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Growing the Good: Multiphasic Improvements in Child Psychosocial Competencies During Parent-Child Interaction Therapy (PCIT)

by

Kelsi Ross

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To the Graduate Faculty:

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Dedications

I would like to dedicate this thesis to the new generations of children, with the hopes that we may continue to provide better ways of supporting, remediating, and empowering their paths into the future—may these journeys be less arduous and more joyful, as a result.

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List of Abbreviations

BPT	Behavioral parent training
CDI	Child-Directed Interaction
CU	Clean-Up
DPICS	Dyadic Parent-Child Interaction Coding System
EBT	Evidence-based treatment
ECBI	Eyberg Child Behavior Inventory
PCIT	Parent-Child Interaction Therapy
PCIT-ED	Parent-Child Interaction Therapy for Emotion Development
PCIT-CU	Parent-Child Interaction Therapy for Callous-Unemotional Traits
PDI	Parent-Directed Interaction
PLP	Parent-Led Play
PSICA	Psychosocial Strengths Inventory for Children and Adolescents

Growing the Good: Multiphasic Improvements in Child Psychosocial Competencies During Parent-Child Interaction Therapy (PCIT)

Thesis Abstract—Idaho State University (2022)

Despite robust research demonstrating that PCIT reduces child conduct problems (e.g., hyperactivity, aggression), limited research has validated PCIT's effect on child psychosocial competencies (e.g., attention regulation, prosociality). Thus, this study examined PCIT's overall and phase-specific effects on archival caregiver-ratings of conduct problems and psychosocial competencies (overall and domain-specific; i.e., prosociality, compliance, attention regulation), with a sample of 29 caregiver-child dyads ($M_{\text{child-age}}$= 6.6; $SD_{child\text{-}age}$ = 2.4) who received PCIT and completed caregiver-report measures of their child's psychosocial competencies (i.e., Psychosocial Strengths Inventory for Children and Adolescents; PSICA) and conduct problems (Eyberg Child Behavior Inventory; ECBI) at pre-, mid-, and post-treatment. As predicted PSICA and ECBI scores correlated significantly across all three timepoints (*r*s = -.62 to -.68), and child conduct problems and psychosocial competence (overall and domain-specific) significantly improved during PCIT (ηs_p^2 = .50–.86) and each of its phases (|*d*|s = 0.43–2.16). These findings further validate PCIT's transdiagnostic effects.

Keywords: PCIT, psychosocial competencies, childhood, Psychosocial Strengths Inventory for Children and Adolescents, PSICA

Chapter I: Literature Review

Child conduct problems (e.g., aggression, oppositionality, impulsivity) can lead to negative, persevering detrimental outcomes (e.g., criminality, substance abuse, depression, and suicide; e.g., Burke et al., 2014; Dodge et al., 2008), as these conduct problems tend to persist and intensify without treatment (e.g., Rivenbark et al., 2018; Ferguson et al., 2005). One protective factor against the emergence and maintenance of conduct problems is psychosocial competencies (e.g., attention and emotion regulation, compliance to caregivers, prosociality), which uniquely predict positive long-term trajectories (e.g., Burt et al., 2008; Dahl & Brownell, 2019) and emphasize the need for child treatments to target–and assess–improvements in child psychosocial competence alongside child misbehavior (Briegel et al., 2018; Todd & Niec, 2022). One treatment that encompasses both of these aims is Parent-Child Interaction Therapy (PCIT; Eyberg & Funderburk, 2011), a best-practice evidence-based treatment for conduct problems in children ages 2.5–6 years and 11 months. Specifically, PCIT aims to concurrently decrease child misbehaviors and increase child psychosocial competencies across both of its two treatment phases: (1) Child-Directed Interaction (CDI) and Parent-Directed Interaction (PDI).

While numerous studies have validated PCIT's effectiveness in reducing child conduct problems (e.g., Lieneman et al., 2017; Niec et al., 2018; Thomas et al., 2017; Thomas & Zimmer-Gembeck, 2011), comparatively few studies have examined the degree to which PCIT improves child psychosocial competencies, much less how these competencies change relative to the aforementioned reductions in child conduct problems (Briegel et al., 2018). Of those that have, studies have focused almost exclusively on PCIT's first treatment phase (i.e., CDI), with results showing significant CDI-related gains in psychosocial competencies (e.g., affect and attention regulation, language, self-esteem, social awareness, compliance to caregivers; e.g., Bagner et al., 2016; Eisenstadt et al., 1993; Lieneman et al., 2020). While this provides support for CDI-specific treatment effects on the growth of child psychosocial competencies, the

uncertainty of how these competencies may further improve or change, both in the treatment's second phase (i.e., PDI) and from pre- to post-treatment, necessitates research.

To address this need, the current study aimed to (1) further examine gains in psychosocial competencies in CDI, (2) determine whether and to what extent these competencies continue to improve in PDI, and (3) examine the overall statistical and clinical significance of pre- to post-treatment changes in psychosocial competencies. These changes were examined by analyzing standardized caregiver-reports of child psychosocial competencies (particularly prosociality, compliance to caregivers, and attention regulation) at pre-, mid-, and post-treatment, and subsequently assessing the change at (a) pre- to mid-treatment, (b) mid- to post-treatment, and (c) pre- to post-treatment. The results better validated PCIT's overall efficacy–particularly in regards to improving child psychosocial competencies–in addition to elucidating the specific phases (and potential components) responsible for hypothesized improvements in specific psychosocial competencies. Findings from this study may aid PCIT researchers, trainers, supervisors, and clinicians in how to further improve within- and across-phase gains in salient child psychosocial competencies.

Childhood Conduct Problems, Sequelae, and Risks

Childhood conduct problems (e.g., aggression, oppositionality, impulsivity) remain the most common reason for children's referral to mental health providers (Boylan et al., 2007; Erath et al., 2009; Kazdin, 2011; Loeber et al., 2000; Merikangas et al., 2009; Rushton et al., 2002; Steiner et al., 2007; Tempel et al., 2015), with approximately 10%–20% of pre-school and elementary age children having at least one diagnosed disruptive behavior disorder (i.e., attention-deficit/hyperactivity disorder [ADHD], conduct disorder [CD], and oppositional defiant disorder [ODD]; APA, 2013; Boylan et al., 2007; Egger & Angold, 2006; Lavigne et al., 2009; Nock et al., 2007; Nolan et al., 2001). These early childhood conduct problems and related disorders can lead to negative developmental cascades, including more proximal internalizing and/or externalizing problems as well as academic and social deficits, which, if untreated, can

become perseverant, lifelong detrimental outcomes (e.g., criminality, substance abuse, depression, and suicide; Burke et al., 2014; Dodge et al., 2008; Fergusson et al., 2005; Masten & Cicchetti, 2010; Nock et al., 2007; Obradović et al., 2010; van Lier & Koot, 2010).

These maladaptive trajectories emphasize the importance of treatment, particularly because child externalizing problems tend to persist and/or intensify without effective intervention (Ferguson et al., 2005; Fischer et al., 1993; Loeber, 1990; Patterson, 1982; Rivenbark et al., 2018). In a 25-year longitudinal study of 1,265 children, Fergusson and colleagues (2005) assessed conduct problems in middle childhood (i.e., 7–9-year-olds) and their subsequent psychosocial outcomes and adjustment in young adulthood (i.e., 21–25-year-olds). Their results showed that children in the most severe 5% of the cohort (i.e., those with the more severe conduct problems), when compared in young adulthood to the cohort's least severe 50%, were 10 times more likely to be arrested, convicted, or imprisoned and 2–5 times more likely to experience adverse sexual or partner relationship outcomes (e.g., multiple sexual partnerships, involvement in domestic violence, teenage pregnancy and parenthood). Additionally, they used more nicotine (2.5 times) and illicit drugs (3.8 times) than the least affected 50% and reported higher rates of mental health problems (e.g., anxiety disorders, antisocial personality disorder, depression, and suicidality). Further, evidence from a national birth cohort sample of adults up to age 38 showed that those who had childhood-onset externalizing problems had over 50% of all criminal convictions, 20% of prescription fills, 15% of emergency department visits, and nearly 25% of social welfare benefit months, despite making up only 9% of the population (Rivenbark et al., 2018).

These numbers highlight the severe risks early conduct problems pose to affected individuals, but also the related steep costs to their communities. Indeed, regardless of if childhood behavior problems persist into other periods of development, they predict future, costly service use across social services, criminal justice, and health care domains (Rivenbark et al., 2018). Of the kindergarteners identified as high risk for behavioral problems in the United

States, children who had a CD diagnosis were estimated to require $70,000 more per year for public services across adolescence than their undiagnosed peers (Foster & Jones, 2005). For 18-year-olds with externalizing problems, an average of $14,000 was calculated for services (Foster et al., 2005). Ultimately, preventing significant childhood conduct could potentially save U.S. society alone between $2.6 to $4.4 million *annually* (Cohen & Piquero, 2009).

Given these sequelae and societal costs, there have been significant efforts to establish which, and to what extent, various factors place children at risk for aggressive and antisocial behavior. Results have identified numerous risk factors, such as neurocognitive deficits (e.g., executive functioning problems), temperamental vulnerabilities (e.g., poor emotion regulation), social information processing deficits (e.g., hostile attributional bias), personality predispositions (e.g., impulsivity), and autonomic (e.g., low resting heart rate) and neurochemical irregularities (e.g., low serotonin; see Dodge and Pettit [2003] and Frick and Viding [2009] for reviews). Notwithstanding this manifold etiology, one of the most common and influential contributors to childhood conduct problems is dysfunctional parenting (e.g., poor monitoring and supervision, inconsistent discipline, low parental involvement, failure to use positive reinforcement, and use of corporal punishment), and specifically what is known as indiscriminant parenting, which is characterized by lax or inconsistent child management methods and/or coercive interactions between caregivers and children (Barkley, 2013; Benzies et al., 2009; Duncombe et al., 2012; Eddy et al., 2001; Furlong et al., 2013; Granic & Patterson, 2006; Grusec et al., 2011; Loeber et al., 2009; Mingebach et al., 2018; Patterson, 1982; Wootton, et al., 1997).

Behavioral Parent Training

One evidence-based treatment model that targets these areas is behavioral parenting training (BPT). Rather than working individually with children, BPT programs aim to alter caregiver behaviors through therapist instruction and reinforcement of adaptive parenting skills and tactics (e.g., consistent and safe discipline, contingent reinforcement of prosocial child behavior), which in turn indirectly target child behaviors (Dretzke et al., 2009; Herschell et al.,

2008; Herr et al., 2015; Kaehler et al., 2016; Mingebach et al., 2018; Patterson, 1982; Shanley & Niec, 2010). Most (but not all) BPT programs follow Hanf's (1969) operant two-stage model for ameliorating parent-child interactions (Kaehler et al., 2016). For these Hanf-based programs (e.g., Community Parent Education Program [Cunningham, 1996], Defiant Child [Barkley, 1997], Helping the Noncompliant Child [McMahon & Forehand, 2003], Incredible Years [Webster-Stratton & Hancock, 1998]), the first stage of treatment focuses on teaching caregivers to consistently utilize differential social reinforcement by concurrently (a) ignoring child behaviors that are negative and nonviolent and (b) elevating levels of praise and social attention for prosocial child behaviors. The second stage instructs caregivers on how to give more effective, safe discipline and commands in order to increase child compliance.

