certificates.

while Table 2 provides information regarding treatment progression.

1.4. Aims of the current study

The major aim of this study was to evaluate treatment outcomes associated with PCIT and a trauma-adapted version (PCIT with TDI) for children with a history of abuse and neglect. The data collected was from child-caregiver dyads within a real-world statutory child protection agency working across New South Wales, Australia. Similar to earlier studies (Warren et al., 2022), outcomes relating to parenting stress, parental mental health, child behavior problems, child abuse recidivism, and parent attitudes to treatment were examined. Additional outcomes of interest including permanency, and child and caregiver posttraumatic stress symptoms were also examined. Little is known about the effect of PCIT treatment on permanency outcomes. For this study, permanency refers to the maintenance of stability, connection, and attachment to family through long-term foster/kinship care or reunification with biological parents (Department of Communities and Justice, 2021). Placement disruption is often associated with poorer mental health and physical health outcomes for children (Villodas et al., 2016). To further assess permanency, number of placement changes was obtained across both treatment groups.

Posttraumatic stress symptom reduction for children is not extensively covered in the PCIT and trauma literature and requires further investigation. The impact of PCIT and PCIT with TDI treatment on caregiver posttraumatic stress is similarly important and not yet covered in the PCIT and trauma literature. Assessing the bidirectionality of PCIT treatment on caregiver posttraumatic stress is particularly important considering the high prevalence of Adverse Childhood Experiences (ACES; Felitti et al., 1998), mental health issues, and posttraumatic stress symptoms in caregivers (Cervin et al., 2020; Crusto et al., 2010; Maybery et al., 2009).

Consistent with post-treatment findings in other studies (e.g., Abrahamse et al., 2021; Eslinger et al., 2015; Herschell, Scudder, Schaffner, & Slagel, 2017), we hypothesized that dyads in both treatment conditions would report reductions in post-treatment outcomes relating to caregiver and child symptomatology. Caregiver outcomes being assessed included caregiver mental health, parenting stress, and posttraumatic stress symptoms. Child outcomes included behavioral problems and posttraumatic stress symptoms. Additional outcomes relating to numbers of placement changes and child protection notifications were also examined. Given that TDI treatment is tailored to this population, we hypothesized that the magnitude of change across all these outcomes would be greater for those who received PCIT with TDI relative to PCIT only.

2. Method

2.1. Participants and procedure

Participants were 68 caregiver-child dyads seen for treatment by 14 psychologists employed by an Australian statutory child protection agency between July 2019 and October 2022. In keeping with the policies of the statutory child protection agency, all referrals were non-mandatory for treatment made by caseworkers from within the agency. Families were informed they were participating in research which focused on the evaluation of PCIT with TDI. Participation in PCIT or PCIT with TDI was voluntary. Proximity to a TDI trained PCIT therapist and therapist discretion were determining factors for group assignment. When these children were referred to a TDI trained therapist, TDI was usually delivered where the child had a history of trauma and standard PCIT was usually chosen if the child had come into care at birth. This was a naturalistic evaluation of PCIT and PCIT with TDI within the agency; it was not a randomized controlled trial. Additionally, this study was largely guided by existing data collection and implementation processes within the agency.

Families were eligible for services if they 1) were currently in receipt of child protection services from the statutory child protection agency; 2) had reported child behavioral issues and/or significant caregiver stress; and 3) had a child between 2 and 7 years of age. There was no eligibility requirement of a minimum level of child traumatic stress symptoms or child behavioral problems.

Caregiver exclusion criteria included significant and untreated mental health of the caregiver, intellectual disability, active drug abuse, and/or caregivers who had perpetrated sexual abuse against children. Children were only excluded from PCIT treatment if they lacked the necessary speech and language skills (i.e., receptive language skills less than 30 months of age), as determined by a speech/language screener. The screener asked five questions regarding the child's speech and language abilities. It included questions like, Can your child follow a 1-step direction such as 'get your shoes', 'throw the ball', or 'give it to me'? _Respondents provided a yes/no response to each of these questions, and if they exceeded the cutoff, they were encouraged to seek speech pathology assessment prior to commencing treatment.

Table 2
Treatment progression.

Component	Treatment	
	PCIT	PCIT with TDI
DPICS-IV and Intake (pre-treatment)	1–2	1–2
CDI Teach	Session 1	Session 1
CDI Coaching Sessions	Session 2–12 (11 sessions)	Sessions 2–8 (7 Sessions)
TDI Teach		Session 9
TDI Coaching Sessions		Session 10–12 (3 sessions)
PDI Teach	Session 13	Session 13
PDI Coaching Sessions	Session 14–24 (10 sessions)	Session 14–24 (10 sessions)
Graduation	Session 25	Session 25

2.2. Treatment conditions

Prior to commencing treatment, families were engaged in a pre-treatment assessment. During this session, caregivers provided detailed information regarding 1) the child's behavioral, social, emotional, and developmental difficulties across environments; 2) caregiver stress and mental health concerns; 3) previous interventions attempted; 4) current behavior management techniques; 4) DPICS-IV observations; and 5) any other information relevant to their family circumstances. Caregivers also completed several standardized pre-treatment assessment measures regarding caregiver and child symptomatology. Following the pre-treatment assessment, families then commenced weekly PCIT or PCIT with TDI. Although PCIT is an assessment driven treatment, to assure standard number of sessions across both groups, a fixed number of sessions was provided (see Table 2).

Therapists conducting the sessions were all psychologists or provisional psychologists (i.e., psychologists in training) who completed or were in the process of completing their PCIT therapist training. Therapists trained in TDI completed 16 h of TDI training and completed 12 months of group consultation calls with TDI developers throughout the course of this study.

2.3. Measures

2.3.1. Child outcome measures. *Table 3 Provides a schedule for the administration of the measures utilized in this study*

2.3.1.1. Eyberg Child Behavior Inventory (ECBI: Eyberg & Pincus, 1999). The ECBI is a reliable and valid measure of problematic behaviours in children and adolescents (Eyberg & Pincus, 1999). The ECBI is a measure completed by caregivers of children between the ages 2 and 16.

Table 3
Schedule of administration of measures.

Measure	Session					
	Pre-treatment	Every treatment session	Post-CDI teach	Post CDI	Post TDI	Post-treatment
ECBI	x	x	x	x	x	x
SDQ	x					x
PSS	x					x
DASS-21	x					x
SUDS			x	x	x	x
TESI-PRR Brief	x					
TSCYC	x			x	x	x
LSC-R	x					
PCL-5 severity	x			x	x	x
SUDs			x	x	x	x

Note. PCL-5 is only administered if the LSC-R indicates presence of traumatic events.

It is 36-item measure and contains two subscales: the Intensity Scale (i.e., how frequently problematic behaviors occur) and the Problem Scale (i.e., whether the behavior is problematic for the caregiver). Respondents are asked to consider their child's behaviors over the last week. They are asked to respond to statements such as "sasses adults" and "whines" using a 7-point Likert scale which corresponds to 5 frequency statements (i.e., never, seldom, sometimes, often, always). The ECBI is scored by separately summing the scores for each of the scales and converted into T Scores. Both scales demonstrated high internal consistency (Intensity Scale Cronbach's alphas were 0.95 for boys and 0.94 for girls; Problem Scale Kruder-Richardson 20 [KR20] scores were 0.94 for boys, 0.93 for girls), and test-retest reliability (Intensity and Problem Scales correlation coefficients were 0.86 and 0.88 respectively).

2.3.1.2. Trauma Symptoms Checklist for Young Children (TSCYC: Briere, 1999). The TSCYC is a 90-item, standardized, parent/caregiver report measure of trauma symptoms in children aged 3–12 years. The TSCYC is a measure completed by caregivers of children aged 3–12 and contains eight clinical scales (i.e., Anxiety, Depression, Anger/Aggression, Posttraumatic Stress Intrusion, Posttraumatic Stress Avoidance, Dissociation, Sexual Concerns, and a summary posttraumatic stress scale [Posttraumatic Stress Total; PTS]) and two validity scales that assess potential caregiver over-report and under-report. Respondents are asked to consider their child's behaviors over the last month and respond to each of the 90 items by a using a 4-point Likert scale. This scale corresponds to 5 statements of frequency (i.e., not at all, sometimes, often, very often). The TSCYC is scored by separately adding the item scores corresponding to the clinical scales together and then obtaining a T Score. The PTS is obtained by adding the scores of each of the posttraumatic stress scales together. Internal consistency of the TSCYC ranged from $\alpha = 0.73$ to 0.86 (Briere et al., 1999). In this sample the Cronbach's alpha for the Posttraumatic Stress Total score was 0.815.