BPT has found superior success in treating child disruptive disorders by focusing psychosocial interventions on improving parenting skills and parent-child relationships (Chorpita et al., 2011; Comer et al., 2013; Dretzke et al., 2009; Eyberg et al., 2008; Furlong et al., 2013; Herr et al., 2015; Kaehler et al., 2016; Kaminski & Claussen, 2017; Kaminski et al., 2008; Leijten et al., 2013; 2015; Mingebach et al., 2018; and Michelson et al., 2013). BPTs do so through therapists reinforcing caregivers' use of consistent discipline and contingent reinforcement with their child and giving instruction to modify caregiver behavior (Patterson, 1982; Herschell et al., 2008; Shanley & Niec, 2010). In addition to reducing child conduct problems to a clinically significant degree (see aforementioned reviews), BPT also benefits caregivers by improving parenting and marital stress, as well as caregiver self-esteem, skills, and confidence (see Barkley, 2014; Lundahl et al., 2006; McCart et al., 2006; Spitzer et al., 1991; Weber et al., 2019). More specifically, BPT meta-analyses have found robust, clinically and statistically significant, small-to-medium effects for both caregivers (*d*s = 0.33–0.60) and their children (*d*s = 0.30–0.62), significantly outperforming other evidence-based treatment models, including CBT (Kaminiski et al., 2008; Lundahl et al., 2006; McCart et al., 2006; Mingebach et al., 2018; Weber et al., 2019).

However, the effectiveness of individual BPT programs and protocols significantly varies, likely due to the disparate ways they teach, model, and reinforce parenting skills (e.g., role-plays, videotapes, didactics, group versus dyadic social interaction, immediate or delayed feedback; Borrego & Urquiza, 1998; Kaehler et al., 2016; Kaminiski et al., 2008; Shanley & Niec, 2010). Given this variance in BPT structure and application, efforts have been made to identify which individual and combined BPT practice elements produce the best clinical outcomes (see Chorpita et al., 2011; Eyberg et al., 2008; Kaehler et al., 2016; Kaminski et al., 2008; 2017; Leijten et al., 2015; Lundahl et al., 2006). Most notably, Kaminski and colleagues' (2008) meta-analysis of 77 BPTs found better clinical outcomes regarding reductions in child disruptive behavior when BPT programs (1) taught caregivers consistent discipline tactics, (2) taught positive child-centered interaction skills to caregivers, and (3) required caregivers to practice these learned skills *during* treatment sessions. Congruent with these findings, one BPT program that utilizes all three of these components is Parent-Child Interaction Therapy (PCIT; Eyberg & Funderburk, 2011; see McNeil & Hembree-Kigin [2010] and Niec [2018]).

Parent-Child Interaction Therapy

PCIT is a BPT program procedurally based on Hanf's (1969) two-stage model and theoretically rooted in social learning and developmental theories (Borrego & Urquiza, 1998; Brinkmeyer & Eyberg, 2003; McNeil & Hembree-Kigin, 2010). Specifically, PCIT is based on attachment theory, which aims to explain *why* caregiver-child relationships are crucial for child development (Lewis et al., 1984, Sroufe, 2000; Urban et al., 1991; Bowlby, 1982), and social interaction learning theory, which specifies *how* to improve these relationships (Bandura, 1977; Dishion & Patterson, 2016; Eyberg & Funderburk, 2011; McNeil & Henbree-Kigin, 2010; Niec, 2018). Further, with almost 50 years of research supporting it, PCIT is an evidence-based treatment program, whose standard protocol has become best practice for treating conduct problems in children ages 2.5–6 years and 11 months (Eyeberg & Funderburk, 2011; Niec, 2018). Originally developed to focus on disruptive behavior problems in this age range, PCIT

has since been adapted diagnostically (e.g., anxiety, depression, autism and developmental disorders, trauma, and selective mutism; Carpenter et al., 2014; Chaffin et al., 2004; Chronis-Tuscano et al., 2015; Urzquiza & McNeil, 1996; see Niec [2018]) and developmentally (e.g., infants, toddlers, middle childhood; Bagner et al., 2013; 2016; Blizzard et al., 2017; Briegel, 2017; Girard et al., 2018; Kohlhoff & Morgan, 2014; Stokes et al., 2017; see Niec [2018]). Consistent with other Hanf-based BPT programs, PCIT's standard protocol has two treatment phases: (1) Child-Directed Interaction (CDI), which focuses on relationship enhancement, and (2) Parent-Directed Interaction (PDI), which focuses on discipline. Typically, both phases–which are detailed below–each last 4–5 weekly sessions.

CDI

Per PCIT's protocol, CDI begins after an intake assessment and has three primary goals: (1) strengthen/repair caregiver-child relationships, (2) increase caregivers' positive parenting skills, and (3) improve children's ability to regulate their affect and behavior (Eyberg & Funderburk, 2011). The CDI phase teaches caregivers child-centered methods for interacting with their children through repeated caregiver-child interactions, which builds positive and mutually reinforcing relationships and enhances child compliance and psychosocial development (Kochanska et al., 2005; Maccoby, 1999; Niec, 2018). More specifically, therapists teach caregivers to differentially reinforce appropriate child behavior by (a) strategically ignoring harmless and nonviolent negative attention-seeking misbehavior (e.g., whining, temper tantrums), (b) avoiding "Don't Skills" (i.e., questions, commands, and criticisms or negative talk) and (b) increasing the use of "Do Skills" (Eyberg & Funderburk, 2011; Niec, 2018). These Do Skills are also known by the acronym PRIDE, which stands for:

- **P**raise (particularly *labeled praise,* which gives a positive verbal evaluation of a child's prosocial behavior),
- **R**eflect (*reflections* are declarative, non-evaluative verbalizations that paraphrase or repeat a child's recent prosocial vocalization),

- **I**mitate (caregivers imitate their child's appropriate play behavior),
- **D**escribe (*behavior descriptions* are declarative, non-evaluative descriptions of a child's current or recently completed behavior), and
- **E**njoy (a caregiver's nonverbal and verbal displays of enjoyment during caregiver-child interactions)

Although other Hanf-based BPT programs teach caregivers child-centered skills similar to CDI PRIDE skills, PCIT largely differs in *how* and *how long* it teaches these skills. Namely, these phase-specific, child-centered interaction skills are first taught didactically to caregivers in an initial CDI session, called the CDI Teach session, but are then continued to be taught and reinforced during subsequent CDI Coach sessions. In these CDI Coach sessions, each caregiver's CDI skills are assessed during 5-minute caregiver-child play interactions that are observed and coded using the Dyadic Parent-Child Interaction Coding System (DPICS; Eyberg et al., 2013). Thereafter, each caregiver receives in vivo feedback or coaching (either in-home or via a bug-in-the-ear receiver) as they practice CDI skills while interacting with PCIT-participating child. Between sessions, daily 5-minute CDI skill practice assignments are given. CDI Coach sessions continue until caregivers meet phase-specific, standardized mastery criteria. For CDI, graduation occurs when a caregiver, per the 5-minute DPICS assessment, uses 10 or more reflections, behavior descriptions*,* and labeled praises*,* each; fewer than three total questions*,* commands, and criticisms; and sufficient strategic ignoring. Caregivers who learn and use these CDI mastery skills typically report significant improvements in their children's behavior; however, CDI-related decreases in child conduct behaviors are typically below clinical significance (e.g., Eisenstadt et al., 1993; Danko et al., 2016; Lanier et al., 2011). Therefore, families typically need and receive both phases of standard PCIT–i.e., CDI and PDI–to extinguish clinically significant disruptive behavior problems and achieve optimal treatment outcomes.

PDI

PDI begins after successful mastery of the CDI skills, and these positive parenting skills (alongside strategic ignoring) are simultaneously used alongside novel PDI-specific rules and procedures. These PDI-specific procedures focus on improving child compliance, since most child disruptive behaviors tend to be one of two kinds of defiance: (1) noncompliance (i.e., refusing to do what is instructed) and (2) disruptiveness (i.e., doing what is prohibited). Moreover, having young children learn to comply with appropriate caregiver limits is beneficial, if not essential, for healthy child development (e.g., Baumrind, 1967; Masten & Cicchetti, 2010), and children who fail to learn how to comply with appropriate rules and directions are at increased risk for childhood anxiety, peer rejection, self-dysregulation, and other psychosocial deficits and problems (Briegel et al., 2018; Huber et al., 2019; McNeil & Hembree-Kigin, 2010; Williams et al., 2009). Consequently, PDI primarily focuses on improving child compliance by directly targeting caregiver discipline practices. More specifically, PDI indirectly reduces child defiance, aggression, and related disruptive behavior by improving caregiver use of consistent, safe, and evidence-based antecedent and operant control strategies.

In regards to antecedent control, PDI aims to minimize the number–while also enhancing the quality or efficacy–of caregiver commands by teaching caregivers how and when to give "effective commands" (Eyberg & Funderburk, 2011). Also known as alpha commands (McCabe et al., 2010), this category of caregiver instructions to children are defined by PCIT's protocol manual and further operationalized by DPICS coding manuals (Eyberg & Funderburk, 2011; Eyberg et al., 2013). Namely, PDI teaches caregiver to use commands that are:

- Direct versus indirect (e.g., "Hand me the yellow racecar" versus "Can you hand me the yellow racecar?"),
- Positive versus negative (i.e., telling a child what to do versus what not to do; e.g., "Sit down" versus "Stop running"),

- Specific versus vague (e.g., “Put toothpaste on your toothbrush” versus “Get ready for bed”),
- Singular (i.e., given one at a time),
- Necessary (i.e., for child behavior[s] that cannot be managed by use of CDI skills),
- Developmentally-appropriate (e.g., telling a 2-year-old child to come closer to a caregiver so the latter can tie their shoelaces versus telling a same-aged child to tie their own shoes [assuming they cannot do so on their own]), and
- Augmented with a reason that is given only *before* the command and/or *after* compliance (but never in-between those two timepoints).

The effectiveness of these PDI-taught commands, like that of all antecedent control, is also related to the differential consequences that follow children’s responses to said commands (i.e., operant control). As such, PDI teaches caregivers to (1) operationally discriminate between child compliance or noncompliance to caregiver commands, (2) consistently provide social reinforcement (via labeled praises) for child compliance to a command, and (3) use a protocol-specific, safe, and evidence-based time-out from reinforcement procedures for child noncompliance to a command (i.e., negative punishment). More specifically, compliance according to PCIT’s protocol occurs when a child obeys (or continuously attempts to obey) an instruction within 5 seconds of an effective command. Otherwise, the child’s behavior is defined as noncompliance. As previously mentioned, in the instance of compliance, children are rewarded by caregivers with enthusiastic, labeled praises targeting the compliance (e.g., “Thank you for listening,” “Great job of doing that right away,” or “I like it when you follow instructions”). In the instance of noncompliance, the caregiver is coached not to give the command again, but instead to give their child a scripted time-out warning (i.e., “If you don’t [repeat of the command], you’re going to have to sit on the time-out chair;” Eyberg & Funderburk, 2011, p. 68). Caregivers once again are coached to wait 5 seconds and determine whether or not the child has complied.

Per PCIT's original and current standard protocol, compliance is once more met with enthusiastic labeled praise.

However, if the child remains noncompliant after this warning, PCIT's standard protocol has caregivers follow-through with a PDI-taught time-out procedure whose elements are consistent with best-practice, empirically supported time-out procedures (American Academy of Pediatrics, 1998; Centers for Disease Control and Prevention, 2009; Dadds & Tully, 2019; Drayton et al., 2014; Everett et al., 2010; Larzelere et al., 2020; Morawska & Sanders, 2011; PCIT International, 2018; Quetsch et al., 2015; Riley et al., 2017). Because time-out is a temporary restriction of the child's ability to have stimulation and attention (i.e., time-out from reinforcement, a specific kind of negative punishment), PDI dictates caregivers use a time-out chair that is sturdy (so it cannot be easily scooted, knocked over, or thrown) and not overly stimulating in its structure (e.g., a plain, static, adult-sized chair versus a decorated chair or rocking chair) or location (i.e., not providing line-of-sight for a TV, not within reach of stimulating and/or dangerous objects). Children who do not comply after the time-out warning is given are then brought to a time-out chair while the caregiver recites the following: "You didn't do what I told you to do, so you have to sit on the time-out chair" (Eyberg & Funderburk, 2011, p. 68). Per PDI protocol, there are two methods for taking the child "quickly, calmly, and safely" to time-out (Eyberg & Funderburk, 2011, p. 68): (1) taking a willing child by the hand and escorting them to the time-out chair or (2) picking-up an unwilling or resistant child and physically setting them on the time-out chair. In the instance of the latter, caregivers utilize the 'barrel carry' technique taught to them in the PDI Teach session; whereby, the caregiver stands behind the child and wraps his or her arms around them (under the child's arms and across the chest) as if holding onto a barrel, to protect both the child and the caregiver as they move safely, quickly, and effectively to the time-out chair (McNeil & Hembree-Kigin, 2010). Once the child is on the chair, the caregiver says with a neutral expression and tone, "Stay on the chair until I say you can get off" (Eyberg & Funderburk, 2011, p. 69). The caregiver then immediately begins timing and

moves away from the chair–and otherwise strategically ignores all child behavior–so long as the child remains in the chair–for the entire time-out duration.

Per PCIT's standard protocol, time-out is 3 minutes with 5 additional seconds of quiet. Namely, once a child remains on the time-out chair for 3 minutes, the caregiver is instructed to wait until their child remains quiet for 5 consecutive seconds (i.e., does not yell, scream, or engage in similarly unquiet behavior). If the caregiver's mental count is interrupted by unquiet child behavior, the caregiver does not restart the 3-minute time-out, but instead continues to silently count until the child remains quiet for 5 consecutive seconds. When this is achieved, the caregiver quickly moves to the chair and says, "You are sitting quietly in the chair. Are you ready to come back and [repeat the original command] now?" (Eyberg & Funderburk, 2011, p. 69). This phrase, along with the requirement of 5 seconds of quiet, prevents superstitious learning that the child can prematurely end a time-out through misbehavior, and instead teaches the child that being quiet leads to the caregiver ending time-out (and thus reinforces emotional and behavioral self-regulation). The phrase also redirects the child to the instruction they previously disobeyed. At this point, if the child once again does not comply, the time-out protocol restarts. If the child complies, the caregiver provides a brief acknowledgement (e.g., "Okay") or mild unlabeled praise (e.g., "Thank you") and issues a new command. Upon compliance to this new command, the child is rewarded with the typical, enthusiastic labeled praise in order to reinforce complying the *first* time an instruction is given (and to avoid reinforcing the time-out itself).

In instances of more resistant children, where a child might scoot, rock, move, leave, or otherwise remove more than 50% of their body weight, a back-up time-out room is utilized that is at least 5 feet by 5 feet, well-lit, and ventilated. During therapy, a clinical back-up room is typically present, but home-based time-out rooms are also discussed and selected for time-out misbehavior that happens in the home. Generally, a bedroom is selected to serve as the back-up time-out room. It is then removed of harmful, stimulating, valuable, and/or potentially

destructive or messy items. When children are put into the back-up time-out room, the caregiver actively holds the door closed rather than using a lock, to ensure that the child is safe from an emergency situation, abuse, and/or neglect.

The very first time a child escapes from the time-out chair, they are seated back on the chair and the following time-out room warning is given: “You got off the chair before I said you could. If you get off the chair again, you will have to go to the time-out room” (Eyberg & Funderburk, 2011, p. 69). Before leaving the chair, the caregiver then says, as per the usual protocol, “Stay here until I say you can get off” (Eyberg & Funderburk, 2011, p. 69), and the 3-minute (plus 5 seconds of quiet) time-out period restarts. Once the first time-out room warning is given, it is never reissued. Rather, for all future time-out escapes, the child is taken immediately to the time-out room without a warning while the caregiver calmly says, “You got off the chair before I said you could, so you have to go to the time-out room” (Eyberg & Funderburk, 2011, p. 69). It is suggested that the child is set down and faced away from the door, which allows more time for the caregiver to quickly exit and safely close the door. Once the door is closed, the caregiver waits 1 minute plus 5 seconds of quiet; after which time, the child is escorted and set back on the time-out chair while the caregiver steps back to avoid being hit and once again says “Stay on the chair until I say you can get off.” Time-out then begins again for the original duration, and this procedure repeats as often as needed until the child successfully sits on the time-out chair for the full 3 minutes plus 5 seconds of quiet and then obeys the originally disobeyed command. When properly implemented, time-outs that include these elements are an effective, safe discipline for children’s misbehavior and have been endorsed by the Centers for Disease Control and Prevention (2009) and the American Academy of Pediatrics (1998).

Like CDI, PDI begins with a Teach session, wherein therapists didactically introduce caregivers to the aforementioned features of effective commands and related discipline procedures (Eyberg & Funderburk, 2011). Also similar to the CDI Phase, each subsequent PDI session is a Coach session that involve therapists coaching caregivers as they practice the

phase-specific skills (i.e., giving commands to their child and using the discipline procedure). Most coaching segments are preceded by 5-minute coding observations of the caregiver-dyad. Practice of PDI skills (as well as continued practice of CDI skills) occurs in-session and at-home. As caregiver skills and child compliance improve, these practice activities increase in difficulty. Namely, they first start with simple play commands (e.g., “Hand me the blue car,” “Put this yellow block on top of the red block”), move to issuing commands for things the child does not necessarily like to do but that are still embedded in play (e.g., cleaning up one set of toys before moving to another), and lastly involve using commands and the time-out procedure in more complex situations, such as those involving multiple siblings, violation of house rules (e.g., aggression against others, stealing), and/or public settings (e.g. “Hold my hand as we cross the street,” “Stay next to me as we go down this aisle”).

Similar to CDI, PDI has phase-specific mastery criteria. Specifically, caregivers must independently (1) give at least four commands during a 5-minute DPICS observation, with at least 75% of those commands being deemed effective commands, and (2) correctly follow-through with PDI’s discipline procedure for at least 75% of those effective commands (e.g., labeled praise for compliance, time-out warning for noncompliance, PDI-correct time-out for continued noncompliance after time-out warning, etc.). Apart from these mastery criteria for both CDI and PDI, successful completion of PCIT (i.e., graduation per protocol) also requires an Eyberg Child Behavior Inventory (ECBI; Eyberg & Pincus, 1999) T-score below 55 (which signifies that a child’s level of disruptive behavior is well within normative levels). Additionally, caregivers should feel ready to graduate and confident with their ability to use treatment skills to manage their child’s behaviors across contexts (e.g., at home or in public, with siblings, etc.; Eyberg & Funderburk, 2011).

Outcome Research

PCIT’s treatment efficacy has been well established in the literature (Chadwick Center for Children and Families, 2004; Eyberg & Boggs, 2008; Lieneman et al., 2017; Niec et al.,

2018; Thomas et al., 2017). Its evidence has been supported with a range of case studies (e.g., Armstrong et al., 2013; Briegel, 2017; Gordon & Coopers, 2016; Stokes et al., 2017) as well as numerous randomized control trials (e.g., Bagner et al., 2010; Bjørseth & Wichstrøm, 2016; Leung et al., 2015; Niec et al., 2016; Nixon et al., 2003; Schuhmann et al., 1998; Thomas & Zimmer-Gembeck, 2011). Additionally, dozens of meta-analyses and reviews of PCIT have been published (e.g., Costello et al., 2011; Eyberg & Bussing, 2010; Funderburk & Eyberg, 2011; Lieneman et al., 2017; Thomas et al., 2017; Thomas & Zimmer-Gembeck, 2007).

For example, Thomas and Zimmer-Gembeck (2007) conducted a meta-analysis of 13 PCIT studies published up to 2003 (including nine randomized control trials). They found that PCIT was associated with significant, medium-to-large improvements in child disruptive behavior problems, not only in clinical observations of negative (d = -0.54) and positive (d = 0.94) child behaviors, but also according to parent reports (d = -1.31 for mothers and d = -0.83 for fathers). Moreover, they reported that these improvements–specifically in caregiver-reported child misbehavior and observed negative parenting–were statistically larger than those obtained by another evidence-based BPT program (i.e., Positive Parenting Program, also known as Triple P; Sanders, 1999; Sanders et al., 2002).

More recently, Ward and colleagues' (2016) meta-analysis incorporated all relevant PCIT research published between 2004 and 2013 and determined a weighted mean effect size for 12 PCIT studies involving 254 treated and 118 control group children. Overall, they found a large pre- to post-treatment reduction in externalizing problems for children with disruptive behavior disorders (d = -1.65, 95% CI [-1.90, -1.41], p < .001). A follow-up analysis with the nine studies that included a control group (and their 34 effect sizes) indicated that PCIT's effect compared to controls remained large (d = -1.39, 95% CI [-1.73, -1.05], p < .001).