2.3.1.3. Traumatic Events Screening Inventory Parent Report Revised Brief Version (TESI-PRR-Brief; Ghosh-Ippen et al., 2002). The TESI-PRR-Brief measures child exposure to trauma over their lifetime. This version is completed by caregivers and used with children aged 0–6 years. It is a 24-item scale designed to screen for a wide range of potential traumatic exposures including accidents, hospitalizations, witnessing violence, physical abuse, sexual abuse, and exposure to natural disasters. Parents/caregivers are asked to indicate whether their child has experienced an event. Psychometric properties of the TESI-PRR are not available (Oh et al., 2018). The measure is scored by adding the number of endorsed items (i.e., number of yeses) together.

2.3.1.4. Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The SDQ is a 25-item parent/caregiver measure that is used to identify behavioral and emotional problems in children. The 2–4 years and 4–10 years versions were utilized in this study. The SDQ is a 25 item measure and includes five subscales: emotional symptoms, conduct problems, hyperactivity and inattention, peer problems, and pro-social behavior. A total difficulties scale (obtains a score between 0 and 40) is also obtained. The respondent is asked to indicate whether each of the statements are not true, somewhat true, or certainly true over the last 6 months. The SDQ is scored by summing the individual items that correspond to the specific clinical scale. Some items are reversed scored (i.e., certain items in the prosocial scale, peer problems scale, and the hyperactivity scale). The SDQ has good internal reliability with average Cronbach's alphas of 0.73 (Goodman, 1997). In a sample of Australian children, parent/teacher Cronbach's alphas ranged from 0.57 to 0.88 (Hawes & Dadds, 2004). In this sample the Cronbach's alpha was 0.66.

2.3.2. Parental outcome measures

2.3.2.1. Life Stressor Checklist – Revised (LSC-R: Wolfe & Kimerling, 1997). The LSC-R is designed to screen for the presence of events that are both traumatic and stressful in adults during their lifetime. The questionnaire includes 30 life events, including experiences with natural disasters, physical or sexual assault, death of a relative, and other events. To score the LSC-R, one point is given to each positively endorsed stressor. The points are summed which provides an overall life stressor score. Validity and reliability data is not available for the LSC-R. Psychometric data was available for an adapted version of the LSC-R which showed test-retest reliability average kappas of 0.70 (McHugo et al., 2005).

2.3.2.2. PTSD Checklist for DSM-V (PCL-5; Weathers et al., 2013). The PCL-5 is a 20-item adult self-report measure that assesses trauma symptom severity. Respondents are provided with a range of stressful experiences and asked to endorse each response on a 5-point Likert scale according to how frequently it has occurred in the last month (i.e., not at all, a little bit, moderately, quite a bit, or extremely). The measure is scored by adding the individual items together to obtain an overall score. An overall score above 33 indicates that the respondent requires further assessment to determine whether a diagnosis of PTSD may be present. The PCL-5 has strong internal consistency ($\alpha = 0.94$), test-retest reliability ($r = 0.82$), and convergent and discriminant validity ($rs = 0.75$ to 0.84 and 0.31 to 0.60 respectively; Blevins, 2015).

2.3.2.3. Parental Stress Scale (PSS: Berry & Jones, 1995). The PSS is an 18-item measure that assesses perception of parenting stress, focusing on parental stress and not general stress. Caregivers are asked to input a number (between 1 and 5) that indicates the level of agreement to each statement (e.g., "I am satisfied as a parent"). Caregivers were asked to consider their levels of stress over the last month. Certain items are reverse scored (i.e., item 1, 2, 3, 8, 7, 17, and 18) and the remainder are scored using the number provided by the caregiver. Items are summed to yield an overall score. The PSS has strong internal consistency ($\alpha = 0.83$) and test-retest reliability ($r = 0.81$; Berry & Jones, 1995).

2.3.2.4. Depression and Anxiety Stress Scale (DASS-21: Lovibond & Lovibond, 1995). The DASS-21 is a 21-item self-report adult questionnaire designed to measure the severity of depression, anxiety and stress. Respondents are asked to endorse each statement on a 0–3 Likert scale with each number corresponding to level of agreement of the applicability of the item to the respondent. Individual items responding to each of the clinical scales are summed and multiplied by 2 to obtain the individual clinical scale score. Overall scores can be classified as normal, mild, moderate, severe or extremely severe. The DASS-21 has good to excellent internal consistency (Cronbach's alphas of 0.94, 0.87, and 0.91) and concurrent validity (correlation coefficients of 0.55–0.79; Antony et al., 1998).

2.3.2.5. Subjective Units of Distress Scale (SUDs) (Wolpe, 1973). The SUDs is a simple scale from 0 to 10 which measures the subjective experience of distress experienced by an individual (0 represents "peace and complete calm; totally relaxed" and 10 represents feeling "unbearable upset to the point that you cannot function and be on the verge of a breakdown; highest distress you have ever felt"). The SUDs was used by caregivers to help them track their own reactions and coping (Gurwitch & Warner-Metzger, 2019).

2.3.3. Therapist and Caregiver Acceptability and Experience of PCIT/PCIT with TDI

Parents/caregivers completed an adapted version of the Therapy Attitude Inventory (TAI; Brestan et al., 1999) to measure acceptability and feasibility of PCIT. Items explore parental perception and confidence regarding discipline skills, the quality of the parent-child interaction, shifts in child behavior, and overall adjustment. Respondents are asked to respond to various statements on a 5 point Likert scale, a score of 5 indicates the greatest satisfaction with that component of treatment. Higher scores indicate greater treatment satisfaction. Psychometric evaluation of the standard version of this measure indicates adequate reliability and validity (Brestan et al., 1999). The TAI was adapted to include an additional two statements regarding attitude to trauma symptom improvement: "My child's trauma symptoms are …" and "If applicable, my own trauma symptoms are ….". The TAI was administered to caregivers who had completed treatment either in the final session of PCIT or PCIT with TDI or in the immediate period after (i.e., less than one month post intervention).

2.4. Integrity (fidelity)

For PCIT and PCIT with TDI, treatment integrity was assessed from either pre-recorded session videotapes or via live attendance by an independent rater. Treatment integrity was evaluated via PCIT Integrity Checklists, included in the PCIT treatment manual for each session, which measures how closely PCIT therapists adhered to the PCIT protocol (Eyberg & Funderburk, 2011). Similarly, the TDI manual incorporates its own Integrity Checklists which describe the content of sessions. To check fidelity in the child protection setting, therapists were asked to record or have a trained observer attend the session live and submit key sessions including CDI and PDI teach and coaching sessions. TDI fidelity was also checked for the TDI teach and at least one TDI coaching session. Seven psychologists had a total of 25 sessions reviewed and assessed with integrity checklists. Fidelity checks for all psychologists were limited due to technical issues, or an inability to provide an appropriate recorded session for review within the study timeframe. A score of 90% or greater on PCIT and TDI integrity checklists indicated good treatment fidelity. Overall fidelity percentages were 90.3%.

2.5. Data analysis

The effectiveness of PCIT and PCIT with TDI was analyzed for the sample of 68 children using a 2 (within subjects) x 2 (between subjects) mixed model using IBM SPSS Statistics 29. Assessment point (i.e., pre-treatment, post-CDI, post-TDI and graduation/post-treatment) was the within-subjects factor and treatment condition (i.e., PCIT with TDI vs PCIT) was the between-subjects factor. Dependent variables under investigation included parenting stress, parental mental health, child behavior problems, parent and child trauma symptoms, child abuse recidivism, and permanency outcomes (i.e., number of placement changes).

Missing data were seen in only a few of the study's variables. As these variables were not critical to the analysis, they were excluded (e.g. missing PCL-5 data and DASS-21 data for caregiver 2, and SUDS all over 60% missing across the two groups). Cases with completed data were utilized throughout the analysis. Normality could not be assumed for some of the variables of interest. Non-parametric tests were utilized where possible; when a non-parametric alternative was not available, the parametric test was conducted. Given the sample size and robustness of the tests selected, normality was unlikely to be impactful on the results of the chosen parametric analysis (Tabachnick & Fidell, 2014). An independent-samples *t*-test was conducted to compare the pre-treatment scores for the two treatment conditions (see Table 6).