The most comprehensive and recent PCIT meta-analysis was conducted by Thomas and colleagues (2017). Namely, they analyzed all known experimental or quasi-experimental efficacy and effectiveness trials of PCIT (n = 23 studies with 1144 total participants [n = 647

PCIT-treated families, *n* = 497 control cases]), regardless of their publication date, sample characteristics, region of implementation, and intervention format. Similar to prior meta-analyses, they found that PCIT was significantly better at reducing child externalizing when compared to control groups, to a large degree (*d* = -0.87, 95% CI [-1.17, -0.58]), and these reductions were universally maintained during studies with 3–24-month follow-up assessments (*n* = 4). More specifically, they found that PCIT had a significant, large effect on reducing child externalizing behavior when compared to waitlist controls (*d* = -1.12, 95% CI [-1.53, -0.71]), and had a significant, medium effect when compared to other active treatments (*d* = -0.51, 95% CI [-0.86, -0.17]). Additionally, results indicated that PCIT significantly reduced caregiver- (M_D = -6.98, 95% CI [-11.69, -2.27]) and child-related stress (M_D = -9.87, 95% CI [-13.64, -6.09]) compared to controls. Furthermore, standardized behavioral observations indicated that PCIT-treated children were significantly more compliant to caregiver requests after treatment, to a large degree, (*d* = 0.89, 95% CI [0.50, 1.28]), with PCIT-treated caregivers displaying significantly more CDI "Do Skills" (M_D = 17.70, 95% CI [8.71, 26.69]) and less CDI "Don't Skills" than control cases (M_D = -18.60, 95% CI [-25.04, -12.17]). Relatedly, PCIT studies that required CDI and PDI skill mastery exhibited significantly greater reductions in child externalizing behavior (*d* = -1.09, 95% CI [-1.44, -0.73]) than did studies that did not require mastery (*d* = -0.51, 95% CI [-0.86, -0.17]). Finally, they found that PCIT's effectiveness did not significantly differ with location (academic versus community settings), study design (experimental versus quasi-experimental trials), session length, or child problems (only disruptive behavior versus disruptive behavior and comorbid psychiatric problems [e.g., ASD, maltreatment]).

Consistent with these meta-analytic findings, PCIT's effects on reducing child disruptive behaviors are evident across settings, treatment populations, and methods of measurement (Lieneman et al., 2017; McNeil et al., 1991; Niec, 2018; Zisser & Eyberg, 2010). Indeed, PCIT has been shown to generalize across school and home settings (Boggs, 1990; Fowles et al., 2018; McNeil et al., 1991; Wallace et al., 2018), as well as to untreated siblings (Brestan et al.,

1997; Eyberg & Robinson, 1982). PCIT's effectiveness at reducing child conduct problems has further been demonstrated in diverse mental health settings, with studies examining PCIT in community mental health centers (e.g., Abrahamse et al., 2016; Bjørseth & Wichstrøm, 2016; Danko et al., 2016; Lanier et al., 2014; Lyon et al., 2010), university-based clinics (e.g., Timmer et al., 2010), community outreach organizations (e.g., Foley et al., 2016), child welfare agencies (e.g., Hakman et al., 2009; Lanier et al., 2014; Self-Brown et al., 2012), in-home settings (e.g., Galanter et al., 2012; Rait, 2012; Lanier et al., 2011; Ware et al., 2008), foster homes (e.g., Mersky et al., 2016), state correctional facilities (e.g., Scudder et al., 2014), and domestic violence shelters (e.g., Keeshin et al., 2015). Furthermore, a large body of literature indicates that PCIT can reduce disruptive behavior in children at-risk due to abuse and maltreatment (Chaffin et al., 2004; Galanter et al., 2012; Terao, 1999; Thomas & Zimmer-Gembeck, 2011; Thomas & Zimmer-Gembeck, 2012; Timmer et al., 2005) and/or developmental delays (Bagner & Eyberg, 2009; Bagner et al., 2010; Bertrand, 2009). In addition to clinically significant reductions in externalizing behaviors, children who complete PCIT demonstrate significantly fewer internalizing symptoms (e.g., anxiety and depression symptoms; Chase & Eyberg, 2008; Schuhmann et al., 1998) and significantly improved behavior regulation (Lieneman et al., 2020; Niec et al., 2016; Rothenberg et al., 2019; Schuhmann et al., 1998; Thomas et al., 2017; Thomas & Zimmer-Gembeck, 2012; see later section for a more detailed review of PCIT's examined benefits to child psychosocial competencies).

Consistent with PCIT's theoretical framework and the aforementioned meta-analyses, numerous studies demonstrate that PCIT not only significantly reduces child disruptive behavior, but also significantly benefits caregivers' own behaviors and well-being. Namely, ample evidence indicates that PCIT significantly increases caregivers' positive parenting practices (e.g., Eisenstadt et al., 1993; Eyberg et al., 1995; Eyberg & Robinson, 1982; Fowles et al., 2018; Hakman et al., 2009; Niec et al., 2016; Nixon et al., 2003; Shuhmann et al., 1998; Zimmer-Gembeck et al., 2019) and significantly decreases caregivers' negative parenting

practices (Budd et al., 2011; Danko et al., 2016; Lyon & Budd, 2010; Timmer et al., 2010; Zimmer-Gembeck et al., 2019). Relatedly, PCIT has been found repeatedly to reduce child abuse recidivism among physically abusive parents (Chaffin et al., 2004; Chaffin et al., 2011; Hakman et al., 2009). Research also shows that caregivers who complete PCIT exhibit significantly decreased stress (Eyberg et al., 2014; Hood & Eyberg, 2003; Niec et al., 2016; Shuhmann et al., 1998), reduced depressive symptoms (Gardner et al., 2010; Hood & Eyberg, 2003; Timmer et al., 2011), increased self-efficacy (Hood & Eyberg, 2003), and improved emotion regulation (Woodfield & Cartwright, 2020; Zimmer-Gembeck et al., 2019). Importantly, numerous studies have evinced the long-term maintenance of PCIT's effects on both children and their caregivers (e.g., Eyberg et al., 2001; Funderburk et al., 1998; Nixon, 2001; Nixon et al., 2003; Schuhmann et al., 1998)–up to 6 years that maintenance has been followed (Eyberg et al., 2001; Hood & Eyberg, 2003).

Unsurprisingly given these benefits, caregivers typically report high satisfaction with PCIT (Eisenstadt et al., 1993; Schuhmann et al., 1998). Quantitatively, PCIT has been shown to be broadly acceptable to caregivers receiving PCIT's standard protocol (e.g., Phillips et al., 2008) or one of its diagnostic adaptations (e.g., autism spectrum disorders [Zlomke et al., 2017], conduct disorder with callous-unemotional traits [Fleming & Kimonis., 2018]). Similarly, community parents given hypothetical scenarios involving PCIT and other potential interventions also have rated PCIT highly in terms of acceptability and perceived efficacy (e.g., Tiano et al., 2013). Qualitative studies of PCIT's perceptions also indicate its acceptability. Namely, Woodfield and Cartwright (2020) conducted semi-structured interviews with families who completed PCIT at a New Zealand clinic; results indicated that caregivers and their children held positive perceptions of PCIT as an effective treatment that improved caregivers' confidence, optimism, and parenting skills. Kohlhoff and colleagues' (2020) qualitative study found similarly positive caregiver perceptions in an Australian sample. In both studies, many caregivers mentioned the influential role of PCIT's live coaching, particularly in regards to supporting skill

acquisition, building confidence, emphasizing existing strengths, improving self-regulation in response to their children (Woodfield & Cartwright, 2020), and providing reassurance and comfort during treatment (Kohlhoff et al., 2020).

Finally, PCIT's clinically significant benefits and positive perceptions have been replicated across racially, ethnically, and internationally diverse populations (e.g., Bigfoot & Funderburk, 2011; Danko et al., 2016; Fernandez et al., 2011; Lanier et al., 2011; Matos et al., 2009; McCabe et al., 2012; McCabe & Yeh, 2009, Pearl et al., 2011). For example, PCIT has been successfully tailored for and implemented with Puerto Rican (Matos et al., 2009), Chinese (Leung et al., 2009), Australian (Thomas & Zimmer-Gembeck, 2011), African-American (Lyon & Budd, 2010), and Mexican-American families (McCabe & Yeh, 2009), as well as international settings such as the Netherlands (Abrahamse et al., 2016), Norway (Bjørseth & Wichstrøm, 2016), and Hong Kong (Leung et al., 2009), to name a few. For more information on PCIT's efficacy, adaptions, and related literature, see Niec (2018) and Lieneman and colleagues (2017) for reviews.

Although PCIT's ability to reduce negative child behaviors has been well-established over the past 50 years, research examining the degree to which PCIT improves positive child behaviors remains comparatively scarce (e.g., Lieneman et al., 2020; Niec et al., 2016; Rothenberg et al., 2019; Schuhmann et al., 1998; Thomas et al., 2017; Thomas & Zimmer-Gembeck, 2012). Moreover, much of this relatively limited research has been specific to PCIT's first phase, CDI (e.g., Bagner et al., 2021; Eisenstadt et al., 1993; Ginn et al., 2017; Hansen & Shillingsburg, 2016; Rothenberg et al., 2018; Tempel et al., 2013), with even fewer studies examining improvements in child positive behaviors during PCIT's second phase, PDI, and/or across both phases (e.g., Eisenstadt et al., 1993). This is perhaps both surprising and regrettable, as PCIT's protocol claims to reduce negative child behavior problems while also concurrently increasing child positive behaviors, particularly those related to psychosocial competencies (Eyberg & Funderburk, 2011).

Psychosocial Competencies: Developmental Cascades and Promotive Contexts

Child and adolescent psychosocial competencies (e.g., affect awareness and regulation, attention regulation, independence, prosocial behaviors, and compliance with caregivers) have been increasingly identified as protective factors related to positive developmental and clinical trajectories (Bowman, 2013; Briegel et al., 2018; Masten & Cicchetti, 2010; Seligman & Csikzentmihalyi, 2000; Tedeschi & Kilmer, 2005; Todd & Niec, 2022). Generally, these competencies first emerge in infancy (Dahl & Brownell, 2019) before expanding in purpose, functionality, and frequency during preschool years (e.g., prosociality in toddlerhood could manifest as comforting behaviors such as patting a peer on the back or hugging a parent; Baillargeon et al., 2007; Carter et al., 2003). Afterwards, these competencies typically increase further in frequency (Baillargeon et al., 2011), eventually growing into more complex techniques that utilize greater attentional, emotional, and social regulatory skills (e.g., listening to a friend share difficulties) through later childhood, adolescence, and adulthood (Baillargeon et al., 2011; Bornstein et al., 2010; Tomasello, 2014). When mastered, these psychosocial competencies typically persist (Baillargeon et al., 2007; Burt et al., 2008), and this mastery lays the foundation for developing psychosocial skills during concurrent and future periods of development (e.g., Masten & Coatsworth, 1998). For instance, development of concrete prosocial skills in toddlerhood (e.g., sharing toys) predicts the growth of more complex, abstract prosocial skills such as perspective taking and empathetic concern during middle childhood and adolescence (Pontoppidan et al., 2017; van der Graaff et al., 2018).