In addition to statistical significance, overall clinically meaningful change of the scores (i.e., ECBI, PCL-5, PSS, TSCYC, DASS-21, and SDQ) was also examined. Aligned with the measures utilized, scores falling in the clinical range for potential diagnosis of a mental health condition and/or required psychological intervention to treat were deemed clinical scores. Subclinical scores described symptoms or behaviors that were subthreshold for diagnosis and intervention was not required.

A post-hoc power analysis indicated low statistical power for the outcomes of interest (i.e., SDQ, ECBI, TSCYC, PCL-5, DASS-21 and PSS). Power values ranged between 0.056 and 0.34 suggesting that overall

Table 4
Child participant characteristics.

Variable	%	*n*	*M*	*SD*	Range
Number of PCIT Participants	32.4	22			
Number of PCIT with TDI Participants	67.6	46			
Child Gender					
Male	57.4	39			
Female	42.6	29			
Cultural Background					
Aboriginal	44.1	30			
Culturally and Linguistically Diverse (CALD)	4.4	3			
Torres Strait Islander	1.5	1			
Caucasian/None	50	34			
Placement type					
Kinship/Relative	52.9	36			
Foster	17.6	12			
Biological parents	27.9	19			
Number of parents in treatment					
1	80.9	55			
2	19.1	13			
Legal status					
Parental Responsibility to Minister to age 18	69.1	47			
Not in care	14.7	10			
Interim Orders	8.8	6			
Guardianship	2.9	2			
Supervision Orders	4.4	3			
Program completion					
Graduated	35.3	24			
Dropped out	44.1	30			
Ongoing	10.3	7			
Unknown	10.3	7			
Age of child at referral		68	5.03	1.30	2.09–7.87
Age of child at start of intervention		68	5.17	1.29	2.12–7.99
Number of traumatic events (child)		64	5.91	3.97	0–15
Number of traumatic events (caregiver 1)		62	8.92	5.08	2–21
Number of traumatic events (caregiver 2)		10	5.20	3.80	1–14

Table 5
Mean and standard deviations for key study variables.

Variable	Pre Treatment *M* (*SD*)	Post CDI *M* (*SD*)	Post TDI *M* (*SD*)	Post Treatment *M* (*SD*)	Pre Treatment *M* (*SD*)	Post CDI *M* (*SD*)	Post TDI *M* (*SD*)	Post Treatment *M* (*SD*)
Intervention	PCIT				PCIT with TDI			
Number of child protection notifications				0.67 (1.23)[a]				0.56 (1.13) [a]
Number of placement changes				0 (0)[a]				0.14 (0.42) [a]
ECBI								
Intensity Score	151.81 [b] (36.21)			116.21 (60.18)	154.12 [b] (32.18)			101.89 (41.11)
Problem Score	22.45 [b] (16.08)			15.00 (16.71)	16.60 [b] (7.58)			7.92 (10.80)
TSCYC (total PTS score)	66.05 [c] (15.86)	70.50 (24.02)		60.33 (19.16)	74.15 [b] (21.17)	63.11 (15.88)	60.79 (17.16)	59.71 (21.05)
SDQ (total score)	20.18 (6.12)			13.00 (9.11)	20.57 (6.73)			13.53 (5.49)
DASS-21 Parent 1								
Depression	5.50 [d] (7.86)			2.50 (4.46)	5.71 [d] (7.57)			3.31 (5.10)
Anxiety	4.55 [d] (8.01)			2.17 (4.40)	5.78 [d] (7.79)			1.63 (2.19)
Stress	11.16 [e] (8.09)			6.17 (4.02)	10.16 [c] (8.50)			6.31 (6.09)
PSS Parent 1	39.70 (9.76)			35.14 (13.01)	41.02 (13.72)			
PCL-5 Parent 1	13.21 (17.00)	18.6 (17.34)		16.00 (22.56)	15.50 (16.03)	14.65 (12.06)	10.62 (9.29)	6.83 (7.37)

Note: DASS-21 = Depression, Anxiety and Stress Scale; ECBI = Eyberg Child Behavior Checklist; PCL-5 = PTSD Checklist for DSM-5; PSS = Parenting Stress Scale; SDQ = Strengths and Difficulties Questionnaire; TSCYC = Trauma Symptom Checklist for Young Children.
[a] Obtained six months post-treatment.
[b] Indicates clinical significance.
[c] Indicates subclinical significance.
[d] Indicates mild clinical significance.
[e] Indicates moderate clinical significance.

Table 6
Pre-treatment score differences between treatment types.

	PCIT			PCIT with TDI								
	n	*M*	*SD*	*n*	*M*	*SD*	Mean Difference	95% CI	*df*	*t*	*p*	Cohen's *d*
ECBI Intensity Score	21	151.81 [a]	36.21	43	154.12 [a]	32.18	2.31	−15.54, 20.15	62	0.26	0.806	0.07
ECBI Problem Score	20	22.54 [a]	16.08	43	16.60 [a]	7.58	−5.85	−13.66, 1.97	23.02	−1.55	0.135	−0.53
TSCYC Total Score	20	66.05 [b]	15.86	41	74.15 [a]	21.17	8.10	−2.57, 18.76	59	1.52	0.098	0.41
SDQ Total Score	22	20.18 [a]	6.12	44	20.57 [a]	6.72	0.39	−3.02, 3.80	64	0.23	0.822	0.06
DASS Depression Score	20	5.50 [c]	7.86	45	5.71 [c]	7.57	0.21	−3.90, 4.32	63	0.10	0.920	0.03
DASS Anxiety Score	20	4.55 [c]	8.01	45	5.78 [c]	7.79	1.23	−2.99, 5.45	63	0.58	0.569	0.16
DASS Stress Score	19	11.16 [d]	8.09	45	10.16 [d]	8.50	−1.00	−5.59, 3.58	62	−0.45	0.658	−0.12
PSS	20	39.70	9.76	43	41.02	13.72	1.32	−5.51, 8.15	50.66	0.44	0.663	0.11
PCL-5	14	13.21	17.00	32	15.50	16.03	2.29	−8.26, 12.83	44	0.44	0.673	0.14
Child Trauma	21	4.62	3.98	43	6.53	3.85	1.92	−0.16, 3.99	62	1.83	0.075	0.49
Parent trauma	19	9.32	5.50	43	8.74	4.95	−5.72	−3.39, 2.25	60	−0.41	0.687	−0.11

Note.
[a] Indicates clinical significance.
[b] Indicates subclinical significance.
[c] Indicates mild clinical significance.
[d] Indicates moderate clinical significance.

statistical power for this sample was low.

3. Results

3.1. Child sample characteristics

There were 68 families who participated in the 3-year study with 22 families receiving PCIT and 46 families receiving PCIT with TDI. Children referred for treatment included more males (n = 39; 57.4%) than females (n = 29; 42.6%). The range of ages of the children at time of referral was 2.09–7.87 years (M = 5.03, SD = 1.30). The age range at the commencement of intervention was 2.12–7.99 years (M = 5.17, SD = 1.29). Approximately 50% (n = 34) of the children engaged in treatment were Caucasian and the remainder were Aboriginal (n = 30; 44.1%), Torres Strait Islander (n = 1; 1.5%) and culturally and linguistically diverse (CALD; n = 3; 4.4%). Children were mostly subject to long-term care orders (n = 47; 69.1%) and were placed in the care of relatives (n = 36; 52.9%). The average number of lifetime traumas for children were 5.91. For caregivers, the average numbers were 8.92 (primary caregiver) and 5.20 (secondary caregiver). Information regarding trauma types and demographic characteristics of caregivers were not obtained. Of the families participating, 80.9% (n = 55) had one parent in PCIT or PCIT with TDI treatment and 19.1% (n = 13) had two parents in treatment. Most (n = 46; 67.6%) were treated with PCIT with TDI and the remainder received PCIT only treatment (n = 22; 32.4%). See Table 4 for a summary of participant characteristics.

Of the 14 psychologists from across NSW Australia who delivered the treatments, six were PCIT-only trained clinicians and eight were PCIT with TDI trained practitioners.

3.2. Descriptive analysis

Participants attended an average of 15.70 (SD = 9.40; range = 0–32 sessions) sessions which occurred over 8.85 months (SD = 5.99, range = 0–25.66). As shown in Table 5 all mean pre-treatment scores were higher than post-treatment scores across ECBI scores, TSCYC total

posttraumatic stress, SDQ, PSS, and DASS-21. An independent samples *t*-test was used to determine the difference between pre-treatment scores on the ECBI, TSCYC, SDQ, PSS, DASS-21 and PCL-5. There was no significant difference between pre-treatment scores for the two treatment conditions (see Table 6). A series of mixed model ANOVAs determined the effect of time (i.e., pre-treatment and post-treatment) and treatment type (PCIT compared to PCIT with TDI) on each outcome variable.

Tables 5 and 6 also indicate those scores that were clinically significant at pre-treatment. ECBI Intensity and Problem Scores were in the clinical range for both conditions, TSCYC scores were subclinical (PCIT) and clinical (PCIT with TDI), and DASS-21 Depression and Anxiety scores were mildly elevated while the DASS-21 stress scores were moderately elevated. None of these scores were clinically significant at post-treatment.

3.3. Therapy attrition

Overall drop-out and treatment completion figures are presented in Table 4. For the PCIT with TDI treatment condition, 17 (37%) families completed treatment and 21 (45.7%) did not complete therapy. The remainder were unknown or still completing therapy. This was due to the data being provided at a single point in time rather than sequentially as families completed or dropped out. For the PCIT treatment condition, 7 (31.8%) families completed treatment and 9 (40.9%) families did not complete treatment. The remainder were unknown or still completing therapy. Data regarding reasons why families did not complete treatment was not collected in this study.

Families completing treatment to graduation attended an average of 23.29 sessions (TDI treatment $M = 22.88$; PCIT treatment $M = 24.29$) and families who dropped out of treatment attended an average of 9.41 sessions (TDI treatment $M = 10.05$; PCIT treatment $M = 8$). There was no significant difference between the number of sessions for families who dropped out for either treatment condition (t (27) $= 0.77$, $p = 0.45$). A two way between-groups ANOVA was conducted to explore the impact of treatment condition and program completion on post-treatment child behavior problems (as measured by the post-treatment ECBI Intensity Score). Post-treatment was defined as the last ECBI score that was obtained before the family dropped out of treatment. The interaction effect between treatment type and program completion was not significant, F (1, 45) $= 0.204$, $p = 0.654$. There was a statistically significant main effect for program completion, F (2, 45) $= 5.055$, $p = 0.10$, with a large effect size ($\eta^2 = 0.18$). This result indicated that children who completed treatment showed fewer behavior problems than those that did not complete treatment.

A mixed model ANOVA was utilized to determine the effect of treatment (i.e., PCIT and PCIT with TDI) for non-completers on ECBI Intensity and Problem Scores over time. There was a significant main effect of time only on non-completers ECBI Intensity Scores only, F (1, 22) $= 6.197$, $p = 0.021$, with a large effect size ($\eta^2 = 0.22$). Mean PCIT with TDI drop-out Intensity Scores ($M = 122.19$) and Problem Scores ($M = 9.38$) scores fell below clinical significance (i.e., Intensity Score is < 132; Problem Score is < 15), and mean PCIT drop-out Intensity Scores ($M = 137.88$) and Problem Scores ($M = 20.00$) were above the level of clinical significance.

3.4. Child outcomes

Mixed model ANOVAs were conducted to determine change over time (i.e., pre-treatment to post-treatment) for each of the two treatment groups (i.e., PCIT and PCIT with TDI) across key child outcome areas (i.e., total posttraumatic stress scores on the TSCYC, SDQ total scores, and ECBI Intensity and Problem Scores; see Table 7). For young children's traumatic stress symptoms, there was a significant main effect of time with individuals in the PCIT and PCIT with TDI demonstrating similar reductions over the course of treatment, $F(1, 21) = 15.68, p < 0.001$. For young children's behavioral difficulties, there was a significant main effect of time with individuals in both the PCIT and PCIT with TDI groups demonstrating similar reductions by treatment completion, F (1, 22) $= 30.69$, $p < 0.001$. Similar results were obtained on the ECBI Intensity and Problem Scores (see Table 7). These results indicated that there was improvement in the key child outcomes across treatment, but this was not influenced by the treatment condition.

Wilcoxon Signed Rank Tests were conducted to evaluate the impact of TDI treatment on children's TSCYC PTS total scores by phase of treatment (i.e., pre-treatment to end of CDI, end of CDI to end of TDI, and end of TDI to end of PDI). There was a statistically significant decrease in TSCYC PTS Total scores from pre-treatment to end of CDI, $z = -2.36$, n $= 27$, $p = 0.018$; and from end of CDI to end of TDI, $z = -2.40$, $n = 23$, $p = 0.016$; but not from end of TDI to post-treatment, $z = -0.196$, $n = 16$, $p = 0.84$. Phase of treatment outcomes were not examined for standard PCIT due to insufficient data.

3.5. Caregiver outcomes

Mixed model ANOVAs were conducted to determine change over time (i.e., pre-treatment and post-treatment) for each of the two treatment groups (i.e., PCIT and PCIT with TDI) for key caregiver outcome areas (i.e., DASS-21 scores, PSS scores, and PCL-5 scores; see Table 8). There was a significant main effect of time on PCL-5 scores, F (1, 12) $= 5.93$, $p = 0.031$; and on the stress scales of the DASS-21 only, F (1, 20) $= 7.38$, $p = 0.013$. These results indicated that there was improvement in parental symptomology for stress and traumatic stress, but this was not influenced by the treatment condition.

Wilcoxon Signed Rank Tests were conducted to evaluate the impact of TDI treatment on caregivers' PCL-5 scores by phase of treatment (i.e., pre-treatment to end of CDI, end of CDI to end of TDI, and end of TDI to end of PDI). There were no statistically significant decreases in PCL-5 scores by phase of treatment (pre-treatment to end of CDI, $z = -1.347$, $n = 21$, $p = 0.178$; end of CDI to end of TDI, $z = -0.171$, $n = 20$, $p = 0.864$; end of TDI to post-treatment, $z = -1.956$, $n = 11$, $p = 0.05$), although PCL-5 results from end of TDI treatment to post-treatment approached significance ($p = 0.05$). Phase of treatment outcomes were not examined for standard PCIT due to insufficient data.

3.6. Child protection notifications and permanency outcomes

Number of placement changes and child protection notifications (obtained at 6 months post-treatment completion) were categorized into the following groups: no changes/notifications, low (n=1–2), medium ($n = 3$–4), and high ($n = 5+$). Percentages of each variable by treatment type are presented in Table 9. A Chi-Square Test for independence indicated no significant associations between treatment type and child protection notifications (χ^2 (3, $n = 48$) $= 0.62$, $p = 0.89$, $phi = 0.11$) and treatment type and placement change (χ^2 (1, $n = 48$) $= 0.36$, $p = 0.23$, $phi = -0.17$).

Table 7
Mixed model ANOVAs for child treatment outcomes.

Variable	*F*	*p*	Partial η^2
TSCYC PTS Total Score			
Time	15.68	<0.001*	0.43
Time x Treatment	0.29	0.597	0.014
SDQ Total Score			
Time	30.69	<0.001*	0.59
Time x Treatment	0.02	0.880	0.001
ECBI Intensity Score			
Time	36.43	<0.001*	0.43
Time x Treatment	2.15	0.149	0.04
ECBI Problem Score			
Time	15.37	<0.001*	0.36
Time x Treatment	0.11	0.739	0.002

*p < 0.05.

Table 8
Mixed model ANOVAs for caregiver treatment outcomes.

Variable	*F*	*p*	Partial η^2
PSS			
Time	1.24	0.278	0.058
Time x Treatment	0.72	0.406	0.035
PCL-5			
Time	5.93	0.031*	0.331
Time x Treatment	0.66	0.433	0.052
DASS-21 Depression Scale			
Time	1.45	0.242	0.068
Time x Treatment	0.17	0.684	0.008
DASS-21 Anxiety Scale			
Time	1.91	0.182	0.087
Time x Treatment	0.01	0.934	<0.001
DASS-21 Stress Scale			
Time	7.39	0.013*	0.270
Time x Treatment	4.32	0.051	0.178

*$p < 0.05$.

3.7. Attitudes to treatment

Caregiver attitude to PCIT or PCIT with TDI was measured by examining overall adapted TAI means for each treatment condition. Fig. 1 shows counts of responses to individual TAI items for the 17 respondents. A higher score on the individual item (i.e., 5) indicates greater satisfaction. The mean adapted TAI scores of the eleven PCIT with TDI families were 51.64 ($SD = 6.90$) and 51.50 ($SD = 7.18$) for the six PCIT families. Scores ranged from 41 to 60 (highest possible score) indicating high treatment satisfaction. There was no significant difference for the mean scores between the two treatment groups ($t\,(15) = 0.04, p = 0.97$).