Although related to negative child behaviors (both externalizing and internalizing), psychosocial competencies are notably distinct and uniquely predict developmental outcomes, above and beyond negative child behaviors (Briegel et al., 2018; Carter et al., 2003; Eisenberg & Mussen, 1989; Masten & Cicchetti, 2010; Todd & Niec, 2022). Further, these prosocial competencies can interact longitudinally with behavioral and emotional problems to cause future developmental cascades (Cicchetti & Curtis, 2006; Masten & Cicchetti, 2010). First, more

advanced levels of psychosocial competencies such as prosociality not only predict more frequent prosocial behaviors in future developmental periods, but they also predict fewer problem behaviors during concurrent and future developmental periods. For instance, preschool-aged children who display more frequent prosocial behaviors (e.g., sharing) simultaneously exhibit fewer externalizing behaviors (e.g., noncompliance and aggression; Huber et al., 2019). Further, better social competence and attention regulation predict fewer caregiver-rated child difficulties in emotion regulation in later childhood (Burt et al., 2008; Kim & Cicchetti, 2010; Perren et al., 2007), and fewer or lower internalizing symptoms (e.g., depressive and anxious symptoms) in adolescence (Bornstein et al., 2010). In other words, high levels of psychosocial competencies in early childhood are related to positive developmental cascades that protect developing youth against negative developmental cascades.

Relatedly, low levels of psychosocial competencies (i.e., deficits) in early childhood can create negative developmental cascades. Indeed, just as early emotional and behavioral problems predict poorer long-term psychosocial competencies, early childhood deficits in psychosocial competencies uniquely predict–even after controlling for extant behavior problems–the emergence and/or maintenance of future behavior problems (Achenbach & Edelbrock, 1983; Carter, 2002; 2003; Cicchetti & Cohen, 1995; Eron & Huesmann, 1984; Keenan & Shaw, 1997; Mastern & Coatsworth, 1995; 1998). For example, children with deficits in prosociality are more likely to develop future conduct problems as well as deficits in other developmental tasks (see Briegel et al., 2018; Burt et al., 2008; Carter & Briggs-Gowan, 2006; Carter et al., 2003). Additionally, lower levels of specific psychosocial competencies (e.g., poor attention regulation, affect regulation, and early-childhood prosociality) significantly increase lasting risks for academic difficulties, peer rejection, and the development of psychopathology in adolescence and adulthood (e.g., Burt et al., 2008; Caprara et al., 2000; Kim & Cicchetti, 2010). Similarly, school-aged children who struggle with peer relations and forming friendships are more likely to show comorbid internalizing symptoms (i.e., isolation, anxiety, depression,

somatic complaints), as well as exhibit perseverant internalizing and externalizing symptoms which persist in adolescence, when compared to peers with more developed psychosocial competencies (Bornstein et al., 2010; Burt et al., 2008).

Given this long-term developmental salience, researchers have attempted to identify factors that promote and/or remediate child psychosocial competencies (Briegel et al., 2018; Masten & Coatsworth, 1998; Masten & Cicchetti, 2010; Todd & Niec, 2022). Although several factors have been noted across multiple bioecological systems (Bronfenbrenner, 2005), one of the most common, influential, proximal, and dynamic factors is a child's caregiving microsystem (Briegel et al., 2018; Luthar et al., 2000; Masten, 2001; Masten & Coatsworth, 1998; Perren et al., 2007). Indeed, caregiver-child relationships are a crucial context for the initial development and growth of early psychosocial competencies, as these skills are typically first modeled, guided, and actively reinforced by caregivers in early childhood (Dahl & Brownell, 2019).

As a consequence, psychosocial interventions that directly target caregiving (e.g., BPT) may hold particularly promise in not only reducing negative child behaviors but also promoting and/or remediating child psychosocial competences–and thus synergistically prevent negative developmental cascades while fostering positive ones (Briegel et al., 2018; Carter et al., 2003). This may especially be true for PCIT given its multiphasic, intensive coaching of caregiving (Briegel et al., 2018; Niec, 2018).

Psychosocial Competency Outcomes in PCIT

Yet, as noted above, most of PCIT's empirical literature has focused on its reduction of children's negative behaviors rather than its putative improvement of their positive behaviors (Briegel et al., 2018). However, the comparatively few studies that have empirically examined treatment-related changes in child psychosocial competencies do suggest that PCIT likely improves several domains of child competence, including compliance (e.g., Allen et al., 2022; Bagner & Eyberg, 2007; Bagner et al., 2010; Eisenstadt et al., 1993; Eyberg et al., 1995; Garcia et a., 2021; Masse et al., 2016; McNeil et al., 1991; Nixon et al., 2003; Querido, 2004;

Schuhmann et al, 1998; Thomas et al., 2017; Zlomke et al., 2017), emotion regulation (e.g., Lenze et al., 2011; Lieneman et al., 2020; Luby et al., 2012, 2018), social skills/prosociality (e.g., Eisenstadt et al., 1993; Ginn et al., 2017; Kimonis et al., 2019; Parladé et al., 2020), attention regulation (e.g., Tempel et al., 2013), language acquisition and vocalization (e.g., Bagner et al., 2016; Hansen & Shillingsburg, 2016), and self-esteem (e.g., Eisenstadt et al., 1993). Notably, most of these studies have typically assessed only one competency domain; moreover, they have varied significantly in assessment modality (e.g., caregiver-report, observational coding, biological indicators), timing (e.g., pre- to post-treatment versus pre- to post-CDI and/or PDI), PCIT format (i.e., standard or adapted protocols), and the developmental and/or diagnostic nature of treated youth (e.g., ASD, toddlers). Notwithstanding this diversity, compliance has been by far the most studied competency outcome in PCIT research.

Compliance. As mentioned above, compliance–particularly to parental figures–has been the most commonly studied psychosocial competency in PCIT outcome research, with results consistently demonstrating large pre- to post-treatment improvements (e.g., Allen et al., 2022; Bagner & Eyberg, 2007; Bagner et al., 2010; Eisenstadt et al., 1993; Eyberg et al., 1995; Garcia et a., 2021; Masse et al., 2016; McNeil et al., 1991; Nixon et al., 2003; Querido, 2004; Schumann et al, 1998; Zlomke et al., 2017). For example, Thomas and colleagues' (2017) previously described meta-analysis pooled results from five RCTs that examined pre- to post-changes in child compliance to parental commands (n = 124 child-caregiver dyads; i.e., Bagner & Eyberg, 2007; Bagner et al., 2010; Eyberg et al., 1995; Nixon et al., 2003; Querido, 2004); results indicated that compliance increased significantly more, pre- to post-treatment, for PCIT-treated children than it did for controls (d = 0.89, 95% CI [0.50, 1.28]). Other PCIT studies (experimental and otherwise) have reported similarly large pre- to post-treatment gains in child compliance to parental commands, regardless of whether PCIT is delivered in-person (e.g., Eisenstadt et al., 1993; McNeil et al., 1991; Schumann et al, 1998; ds = 1.72–1.80), via telehealth (Garcia et al., 2021), or to children with autism spectrum disorders (ASD; e.g., Allen

et al., 2022; Masse et al., 2016; Zlomke et al., 2017; *d*s = 0.98–1.87; c.f., Scudder et al., 2019; *d* = -0.52).

These convergent results are particularly noteworthy since *all* of these studies assessed child compliance using a standardized behavioral observation and coding system (i.e., DPICS [see prior description]). However, most of these studies only measured child compliance, pre- and post-treatment. Although this is consistent with PCIT's protocol, this has led to a relative lack of studies assessing PCIT's phase-specific effects on child compliance (i.e., unique impact of CDI versus PDI; c.f., Allen et al., 2022; Eisenstadt et al., 1993). One notable exception was Eisenstadt and colleagues' (1993) study, which examined order effects for PCIT's phases; i.e., participating families (*N* = 24) were randomly assigned to receive either CDI followed by PDI (CDI-First) or PDI followed by CDI (PDI-First). Due to this design, the authors were able to compare phase-specific effects on a number of treatment-relevant outcomes, including child compliance to caregiver commands (as measured by the DPICS). Consistent with PDI's rationale and study hypotheses, PDI significantly improved child compliance to caregivers (*d* = 1.38), particularly when compared to CDI (*d* = 0.08, phase-specific comparison: *d* = 0.63, *p* = .01)–although the sequencing of phases did not significantly impact their cumulative effects on child compliance (*d* = 0.04, *p* = .85).

Similarly, Allen and colleagues (2022) examined PCIT's phase-specific effects on child compliance, but with an RCT involving 55 children with ASD. Compared to children in the wait-list condition (*n* = 25), PCIT-treated children (*n* = 30) had significant, large pre- to post-treatment improvements in child compliance, as measured by the DPICS during both parent-led play (*d* = 1.87, p < .001) and clean-up scenarios (*d* = 0.98, *p* = .005). However, the authors also assessed child compliance at mid-treatment (i.e., between CDI and PDI), allowing for phase-specific comparisons. Such analyses indicated that changes in child compliance significantly varied by treatment phase for both parent-led play (PLP; η_p^2 = .47, *p* < .001) and clean-up situations (CU; η_p^2 = .30, *p* = .001). Specifically–and consistent with Eisenstadt et al.'s (1993)

findings–child compliance did not significantly change during CDI (i.e., pre- to mid-treatment) for either PLP (34% to 33%) and CU (47% to 39%). In contrast, child compliance significantly improved during PDI (i.e., mid- to post-treatment) for both PLP (33% to 73%, $p < .001$) and CU activities (39% to 73%, $p = .003$).

Overall, these studies' results suggest that PCIT is linked to large gains in child compliance–and these improvements occur primarily during PDI. Notwithstanding this convergence of findings, this research has a few notable limitations. Firstly, only the above two studies (i.e., Allen et al., 2020; Eisenstadt et al., 1993) assessed CDI-related changes in child compliance. Further research should aim to replicate these studies by assessing child compliance at pre-, mid- and post-treatment. Secondly, the above studies only assessed child compliance using clinician-coded behavioral observations of standardized play scenarios. Although such observations are the gold standard, they do not indicate the degree to which caregivers (versus clinicians) perceive changes in child compliance within and across PCIT's phases (Briegel et al., 2018). Thirdly, these studies only assessed child compliance within a clinic setting, and only with commands related to play and clean-up of toys. Consequently, it remains relatively unknown how PCIT's phases affect child compliance to broader arrays of caregiver commands and contexts outside of a clinic setting and/or play (e.g., coming to the table when called, eating presented foods, brushing teeth, getting dressed).

One potential way to address these issues is to measure child compliance via caregiver-reports. This could not only provide multimodal validation of PCIT's impact on child compliance, but also allow pragmatic assessment of changes in child compliance across more diverse contexts and caregiver commands. Such methods also might strengthen confidence as to PCIT's phase-specific effects on other child psychosocial competencies, particularly those that have been comparatively less-studied, such as emotion regulation.

Affect/Emotion regulation. Generally posited to involve several executive functioning skills and cognitive processes related to goal-oriented emotional behavior (e.g., behavioral

inhibition, attentional flexibility; Eisenberg et al., 2004; Gratz & Roemer, 2004), emotion regulation is multifaceted, but typically viewed as having two main components: (1) emotional negativity/liability and (2) adaptive regulatory abilities (e.g., affect identification, empathy, positive affect expression; Lieneman et al., 2020; Rothenberg et al., 2019; Shields & Cicchetti, 1997). The former reflects a transdiagnostic process underlying many dysfunctions and disorders, including disruptive behavior problems (Aldao, 2016; Gilliom et al., 2002; Hofmann et al., 2012; Trentacosta & Shaw, 2009). In contrast, the latter is linked to a wide variety of psychosocial competencies such as positive well-being (e.g., life satisfaction, mood, affect; Haga et al., 2009), social functioning (Eisenberg et al., 2000; Lopes et al., 2005), sympathy/empathy (Eisenberg et al., 2000), and as a protective factor against the development of behavior problems (Cole et al., 1994). These results have also been found in physiological studies of emotion regulation, linking cardiac vagal regulation (as measured via respiratory sinus arrhythmia [RSA]) with improved self-regulation and active coping skills, sustained attention, social competence, and fewer behavior problems (Calkins, 1997; Calkins & Dedmon, 2000; Calkins & Keane, 2004; Calkins et al., 2007; DeGangi et al., 1991; El-Sheikh & Whitson, 2006; Graziano et al., 2007; Huffman et al., 1998; Porges, 1991; 1995; 2001; Porges et al., 1996; Propper & Moore, 2006; Suess et al., 1994; Wilson & Gottman, 1996).

Consequently, emotion regulation is a salient putative target for manifold clinical interventions, including PCIT (Eyberg & Funderburk, 2011). However, few studies have empirically examined if, how, and/or when emotion regulation improves within the context of PCIT (Bagner et al., 2012; Graziano et al., 2012; Lieneman et al., 2020; Lenze et al., 2011; Luby et al., 2012; Rodríguez et al., 2014; Rothenberg et al., 2019). Of those that have, most have either assessed pre- to post-treatment *decreases* in emotional negativity/lability (e.g., “argues when denied own way”, “is easily upset”, “overreacts to small problems”; i.e., Chronis-Tuscano et al., 2016; Lieneman et al., 2020; Luby et al., 2012; 2018; Rothenberg et al., 2019; *d*s = -1.93 to -0.52) or how children’s emotion regulation predicts or moderates PCIT-related

reductions in disruptive behavior (i.e., Bagner et al., 2012; Chronis-Tuscano et al., 2016; Rodríguez et al., 2014). Comparatively fewer studies have explicitly assessed PCIT-related changes in treated children's *positive* emotion regulation strategies or skills (e.g., empathy, expression of positive emotions, emotion identification; i.e., Lenze et al., 2011; Lieneman et al., 2020; Luby et al., 2012, 2018), and only two known studies have done so within the context of standard PCIT (i.e., Graziano et al., 2012; Lieneman et al., 2020) versus with PCIT adaptations.

In regards to the latter, PCIT-related changes in child emotion regulation were first studied with PCIT-Emotion Development (PCIT-ED; Lenze et al., 2011; Luby et al., 2008), an emotion-enhanced expansion of PCIT targeting preschool-aged children with depression. PCIT-ED condenses PCIT's two standard treatment phases into 4 sessions each, followed by a 6-session PCIT-ED module; wherein, therapists coach caregivers to recognize emotions in themselves and their children, model adaptive emotion regulation strategies, and reinforce emotion regulation-related components of CDI and PDI (e.g., providing labeled praises for staying calm, reflecting verbal labels of expressed emotions; Lenze et al., 2011). In an initial PCIT-ED pilot study, emotion identification and regulation (measured via the performance-based Penn Emotion Differentiation Test [KIDSEDF]; Gur et al., 2001, 2010) improved for five of the six children ages 3–5 with depression, although these gains were nonsignificant at the overall group level (p =.19), likely due to low power (Lenze et al., 2011). Indeed, later PCIT-ED studies with larger samples have consistently showed significant improvements in children's negative and positive emotion regulation.

First, Luby et al. (2012) conducted a RCT with 54 children ages 3–7 with major depression disorder who were randomly assigned to PCIT-ED (n = 25) or an active control (n = 29). Results indicated medium pre- to post-PCT-ED improvements in children's objective emotion identification and regulation (per the KIDSEDF; d = 0.44, p < .01) and caregiver-reported adaptive emotion regulation and negativity/lability (per the ERC*,* ds = 0.53 and -0.60, respectively, p < .01). In contrast, emotion regulation did not significantly change for children in

the active control, such that affect identification (per KIDSEDF scores) was significantly better for PCIT-ED-treated children compared to those in the control group (d = 0.83, p = .002). Second, Luby et al. (2018) replicated the above findings with a larger RCT of 229 children ages 3.0–6 years and 11 months with major depressive disorder (PCIT-ED: n = 115; WL: n = 114). Namely, children treated with PCIT-ED, compared to the wait-list control, had significantly better emotion regulation, post-treatment (per ERC scores), for both negativity/lability (d = -1.21) and adaptive emotion regulation (d = 0.69).

Notwithstanding the above findings, such studies did not demonstrate the degree to which PCIT's standard protocol led to improvements in adaptive emotion regulation, particularly for children without depression. Rather, Graziano and colleagues (2012) were the first to examine changes in emotion regulation during standard PCIT, as well as the first to do so using a biological marker of emotion regulation (specifically RSA suppression), which is thought to facilitate one's ability to cope with challenging states through the mediation of metabolic outputs via heart rate increases; Porges et al., 1996; Porges, 2002). For this study, Graziano and colleagues (2012) examined 28 children (M_{age} = 37.8 months, SD_{age} = 13.3; 71% boys; 82% White, 21% LatinX, 10% Biracial) who were born premature (i.e., < 37-week gestation) and presented with elevated disruptive behavior problems. They assessed pre- and post-treatment levels of caregivers' CDI Do and Don't Skills, baseline child RSA, and RSA change (i.e., suppression; baseline RSA – challenge RSA) to the DPICS' clean-up situation. Vagal tone was derived from electrocardiogram (ECG) signals from three electrodes placed on the child's chest and abdomen, and these signals were converted to RSA from a time-series analysis of R-R intervals from these ECG recordings. After controlling for pre-treatment RSA and caregiver Do and Don't Skills, pre- to post-treatment improvements in caregiver Do Skills yielded large pre- to post-treatment gains in child emotion regulation (as measured by RSA suppression; d = 0.88). While this displayed evidence for PCIT's effect on children's physiological regulation, this study did not assess phase-specific effects of CDI and PDI on children's emotion regulation.

Fortunately, Lieneman and colleagues (2020) examined standard PCIT's phase-specific effects on emotion regulation in 66 children ages 2–7 (M_{age} = 3.8; SD_{age} = 1.1; 69.7% male; 57.6% LatinX) and their caregivers (M_{age} = 34.8; SD_{age} = 8.6; 83.3% mothers; 63.6% LatinX) who reported child disruptive behavior problems. Participants were recruited from Riverside University Health System—Behavioral Health (RUHS-BH) Preschool 0–5 programs, including Set-4-School Programs for Preschoolers (ages 0–5) and the Mobile Prevention and Early Intervention (MPEI) Services in Riverside, California. Procedurally, caregivers were randomly assigned to receive either standard PCIT augmented with either inexpensive tangible incentives like clothing (n = 41) or standard PCIT with no incentives (n = 25). Among other study measures, caregivers reported on their PCIT-treated child's emotion regulation (i.e., via the Emotion Regulation Checklist [ERC]; Shields & Cicchetti, 1997), including the ERC's Emotion Regulation Subscale, which assesses adaptive emotional understanding and empathy (e.g., "Is empathetic towards others", "Shows concern when others are upset or distressed"). Overall, caregiver-reports of adaptive child emotion regulation increased, pre- (M = 24.6; SD = 3.3) to post-treatment (M = 26.6; SD = 3.0), to a medium degree (d = 0.65)–although these gains were only statistically significant (and large) for those receiving unincentivized PCIT (η_p^2 = .38, d = 1.18, p < .001). Furthermore, phase-specific analyses indicated that children's emotion regulation did not significantly change during CDI (d = 0.17), but rather significantly increased during PDI (d = 1.12),

Collectively, these studies suggest that PCIT and/or its adaptations can significantly improve children's emotion regulation, including both (1) reductions in emotion negativity or dysfunction (i.e., Chronis-Tuscano et al., 2016; Lieneman et al., 2020; Luby et al., 2012; 2018; Rothenberg et al., 2019; ds = -1.93 to -0.52) and (2) increases in adaptive emotion regulation (i.e., Lenze et al., 2011; Lieneman et al., 2020; Luby et al., 2012; 2018). Nevertheless, more research is needed to replicate these findings, particularly those pertaining to gains in adaptive emotional competencies with diagnostically typical PCIT cases treated with its standard

protocol. Furthermore, research should re-examine PCIT's phase-specific contributions to children's affect/emotion regulation, since only one known study has done this to date. Relatedly, research is needed to better understand how these affective improvements compare to PCIT-related gains in children's other interpersonally salient competencies.

Prosociality/Social skills. Consistent with the above literature, growing research suggests that PCIT may also improve children's prosociality and requisite basal social skills (e.g., empathy, social awareness, proximity/affection towards caregivers; Eisenstadt et al., 1993; Ginn et al., 2017; Kimonis et al., 2019; Parladé et al., 2020). As commonly defined, prosociality refers to behaviors intended to benefit others, including informing (i.e., providing someone with needed information), comforting (i.e., decreasing another's distress; e.g., hugging a crying peer), sharing (i.e., surrendering a resource to someone else), and helping (i.e., recognizing others' goals and working to see those goals achieved; e.g., holding the door open for someone whose hands are full; Jensen, 2016). Prosociality is particularly salient to clinical study, as reductions in problematic behaviors do not always indicate a parallel increase in prosociality (Pemberton et al., 2013), and because prosociality can additionally serve a compensatory or protective role against numerous negative outcomes and related developmental cascades (e.g., aggression, delinquency, peer relational victimization, loneliness, academic achievement; Grieze & Buhs, 2014; Holmes et al., 2015; Kerr et al., 1997; Vitaro et al., 2005). However, similar to the prior psychosocial competencies discussed above, direct measurements of children's prosociality and/or related or requisite social skills during treatment remain scarce, particularly in the context of PCIT.