4. Discussion

This study was a quasi-experimental cohort study evaluating pre to post-treatment outcomes for two treatment groups (PCIT and PCIT with TDI). The primary hypothesis of this study was that both treatments would report pre-post treatment changes but that the magnitude of change would be greatest for children and caregivers receiving PCIT with TDI treatment given its trauma-focused nature. A two-group (PCIT and PCIT with TDI) pre-post design was utilized to evaluate treatment outcomes. The outcomes of interest included parenting stress, child and caregiver traumatic stress, child behavior problems, caregiver mental health (i.e., depression, anxiety and stress), and caregiver attitudes to treatment.

4.1. Treatment outcomes

Regardless of treatment condition, there was a statistically significant reduction from pre-to post-treatment for child behavior problems and posttraumatic stress symptoms, and caregiver stress and posttraumatic stress symptoms. Contrary to our hypotheses, there was no statistically significant impact of treatment type for any of the outcomes of interest. Child behavior treatment effects in this sample were comparable to other studies of PCIT and adapted versions with a population who had experienced child abuse and neglect (Warren et al., 2022). Children's posttraumatic stress symptoms decreased from pre-to post-treatment and there were statistically significant changes from pre-treatment to end of CDI and from end of CDI to end of TDI phase. Child posttraumatic stress symptom reduction for the PCIT with TDI condition had a larger effect size compared to the only other quantitative study of child posttraumatic stress symptoms (i.e., Pearl et al., 2012).

Table 9
Child protection notifications and placement changes percentages by treatment type.

Count				
Treatment type	None	1–2	3–4	5+
Child Protection Notifications				
PCIT with TDI	72.2	19.4	5.6	2.8
PCIT	66.7	25	8.3	0
Placement Changes				
PCIT with TDI	88.9	11.1	0	0
PCIT	100	0	0	0

Caregiver treatment outcomes were not as consistent. Levels of parenting stress did not significantly decrease following treatment, nor did levels of depression or anxiety. This was not consistent with previous research findings which showed significant improvement on measures of parenting stress and caregiver mental health (see Warren et al., 2022 for a review). It is possible that this was due to the high levels of foster and kinship caregivers in this sample compared with other studies who utilized a biological parent sample. Foster caregivers encounter child behavior problems that exceed typical experiences of parenting, and they are required to parent in a system that is highly stressed (Murray, Tarren-Sweeney, & France, 2011; Tarren-Sweeney, 2008). This study occurred during significant global and regional environmental stressors (i.e., COVID-19; Australian bushfires and floods). Previous research clearly indicates large-scale disaster events create elevated levels of stress, depression, and anxiety (Passavanti et al., 2021; Zhang et al., 2022) and may account for the increase in PCL-5 scores for caregivers undergoing PCIT treatment (although it is important to note that participants in PCIT treatment were roughly half of those in the TDI condition). Therefore, it is unsurprising parenting stress and adult depression and anxiety levels did not experience a statistically significant change throughout the current study. However, there were clinically significant shifts in a the DASS-21 Depression, Anxiety and Stress scores which showed mild and moderate levels of distress reducing to normative ranges at the end of treatment for both treatments.

This study is the first to highlight the significant change in caregiver posttraumatic stress symptoms for families treated with PCIT and PCIT with TDI. The PCL-5 levels reported at pre-treatment were not at a level that would indicate PTSD. These results are particularly important due to prevalence of ACES and mental health concerns amongst caregivers (Cooley et al., 2014; Felitti et al., 1998), transmission of intergenerational trauma (Bartlett, Kotake, Fauth, & Easterbrooks, 2016), and the relationship between adult posttraumatic stress symptomatology and increased risk of future perpetration of child abuse (Milner et al., 2010). The bidirectionality of PCIT and PCIT with TDI treatment on caregiver posttraumatic stress symptoms is a promising find of this study.

Attrition within this study (45.3%) was comparable to similar studies using PCIT for children with trauma histories (Batzer et al., 2018). Children who completed treatment achieved lower ECBI Intensity Scores (i.e., fewer symptoms) than those who did not complete treatment. There was, however, a statistically significant change in pre-treatment to final ECBI Intensity Scores for families who did not complete treatment. This was similar to the Messer et al. (2022) study that showed significant ECBI Intensity Score changes from pre-treatment to dropout for families with a history of trauma who failed to complete treatment. In considering the impact of treatment type, families treated with PCIT with TDI who did not complete treatment had an average ECBI score below clinical significance.

Permanency outcomes (i.e., number of placement changes) and number of child protection notifications did not differ between treatment conditions. Children in this study had greatest frequency of no future child protection notifications (66.7%–72.2% of the sample) and no placement changes (88.9%–100% of the sample) at 6-month follow-up. Several longitudinal studies have reported similar results for child protection notifications (e.g., Chaffin et al., 2004; Thomas & Zimmer-Gembeck, 2011). While permanency outcomes have been less commonly evaluated in the PCIT and trauma literature (Warren et al., 2022), documentation of PCIT's impact on permanency is vital given that children who achieve permanency have more positive outcomes than those that do not (Vanderwill et al., 2021). This study of PCIT and PCIT

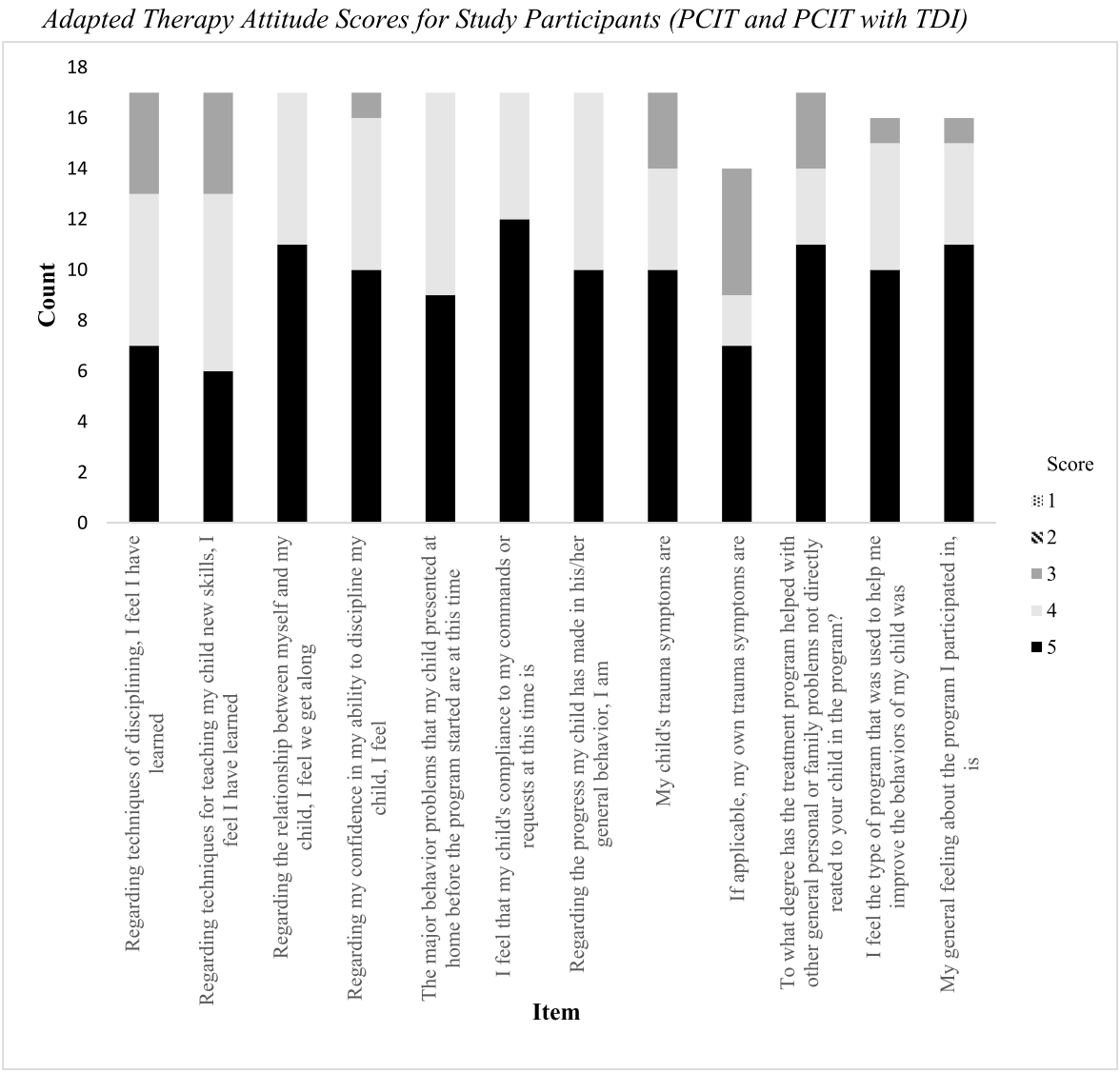

Fig. 1. Adapted therapy attitude scores for study participants (PCIT and PCIT with TDI).

with TDI is the first to document permanency outcomes via placement changes.