Indeed, only one known study has directly assessed changes in prosociality during PCIT. Specifically, Pemberton and colleagues (2013) utilized time-series analysis to examine differential reinforcement as a mechanism of change in PCIT for three families with children ages 5–8 years with clinically significant disruptive behavior problems. The authors hypothesized that parents' contingent skill use would predict subsequent child prosocial

behavior (as measured by DPICS codes), which was fully and partially confirmed for two of the three families. Namely, caregivers' strategic ignoring of child misbehavior significantly elicited children's prosocial behavior within 1–2 minutes of child-led play (*p*s = .007–.06). However, observed prosocial child behavior did not significantly change across CDI sessions for any of the three families, possibly because all three children began with high pre-treatment levels of prosociality (as assessed by DPICS coding).

Although no other known study has directly assessed changes in child prosociality during PCIT, several other studies have examined pre- to post-PCIT changes in prosociality-requisite social skills, including social awareness, empathy, and proximity, with larger clinical samples (e.g., Eisenstadt et al., 1993; Ginn et al., 2017; Kimonis et al., 2019; Parladé et al., 2020). For example, a child must first be socially aware of others' feelings, wants, needs, and/or goals in order to prosocially ameliorate another's distress, share a desired resource, or help peers with their goals. Similarly, empathy is not typically considered a prosocial skill in itself (Jensen, 2016), but the subsequent action a person takes after the emotion has the potential to be. Specifically, empathy has been posited as necessary for adaptive guilt—that is, guilt that motivates an individual to take actions that mitigate/inhibit harm to another and to approach reparative behaviors (Caprara et al., 2001; Tilghman-Osborne et al., 2010). Indeed, empathy and adaptive guilt have been found as strong predictors for children's prosociality to peers, with adaptive guilt additionally being associated with self-regulation related to modulating impulse and applying attention and effort (Roberts et al., 2014). Consequently, PCIT may improve children's prosocial behaviors by increasing social awareness, empathy, and other basal social skills.

Social awareness. Regarding PCIT's effect on social awareness, extant research has focused on children with ASD (e.g., Ginn et al., 2017; Parladé et al., 2020). Namely, Ginn and colleagues (2017) conducted a RCT with 39 children ages 3.0–7.1 years with ASD who were randomly assigned to receive eight sessions of CDI (*n* = 19) or a wait-list condition (*n* = 20).

Children's social responsiveness and awareness were measured by the Social Responsiveness Scale (SRS-2; Constantino & Gruber, 2012), a 65-item caregiver-rating scale (and subordinate Social Awareness subscale) of children's social functioning as they occur in natural social settings (e.g., interactions with peers or caregivers). Results indicated that social awareness significantly improved for youth treated with CDI compared to those in the wait-list condition, to a large degree (d = 1.03).

Similar gains in social awareness were found by Parladé and colleagues (2020) with a PCIT-treated sample of 16 children ages 3–7 years with ASD. Specifically, children's social awareness, per caregiver-report on the SRS, significantly improved, pre- to post-treatment, to a medium-to-large degree (d = 0.73, p = .02). These children also experienced large, significant pre- to post-treatment gains in their social skills (d = 0.86), as measured by caregiver-report on the Behavior Assessment System for Children (BASC-2; Reynolds & Kamphaus, 2004). Notably, this study also included 16 PCIT-treated children without ASD, but no data were presented on their pre- to post-treatment changes in social awareness or other adaptive social skills. Thus, more research should be done involving children without ASD to see if or to what degree PCIT's benefits to social awareness–and other skills such as empathy–replicate.

Empathy. Similar to social awareness research with ASD-specific groups, much of the known research on PCIT's effects on empathy has been conducted with specific diagnoses (i.e., depression, conduct disorder with callous-unemotional traits) and related protocol adaptations (e.g., Kimonis et al., 2019; Luby et al., 2018). First, Luby and colleagues (2018) compared changes in reparative guilt in children ages 3–6 years and 11 months with clinical depression who were randomly assigned to PCIT-ED (n = 115) or a wait-list condition (n = 114). Both conditions lasted 18 weeks, with results showing significantly better improvements in guilt reparation (measured via caregiver-report on the My Child questionnaire; Ferguson et al., 1996) for children treated with PCIT-ED versus those in the wait-list condition (d = 0.70, p < .001).

Another adaption that targets child empathy is PCIT for callous-unemotional traits (PCIT-CU; Kimonis et al., 2019). PCIT-CU differs from standard PCIT in three key ways: it (1) explicitly coaches caregivers to use warm, emotionally responsive parenting strategies in CDI (e.g., verbal and physical expressions of warmth), (2) emphasizes rewards as a means of achieving discipline by systematically substituting punishment-based discipline (i.e., time-out) with reward-based techniques (i.e., an individualized token economy) in PDI, and (3) provides a novel module called Coaching and Rewarding Emotional Skills (CARES) to address emotional deficits in children with CU traits. In their open pilot trial of PCIT-CU, Kimonis and colleagues (2019) assessed 23 children ages 2–6 years (M_{age}= 4.5; SD_{age} = 0.9; 87% boys; 91.3% White) with elevated conduct problems and CU traits. Families received the two phases of PCIT, immediately followed by the CARES module, which targets children's insensitivity to distress cues by (a) improving emotion recognition by enhancing attention to important facial cues indicative of distress (e.g., micro-expressions), (b) improving emotional understanding by identifying anger- and frustration-triggering situations for the child and linking context to emotional expression, (c) positively reinforcing empathetic and prosocial behaviors via caregivers' modeling, roleplay, etc., and (d) increasing frustration tolerance through caregivers' skill use (e.g., modeling, roleplay) to decrease children's aggressive behavior.

Given this greater focus on prosocial development, PCIT-CU's developers measured treatment-related changes in youth's empathy via the Griffith Empathy Measure (GEM; Dadds et al., 2008), a 23-item caregiver-report of children's empathy, including affective (e.g., *Seeing another child sad makes my child feel sad*) and cognitive components (e.g., *My child has trouble understanding other people's feelings*). The presence of empathy is better captured by the affective component, which involves positively stated words (i.e., *can*, *does*). Results indicated significant small-to-medium increases in affective empathy, pre- to post-PCIT-CU (d = 0.47, p = .01). Moreover, phase-specific results indicated that CDI and PDI each had a small, but significant individual effect on affective empathy (ds = 0.28 and 0.40, respectively); whereas, the

CARES module had a trivial effect (*d* = 0.12). Importantly, the aforementioned pre- to post-treatment gains in affective empathy were significantly sustained if not further improved at a 3-month follow-up (*d* = 0.56). Overall, these results suggest that PCIT–or at least some of its adaptations–may improve empathy in youth, although additional research is needed to know if and to what extent such gains occur with typical PCIT clients (i.e., youth with disruptive behavior but not necessarily conduct disorder and/or depression) receiving PCIT's standard protocol.

Proximity. Lastly, treatment-related changes in children's proximity to caregivers have been researched in the context of standard PCIT. Specifically, in Eisenstadt and colleagues' (1993) previously mentioned, phase-specific analysis of standard PCIT, children's proximity/affection towards their caregivers was assessed via observational coding. Specifically, proximity was coded during DPICS-standardized child-led play observations at four timepoints (i.e., pre-, mid-, and post-treatment and at a 6-week follow-up). For every 5-second interval in a 10-minute CDI observation, coders assessed proximity (i.e., distance between the caregiver's and child's torsos) using a 4-point scale (0 = *1 foot or less*, 3 = *6 feet or more*). Regardless of which phase was implemented first (i.e., CDI or PDI), children's proximity improved (i.e., grew closer) pre- to mid-treatment to a small but statistically non-significant degree (*p* = 0.36), and these gains continued to improve as children completed both phases, such that pre- to post-treatment gains in proximity were medium-to-large and statistically significant (*d* = 0.74, *p* = .006).

Overall, the aforementioned research provide evidence that both standard and adapted PCIT may help improve children's prosociality and related social skills, such as social awareness, empathy, proximity/affection to caregivers. However, more research is needed in this area, particularly related to the full standard protocol and its phase-specific effects–and specifically with neurotypical youth. Relatedly, this literature could be strengthened by examining the degree to which PCIT with these youth lead to not only gains in social competencies, but to concurrent improvements in other domains like attention regulation.

Attention regulation. Behavior descriptions are one CDI skill posited to not only enhance caregiver-child interactions but also increase children's attention regulation (Eyberg, 1988, 1999; Eyberg & Funderburk, 2011; Herschell et al., 2002). However, only one known study has been conducted to concretely confirm this claim. Namely, Tempel and colleagues (2013) conducted a PCIT-based experiment with 30 children ages 3–5 (M_{age} = 4.3 years; 92.3% White; 53.8% boys; 96.2% without an ADHD diagnosis) who were enrolled in Head Start. Procedurally, caregivers were asked to repeat interviewer-provided speech while simultaneously completing a coloring/drawing task with their child. Families were randomly assigned to one of five intervention conditions (i.e., nonverbal attention, questions, behavior descriptions, reflections, and combined CDI skills). Children's attention problems were measured via caregiver-report on the Connors' Parent Rating Scale-Revised Scale (Conners et al., 1998); whereas, children's on-task behavior was expert-coded via the Revised Edition of the School Observation Coding System (REDSOCS; Jacobs et al., 2000) which determined the percentage of on-task behavior in each condition during the child's play. Specifically, on-task behavior was computed by dividing the frequency of a child's on-task behavior (for each intervention condition) by the total number of 10-second intervals that were observed, making for thirty 10-second intervals within a 5-minute child-led play observation period.

Results demonstrated that children exhibited significantly more on-task behavior when caregivers utilized combined versus any singular CDI skill (i.e.., reflections, proximity, questions) with the exception of behavioral descriptions, which did not significantly differ from combined CDI skill use (d = 0.05, p = .79). Indeed, behavioral descriptions produced more on-task child behavior than any single skills, including questions (d = 0.95, p < .001), reflections (d = 0.36, p = 0.12) and nonverbal attention (d = 0.23, p = 0.26). Collectively, these findings confirmed the theoretical basis for behavioral descriptions keeping children on-task and teaching attention regulation, specifically greater sustained attention (e.g., Eyberg 1988, 1999; Eyberg & Funderburk, 2011; Herschell et al., 2002). However, being the only known study focusing on this

psychosocial competency (much like the limited literature examining prior psychosocial domains), more research is necessary to examine to what extent children's attention regulation shifts and/or improves not only in CDI but in PDI and, overall, during standard PCIT treatment.