Finally, caregiver attitudes to treatment were generally favorable across the two treatment conditions. The majority of participants indicated either treatment was effective in treating posttraumatic stress symptoms of children and caregivers. Further, attitudes were similarly positive across the two treatment conditions suggesting that PCIT and PCIT with TDI were generally an acceptable and efficacious treatment by caregivers.

Given that all families in the current study received foundational PCIT treatment, it is unsurprising that significant caregiver and child outcomes were observed across the two treatment conditions. PCIT's effectiveness with a population of children who have experienced abuse and neglect is well documented. It is promising that the TDI adaptation has yielded comparable results across a range of child and caregiver symptoms; however, a larger scale randomized controlled trial would better determine the relative efficacy of the treatments.

4.2. Clinical implications

The significant improvements on child (i.e., problematic behavior and posttraumatic stress symptoms) and caregiver (i.e., general stress and posttraumatic stress) did not differ across the two treatment conditions of PCIT compared to PCIT with TDI. Furthermore, adding trauma-focused concepts to PCIT did not weaken the efficacy of PCIT with this population. While this study did not have the necessary statistical power to determine the magnitude of change of PCIT with TDI to be greater than PCIT alone, it showed outcomes for caregivers and their children were similar between the treatment conditions. PCIT with TDI represents a standardized way to implement a trauma-informed approach to PCIT treatment.

Gurwitch and Warner-Metzger (2022) state that PCIT with TDI also assists in reducing concerns from clinicians, families and agencies about the ability of PCIT to directly treat traumatic stress symptoms. This study has provided preliminary evidence of both PCIT and PCIT with TDI to directly treat traumatic stress symptoms. The study also showed favorable caregiver attitudes to treatment overall and particularly in relation to the efficacy of both PCIT and PCIT with TDI to treat children's trauma symptoms. It is possible that both PCIT and a trauma-adapted version have good face validity for caregivers and therapists.

4.3. Strengths and limitations

This study has high clinical utility as it was conducted in a real-world context with a sample of children known to the child protection agency. There are, however, inherent difficulties with this type of research and

limitations. One limitation related to the low numbers of further child protection notifications. Most of the children were in foster care or relative/kinship care and only some were still in the care of their biological parents. For those children in care, the risk of future child protection notifications may have been low due to children no longer being with the perpetrator of their abuse. Conversely, it is a promising find of this study that children engaged in PCIT or PCIT with TDI treatment had few to no placement disruptions. Placement permanency is often complicated by the presence of challenging behavior and it is unsurprising that an intervention that directly addresses such behavior has promoted placement stability.

An additional limitation was that no corroborative sources of information were utilized. Descriptions of child behavior and traumatic stress were provided by one informant (either the biological parent or foster/kinship/relative caregiver) and multiple reporters (e.g., teachers or daycare educators) and observational data were not used. One final limitation is the lack of follow-up behavioral and mental health data and the short duration from post-treatment to follow-up permanency and child protection data being collected. With rare exception (Chaffin et al., 2004), the long-term impacts of PCIT treatment have not been examined with this population. The current outcomes of PCIT with TDI will also require long-term study.

4.4. Future research

The highly clinical nature of this evaluation indicates that future research should focus on understanding treatment selection for children and caregivers with a history of abuse. It is not a recommendation of this study that one treatment or the other is preferential for children or families exposed to abuse and neglect. While a randomized control trial represents the gold standard of research, a stepped approach to answering the question of treatment choice should also be considered. Altering the design of this study to include better triaging of participants (i.e., admitting families where there are clinically significant post-traumatic stress symptoms, general stress, parenting stress; or for children who are in foster care only given the reported complexities of treatment for them), including motivational components or altering treatment length to increase retention, more detailed data collection regarding caregiver and child demographics (above what was collected here, e.g., caregiver type, caregiver age, caregiver level of education etc) and trauma type, including multiple informants and observational data, and including information about cost efficiencies would all be important next steps. This would also help to understand the factors influencing attrition for both treatment options and would allow more targeted intervention.

It is difficult to fully assess the impact of COVID-19 and the local natural disasters (i.e., bushfires and floods) on the impact of the results found. It would be worthwhile assessing the outcomes with a new cohort to see if a different result is obtained.

4.5. Conclusions

The results of this study indicated that PCIT and PCIT with TDI were both effective in improving child behavioral concerns, child and parent posttraumatic stress, and general caregiver stress. PCIT with TDI did not produce superior results to the standard PCIT version in this study, and may have been impacted by low statistical power, and significant global and regional events. Many outcomes of interest were assessed for the first time (i.e., caregiver posttraumatic stress and permanency) in the PCIT and trauma literature and there were positive changes from pre-to post-treatment. The outcomes found here provide impetus for further studies that examine PCIT versus PCIT with TDI outcomes which could clarify and expand the findings of this study.

Conflicts of interest

This study was approved by the University of Newcastle's Human Research Ethics Committee (approval no. H-2020-0084). We have no conflicts of interest to disclose.

CRediT authorship contribution statement

Jessica M. Warren: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Writing – original draft, Writing – review & editing. **Tanya L. Hanstock:** Conceptualization, Methodology, Project administration, Resources, Supervision, Writing – review & editing. **Sally A. Hunt:** Conceptualization, Investigation, Methodology, Project administration, Resources, Supervision, Writing – review & editing. **Sean A. Halpin:** Conceptualization, Investigation, Methodology, Project administration, Resources, Supervision, Writing – review & editing. **Christina M. Warner-Metzger:** Conceptualization, Investigation, Methodology, Project administration, Supervision, Writing – review & editing. **Robin H. Gurwitch:** Conceptualization, Data curation, Investigation, Methodology, Project administration, Resources, Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998). Psychometric properties of the 42-item and 21-item versions of the depression anxiety stress scales in clinical groups and a community sample. *Psychological Assessment, 10*(2), 176–181. https://doi.org/10.1037/1040-3590.10.2.176

Australian Institute of Health and Welfare. (2022). Child protection Australia 2020-2021. https://www.aihw.gov.au/reports/australias-welfare/child-protection.

Bartlett, J. D., Kotake, C., Fauth, R., & Easterbrooks, M. A. (2016). Intergenerational transmission of child abuse and neglect: Do maltreatment type, perpetrator, and substantiation status matter? *Child Abuse & Neglect, 63*, 84–94. https://doi.org/10.1016/j.chiabu.2016.11.021

Batzer, S., Berg, T., Godinet, M. T., & Stotzer, R. L. (2018). *Efficacy or chaos? Parent–Child interaction therapy in maltreating populations: A review of research*. SAGE Publications. https://doi.org/10.1177/1524838015620819

Berry, J., & Jones, W. (1995). The parental stress scale: Initial psychometric evidence. *Journal of Social and Personal Relationships, 12*(3), 463–472. https://doi.org/10.1177/0265407595123009

BigFoot, D. S., & Funderburk, B. W. (2011). Honoring children, making relatives: The cultural translation of parent-child interaction therapy for American Indian and Alaska Native families. *Journal of Psychoactive Drugs, 43*(4), 309–318. https://doi.org/10.1080/02791072.2011.628924

Blevins, C. A., Weathers, F. W., Davis, M. T., Witte, T. K., & Domino, J. L. (2015). The posttraumatic stress disorder checklist for DSM-5 (PCL-5): Development and initial psychometric evaluation. *Journal of Traumatic Stress, 28*(6), 489–498. https://doi.org/10.1002/jts.22059

Brestan, E., Jacobs, J., Rayfield, A., & Eyberg, S. (1999). A consumer satisfaction measure for parent-child treatments and its relation to measures of child behavior change. *Behavior Therapy, 30*(1), 17–30. https://doi.org/10.1016/S0005-7894(99)80043-4

Briere, J. (1999). *Trauma symptom checklist for young children (TSCYC) professional manual.* Psychological Assessment Resources.

Catchpole, R., Young, A., Baer, S., & Salih, T. (2019). Examining a novel, parent child interaction therapy-informed, behavioral treatment of selective mutism. *Journal of Anxiety Disorders, 66*, 102112. https://doi.org/10.1016/j.janxdis.2019.102112, 102112.

Center for Disease Control (n.d.). *Violence prevention* from https://www.cdc.gov/violenceprevention/childabuseandneglect/riskprotectivefactors.html.

Cervin, M., Salloum, A., Ruth, L. J., & Storch, E. A. (2020). Posttraumatic symptoms in 3–7 year old trauma-exposed children: Links to impairment, other mental health symptoms, caregiver PTSD, and caregiver stress. *Child Psychiatry and Human Development, 52*(6), 1173–1183. https://doi.org/10.1007/s10578-020-01093-3

Chaffin, M., Silovsky, J. F., Funderburk, B., Valle, L. A., Brestan, E. V., Balachova, T., … Bonner, B. L. (2004). Parent-child interaction therapy with physically abusive parents: Efficacy for reducing future abuse reports. *Journal of Consulting and Clinical Psychology, 72*(3), 500–510. https://doi.org/10.1037/0022-006X.72.3.500

Choate, M. L., Pincus, D. B., Eyberg, S. M., & Barlow, D. H. (2005). Parent-child interaction therapy for treatment of separation anxiety disorder in young children: A pilot study. *Cognitive and Behavioral Practice, 12*(1), 126–135. https://doi.org/10.1016/S1077-7229(05)80047-1

Cooley, M. E., Veldorale-Griffin, A., Petren, R. E., & Mullis, A. K. (2014). Parent-child interaction therapy: A meta-analysis of child behavior outcomes and parent stress. *Journal of Family Social Work, 17*(3), 191–208. https://doi.org/10.1080/10522158.2014.888696

Crusto, C. A., Whitson, M. L., Walling, S. M., Feinn, R., Friedman, S. R., Reynolds, J., Amer, M., & Kaufman, J. S. (2010). Posttraumatic stress among young urban children exposed to family violence and other potentially traumatic events. *Journal of Traumatic Stress, 23*(6), 716–724. https://doi.org/10.1002/jts.20590

Dadds, M. R., & Tully, L. A. (2019). What is it to discipline a child: What should it be? A reanalysis of time-out from the perspective of child mental health, attachment, and trauma. *American Psychologist, 74*(7), 794–808. https://doi.org/10.1037/amp0000449

Department of Communities and Justice. (2021). Permanency case planning. https://www.facs.nsw.gov.au/families/permanency-support-program/permanency-case-management-policy/rules-and-practice-guidance/psp-pcmp-rules-and-practice-guidance/permanency-case-planning#:~:text=Permanency%20planning%20considers%20how%20to,considering%20a%20child's%20permanency%20options.

Eyberg, S., Chase, R., Fernandez, M., & Nelson, M. (2014). *Dyadic parent-child interaction coding system (DPICS): Clinical manual* (4th ed.). PCIT International, Inc.

Eyberg, S. M., & Funderburk, B. (2011). *Parent-Child Interaction Therapy: The empirically supported protocol*. PCIT International.

Eyberg, S. M., & Pincus, D. (1999). *Eyberg child behavior inventory and Sutter-Eyberg student behavior inventory-revised: Professional manual*. Psychological Assessment Resources.

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine, 14*(4), 245–258. https://doi.org/10.1016/S0749-3797(98)00017-8

Foley, K., McNeil, C. B., Norman, M., & Wallace, N. M. (2016). Effectiveness of group format parent-child interaction therapy compared to treatment as usual in a community outreach organization. *Child & Family Behavior Therapy, 38*(4), 279–298. https://doi.org/10.1080/07317107.2016.1238688

Galanter, R., Self-Brown, S., Valente, J. R., Dorsey, S., Whitaker, D. J., Bertuglia-Haley, M., & Prieto, M. (2012). Effectiveness of parent-child interaction therapy delivery to at-risk families in the home setting. *Child & Family Behavior Therapy, 34*(3), 177–196. https://doi.org/10.1080/07317107.2012.707079

Ghosh-Ippen, C., Ford, J., Racusin, R., Acker, M., Bosquet, K., Rogers, C., Ellis, C., Schiffman, J., Ribbe, D., Cone, P., Lukovitz, M., & Edswards, J. (2002). Trauma events screening inventory-parent report revised. *The child trauma research Project of the early trauma network and the national center for PTSD dartmouth child trauma research group*.

Goodman, R. (1997). The strengths and difficulties questionnaire. *Journal of Child Psychology and Psychiatry, 38*, 581–586.

Gurwitch, R. H., Messer, E. P., & Funderburk, B. W. (2017). Parent-child interaction therapy. In *Evidence-based treatments for trauma related disorders in children and adolescents* (pp. 341–361). Springer International Publishing.

Gurwitch, R., & Warner-Metzger, C. M. (2019). *Trauma-directed interaction protocol*. Authors.

Gurwitch, R. H., & Warner-Metzger, C. M. (2022). Trauma-directed interaction (TDI): An adaptation to parent-child interaction therapy for families with a history of trauma. *International Journal of Environmental Research and Public Health, 19*(10), 6089. https://doi.org/10.3390/ijerph19106089

Hawes, D. J., & Dadds, M. R. (2004). Australian data and psychometric properties of the strengths and difficulties questionnaire. *Australian and New Zealand Journal of Psychiatry, 38*(8), 644–651. https://doi.org/10.1080/j.1440-1614.2004.01427.x

Herschell, A. D., Scudder, A. B., Schaffner, K. F., & Slagel, L. A. (2017). Feasibility and effectiveness of parent–child interaction therapy with victims of domestic violence: A pilot study. *Journal of Child and Family Studies, 26*(1), 271–283. https://doi-org.ezproxy.newcastle.edu.au/10.1007/s10826-016-0546-y.

Hu, N., Gelaw, Y. A., Katz, I., Fernandez, E., Falster, K., Hanly, M., Newton, B. J., Stephensen, J., Hotton, P., Zwi, K., & Lingam, R. (2024). Developmental trajectories of socio-emotional outcomes of children and young people in out-of-home care – insights from data of Pathways of Care Longitudinal Study (POCLS). *Child Abuse & Neglect, 149*. https://doi.org/10.1016/j.chiabu.2023.106196

Hu, N., Taylor, C. L., Li, J., & Glauert, R. A. (2017). The impact of child maltreatment on the risk of deliberate self-harm among adolescents: A population-wide cohort study using linked administrative records. *Child Abuse & Neglect, 67*, 322–337. https://doi.org/10.1016/j.chiabu.2017.03.012

Kimonis, E. R., Fleming, G., Briggs, N., Brouwer-French, L., Frick, P. J., Hawes, D. J., Bagner, D. M., Thomas, R., & Dadds, M. (2019). Parent-child interaction therapy adapted for preschoolers with callous-unemotional traits: An open trial pilot study. *Journal of Clinical Child and Adolescent Psychology, 48*(sup1), S347–S361. https://doi.org/10.1080/15374416.2018.1479966

Larsen, M., Baste, V., Bjørknes, R., Myrvold, T., & Lehmann, S. (2018). Services according to mental health needs for youth in foster care? - a multi-informant study. *BMC Health Services Research, 18*(1), 634. https://doi.org/10.1186/s12913-018-3365-6, 634.

Leung, C., Tsang, S., Heung, K., & Yiu, I. (2009). Effectiveness of Parent-Child interaction therapy (PCIT) among Chinese families. *Research on Social Work Practice, 19*(3), 304–313. https://doi.org/10.1177/1049731508321713

Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the depression, anxiety and stress scales* (2nd ed.). Psychology Foundation.

Luby, J. L., Gilbert, K., Whalen, D., Tillman, R., & Barch, D. M. (2020). The differential contribution of the components of Parent-Child Interaction Therapy emotion development for treatment of preschool depression. *Journal of the American Academy of Child & Adolescent Psychiatry, 59*(7), 868–879. https://doi.org/10.1016/j.jaac.2019.07.937

Matos, M., Torres, R., Santiago, R., Jurado, M., & Rodriguez, I. (2006). Adaptation of parent-child interaction therapy for Puerto Rican families: A preliminary study. *Family Process, 45*(2), 205–222. https://doi.org/10.1111/j.1545-5300.2006.00091.x

Maybery, D., Reupert, A., Patrick, K., Goodyear, M., & Crase, L. (2009). Prevalence of parental mental illness in Australian families. *Psychiatric Bulletin, 33*(1), 22–26. https://doi.org/10.1192/pb.bp.107.018861

McCabe, K., & Yeh, M. (2009). Parent-child interaction therapy for Mexican Americans: A randomized clinical trial. *Journal of Clinical Child and Adolescent Psychology, 38*(5), 753–759. https://doi.org/10.1080/15374410903103544

McHugo, G. J., Caspi, Y., Kammerer, N., Mazelis, R., Jackson, E. W., Russell, L., Clark, C., Liebschutz, J., & Kimerling, R. (2005). The assessment of trauma history in women with co-occurring substance abuse and mental disorders and a history of interpersonal violence. *The Journal of Behavioral Health Services & Research, 32*(2), 113–127. https://doi.org/10.1007/BF02287261

Messer, E. P., Eismann, E. A., Folger, A. T., Grass, A., Bemerer, J., & Bensman, H. (2022). Comparative effectiveness of parent-child interaction therapy based on trauma exposure and attrition. *Psychological Trauma*. https://doi.org/10.1037/tra0001259

Milner, J. S., Thomsen, C. J., Crouch, J. L., Rabenhorst, M. M., Martens, P. M., Dyslin, C. W., Guimond, J. M., Stander, V. A., & Merrill, L. L. (2010). Do trauma symptoms mediate the relationship between childhood physical abuse and adult child abuse risk? *Child Abuse & Neglect, 34*(5), 332–344. https://doi.org/10.1016/j.chiabu.2009.09.017

Murray, L., Tarren-Sweeney, M., & France, K. (2011). Foster carer perceptions of support and training in the context of high burden of care: Foster carer support and training. *Child & Family Social Work, 16*(2), 149–158. https://doi.org/10.1111/j.1365-2206.2010.00722.x

Niec, L. N. (2018). Parent–child interaction therapy: A transdiagnostic intervention to enhance family functioning. In *Handbook of parent-child interaction Therapy* (pp. 3–15). Springer International Publishing. https://doi.org/10.1007/978-3-319-97698-3_1.

NSW Child Death Review Team. (2022). NSW child death review Team annual report 2021-22 from. https://www.parliament.nsw.gov.au/tp/files/83226/Updated%20-%20NSW%20Child%20Death%20Review%20Team%20Annual%20Report%202021-22.PDF.

Oh, D. L., Jerman, P., Purewal Boparai, S. K., Koita, K., Briner, S., Bucci, M., & Harris, N. B. (2018). Review of tools for measuring exposure to adversity in children and adolescents. *Journal of Pediatric Health Care, 32*(6), 564–583. https://doi.org/10.1016/j.pedhc.2018.04.021

Osofsky, J. D., Stepka, P. T., King, L. S., & PsycBooks. (2017). *Treating infants and young children impacted by trauma: Interventions that promote healthy development*. American Psychological Association.

Passavanti, M., Argentieri, A., Barbieri, D. M., Lou, B., Wijayaratna, K., Foroutan Mirhosseini, A. S., Wang, F., Naseri, S., Qamhia, I., Tangerås, M., Pelliciari, M., & Ho, C.-H. (2021). The psychological impact of COVID-19 and restrictive measures in the world. *Journal of Affective Disorders, 283*, 36–51. https://doi.org/10.1016/j.jad.2021.01.020

Pearl, E., Thieken, L., Olafson, E., Boat, B., Connelly, L., Barnes, J., & Putnam, F. (2012). Effectiveness of community dissemination of parent-child interaction therapy. *Psychological Trauma, 4*(2), 204–213. https://doi.org/10.1037/a0022948

Phillips, S., & Mychailyszyn, M. (2021). A review of parent-child interaction therapy (PCIT): Applications for youth anxiety. *Children and Youth Services Review, 125*, Article 105986. https://doi.org/10.1016/j.childyouth.2021.105986

Scudder, A., Wong, C., Ober, N., Hoffman, M., Toscolani, J., & Handen, B. L. (2019). Parent-child interaction therapy (PCIT) in young children with autism spectrum disorder. *Child & Family Behavior Therapy, 41*(4), 201–220. https://doi.org/10.1080/07317107.2019.1659542

Tabachnick, B. G., & Fidell, L. S. (2014). *Using multivariate Statistics* (6th ed.). Pearson Education Limited.

Thomas, R., & Zimmer-Gembeck, M. J. (2011). Accumulating evidence for parent-child interaction therapy in the prevention of child maltreatment. *Child Development, 82*(1), 177–192. https://doi.org/10.1111/j.1467-8624.2010.01548.x

Thomas, R., & Zimmer-Gembeck, M. J. (2012). Parent–child interaction therapy: An evidence-based treatment for child maltreatment. *Child Maltreatment, 17*(3), 253–266. https://doi.org/10.1177/1077559512459555

Vanderwill, L. A., Salazar, A. M., Jenkins, G., Larwelle, J., McMahon, A. K., Day, A., & Haggerty, K. (2021). Systematic literature review of foster and adoptive caregiver factors for increasing placement stability and permanency. *Journal of Public Child Welfare, 15*(4), 487–527. https://doi.org/10.1080/15548732.2020.1760176

Villodas, M. T., Cromer, K. D., Moses, J. O., Litrownik, A. J., Newton, R. R., & Davis, I. P. (2016). Unstable child welfare permanent placements and early adolescent physical and mental health: The roles of adverse childhood experiences and post-traumatic stress. *Child Abuse & Neglect, 62*, 76–88. https://doi.org/10.1016/j.chiabu.2016.10.014

Warren, J. M., Halpin, S. A., Hanstock, T. L., Hood, C., & Hunt, S. A. (2022). Outcomes of parent-child interaction therapy (PCIT) for families presenting with child maltreatment: A systematic review. *Child Abuse & Neglect, 134*, Article 105942. https://doi.org/10.1016/j.chiabu.2022.105942

Warren, J. M., Hanstock, T., Hunt, S., & Halpin, S. (2021). Parent–child interaction therapy for a 3-year-old girl with post-traumatic stress disorder: Restoration to her

father's care following a period in out-of-home care. *Clinical Case Studies*. https://doi.org/10.1177/15346501211047482

Weathers, F. W., Litz, B. T., Keane, T. M., Palmieri, P. A., Marx, B. P., & Schnurr, P. P. (2013). The PTSD checklist for DSM-5 (PCL-5). Retrieved from https://www.ptsd.va.gov/professional/assessment/adult-sr/ptsd-checklist.asp.

Wolfe, J., & Kimerling, R. (1997). Gender issues in the assessment of posttraumatic stress disorder. In J. Wilson, & T. Keane (Eds.), *Assessing psychological trauma and PTSD* (pp. 192–238). Guilford Press. Retrieved from https://www.ptsd.va.gov/professional/articles/article-pdf/id13558.pdf.

Wolpe, J. (1973). *The practice of behavior therapy*. Pergamon Press.

Woodfield, M. J., Cargo, T., Merry, S. N., & Hetrick, S. E. (2021). Barriers to clinician implementation of parent-child interaction therapy (PCIT) in New Zealand and Australia: What role for time-out? *International Journal of Environmental Research and Public Health, 18*(24), Article 13116. https://doi.org/10.3390/ijerph182413116

Woodfield, M. J., & Cartwright, C. (2020). Parent-child interaction therapy from the parents' perspective. *Journal of Child and Family Studies, 29*(3), 632–647. https://doi.org/10.1007/s10826-019-01611-5

Xu, J., Tully, L. A., & Dadds, M. R. (2024). Generation time-out grows up: Young adults' reports about childhood time-out use and their mental health. *attachment, and emotion regulation*. European Child & Adolescent Psychiatry. https://doi.org/10.1007/s00787-024-02408-8

Zeanah, C. H., & Humphreys, K. L. (2018). Child abuse and neglect. *Journal of the American Academy of Child & Adolescent Psychiatry, 57*(9), 637–644. https://doi.org/10.1016/j.jaac.2018.06.007

Zhang, Y., Workman, A., Russell, M. A., Williamson, M., Pan, H., & Reifels, L. (2022). The long-term impact of bushfires on the mental health of Australians: A systematic review and meta-analysis. *European Journal of Psychotraumatology, 13*(1), 2087980. https://doi.org/10.1080/20008198.2022.2087980, 2087980.