Study Aims and Hypotheses

While the previously mentioned studies have led to promising results, few have examined *standard* PCIT's influence on psychosocial competencies like emotion/affect regulation (i.e., Graziano et al., 2012; Lieneman et al., 2020), attention regulation (i.e., Tempel et al., 2013), and prosociality (i.e., Pemberton et al., 2013). Even fewer have involved a mid-treatment timepoint to investigate PCIT's phase-specific contributions to psychosocial competencies, even for otherwise well-studied competencies like compliance (i.e., Allen et al., 2020; Eisenstadt et al., 1993). Considering the empirical findings mentioned above and their need for further exploration or replication, the current study aimed to examine if and to what extent multiple psychosocial competencies (i.e., compliance, prosociality, attention regulation) changed in the context of standard PCIT with typical PCIT clients (i.e., mostly neurotypical children ages 2.5–6 years and 11 months with clinically elevated disruptive behavior problems). Because much of the literature assesses improvement through the *reduction* of misbehavior instead of the explicit growth of positive behaviors, this study simultaneously assessed caregiver-reports of child disruptive behavior (via the ECBI) and positive behavior (via the Psychosocial Inventory for Children and Adolescents; PSICA; see methodology). This allowed for investigation into the standard PCIT protocol's effect on psychosocial domains while examining the relationship between positive and disruptive child behavior throughout treatment.

To accomplish this, archival PCIT data were sampled at three different time points (i.e., pre-, mid- [post-CDI], and post-treatment [post-PDI]) to ascertain phase-specific contributions, as well as the overall contribution of PCIT to the aforementioned domains (i.e., pre- to post-treatment). Expected results would significantly enhance the PCIT literature, particularly as PCIT claims to increase positive child behaviors with relatively scant research confirming

explicit, phase-specific growth in these domains, particularly with the standard protocol and/or with typical client samples (Briegel et al., 2018).

Pursuant to these aims, the following hypotheses were tested by the current study:

- ***H_1*:** Children's disruptive behavior problems will negatively and significantly correlate with their overall psychosocial competence across treatment, and specifically at pre-treatment (***H_{1a}***), mid-treatment (***H_{1b}***), and post-treatment (***H_{1c}***),
- ***H_2*:** Children's disruptive behavior problems will significantly decrease during PCIT (i.e., pre- to post-treatment), and during each of its standard phases, such that:
    - ***H_{2a}*:** Child disruptive behavior problems will significantly decrease during CDI (i.e., pre- to mid-treatment), and
    - ***H_{2b}*:** Child disruptive behavior problems will significantly decrease during PDI (i.e., mid- to post-treatment).
- ***H_3*:** Children's overall psychosocial competence as well as specific competencies (i.e., compliance to caregivers, prosociality, attention regulation) will significantly increase during PCIT (i.e., pre- to post-treatment), as its standard phases, such that:
    - ***H_{3a}*:** Overall and domain-specific psychosocial competencies will significantly increase during CDI (i.e., pre- to mid-treatment), and
    - ***H_{3b}*:** Overall and domain-specific psychosocial competencies will significantly increase during PDI (i.e., mid- to post-treatment).
- ***H_4*:** Pre- to post-treatment, the percentage of children with clinically significant deficits in psychosocial competence will significantly decrease.

Chapter II: Methods

Participants

To test the above hypotheses, the current study used de-identified archival data from a sample consisting of 29 caregiver-child dyads who presented for treatment of child disruptive behavior disorders at the Idaho State University Psychology Clinic, all of whom received either PCIT's standard protocol or an age-adaption protocol for middle childhood (i.e., PCIT-MC; Peer et al., 2019). The majority of caregivers in this sample were mothers (82%), while treated children were predominately White (82%) boys (76%) with a mean age of 6.6 years (*SD* = 2.4), though 10% of the sample's children were identified as Latinx.

Due to this study's aim to assess PCIT's general capacity to improve child psychosocial competencies, children were not excluded for age (i.e., children older than the standard protocol's 6 years and 11 months; *n* = 11); or for any comorbid externalizing, internalizing, or developmental conditions (e.g., intellectual impairment/disability, ASD; *n* = 3); so long as the primary concern for treatment was child disruptive behavior problems (which were all of the archival cases). For cases with multiple participating caregivers (*n* = 25) who completed study measures at all three timepoints (*n* = 14; see Measures and Procedures), only one caregiver's data were used to ensure independence of data, given the used analyses' statistical assumptions (see Analytic Plan). Specifically, data were taken from the reported primary caregiver; though for cases with no clear primary versus secondary caregiver (*n* = 6), one caregiver's data were randomly selected for that case via a true random number service (www.random.org).

Measures

Eyberg Child Behavior Inventory (ECBI)

The ECBI (Eyberg & Pincus, 1999) is a 36-item, standardized caregiver-report measure of conduct problems in children ages 2–16 years. Like the PSICA, the ECBI's two scales have caregivers report on child behavior during the past week. The first scale, Intensity, measures

caregiver-reported frequency of item-specific conduct behaviors on a 7-point Likert scale (1 = *Never*, 7 = *Always*). These are summed to provide the overall Intensity scale [IS] score, which can range from 36 to 252. The second scale, Problem, assesses the extent to which these child behaviors are problematic to caregivers, by asking caregivers to circle *Yes* (1) or *No* (0) in response to the question "Is this behavior a problem for you?" The total Problem scale [PS] score (ranging 0–36) is calculated by summing responses. Both ECBI scales have clinical cutoff scores. Specifically, a raw score above 132 on the IS represents clinically significant levels of child disruptive behavior; whereas, a raw score of 13 or above indicates clinically significant concerns on the PS regarding said disruptive behavior.

Previous research with the ECBI has evidenced it to have excellent internal consistency (IS: α = .95, PS: α = .93; Eyberg & Pincus, 1999), strong test-retest reliability (IS: *r* = .75, PS: *r* = .75; Funderburk et al., 2003), convergent construct and criterion validity with other measures of child conduct problems (Abrahamse et al., 2015; Axberg et al., 2008; Gross et al., 2007), and excellent known-groups validity (i.e., differentiating between children with and without clinically significant externalizing problems; Abrahamse et al., 2015; Eyberg & Ross, 1978; Robinson et al., 1980; Weis et al., 2005). Specifically, Rich and Eyberg (2001) found the ECBI's overall classification rate to be .91, with a specificity of .87, a sensitivity of .96, a negative predictive power of .96, and a positive predictive power of .88. Notably, the ECBI has been standardized and utilized across multiple countries (e.g., China, Norway, Japan), in multiple languages (e.g., Spanish, Dutch, Swedish, Norwegian; Abrahamse et al., 2015; Axburg et al., 2007; García-Tornel Florensa et al., 1998; Reedtz et al., 2008) and with ethnoracially diverse samples (e.g., African American, Latinx, Korean, Filipino; Abrahamse et al., 2015; Coffery et al., 2015; Gross et al., 2007; Rhee & Rhee, 2015). With the current sample, ECBI intensity scale scores had good-to-excellent internal consistency at pre-, mid-, and post-treatment (αs = .89, .95, and .89, respectively).

Prosocial Strengths Inventory for Children and Adolescence (PSICA)

The PSICA (Briegel et al., 2018; see Appendix) is a 36-item, standardized caregiver-report of multidimensional psychosocial competence in children ages 2–16 years. The measure has two separate scales, both focused on positive child behaviors occurring in the past week. The first scale, Frequency, asks caregivers to rate how frequently their child engaged in each item's listed behavior using a 7-point Likert scale (1 = *Never,* 7 = *Always*). Responses are summed to provide an overall Frequency scale score that can range from 36 to 252 (with scores below 170 indicating clinically significant deficits in overall psychosocial competence, per empirically derived cutoff scores; Korell & Peer, 2022). This scale is composed of three subscales: Prosociality (e.g., *Shares*), Attention Regulation (e.g., *Can concentrate on one thing*), and Compliance (e.g., *Obeys house rules*). For each item, caregivers also complete the second scale, Satisfaction, in which caregivers circle *Yes* (1) or *No* (0) in response to the question "Are you satisfied with this behavior in your child?" Responses are summed to provide an overall Satisfaction scale score, which can range from 0 to 36 (with scores below 21 indicating clinically significant deficits, per empirically derived cutoff scores; Korell & Peer, 2022).

Past studies affirm the PSICA's psychometrics with both community and PCIT-referred youth (i.e., Dell'armi & Niec, 2017; Hynes et al., 2022; Korell & Peer, 2021; Niec et al., 2018; Todd & Niec, 2022). These studies have consistently demonstrated good-to-excellent internal consistency across the PSICA's scales (Satisfaction: *KR-20*s = .81–.95, Frequency: αs = .93–.97) and subscales (αs = .78–.92; Dell'armi & Niec, 2017; Niec et al., 2018; Korell & Peer, 2021; Todd & Niec, 2022), convergent construct validity (i.e., |*r*|s = .21–81; Dell'armi & Niec, 2017; Niec et al., 2018; Todd & Niec, 2022), concurrent criterion validity with other prosociality (*r* = .32–.54; Dell'armi & Niec, 2017; Niec et al., 2018) and affect regulation measures (*r* = .77; see Briegel et al., 2018). Further, multiple studies have consistently supported the PSICA's structural validity, specifically its 3-factor structure (i.e., Prosociality, Compliance, and Attention

Regulation; Dell'armi & Niec, 2017; Hynes et al., 2022; Niec et al., 2018). Moreover, the PSICA's psychometrics have been consistent across the PSICA's original English and translated French versions and related cross-cultural samples: i.e., French (*n* = 258; Dell'armi & Niec, 2017) and U.S. English-speaking community-based samples (*n*s = 314–865; Hynes et al., 2022; Niec et al., 2018). Additionally, the PSICA Frequency and Satisfaction scales had good and adequate 7–14-day test-rest reliability (ICCs = .87 and .71, respectively) with a community sample of 47 caregivers of children ages 2–7 (Todd & Niec, 2022). Finally, prior research by Korell and Peer (2022) evinced the PSICA's known-groups validity, as its scales excellently differentiated PCIT-referred (*n* = 27) from non-referred community children (*n* = 625; AUCs = .90–.93, sensitivity = .78–.89, specificity = .84–.90), similar to its subscales (AUCs = .86–.90, sensitivity = .85–.89, specificity = .76–.79).

With the current sample, the internal consistency of PSICA Frequency scale scores were good at pre-treatment (α = .84), excellent at mid-treatment (α = .93), and good at post-treatment (α = .84). For the PSICA's three Frequency subscales, Prosociality's internal consistency was adequate at pre-treatment (α = .70) and good at both mid- and post-treatment (αs = .84 and .83, respectively). Compliance's internal consistency, in turn, was lower but still acceptable at pre- and post-treatment (αs = .67 and .69; Taber, 2018), even as it was excellent at mid-treatment (α = .91). Finally, Attention Regulation had good internal consistency at pre-, mid- and post-treatment (αs = .85, .86, and .86, respectively).

Procedures

The archival data for this study involved caregiver-child dyads who received PCIT at the ISU Psychology Clinic from graduate students. All graduate clinicians were enrolled in ISU's clinical psychology doctoral program and paired on a co-therapy model matching less-experienced therapists with advanced therapists. Congruent with PCIT's (2020) training standards, these clinicians all received 40+ hours of didactic training in PCIT, met CDI mastery during a standardized child-led-play observation, achieved 80+% agreement on the DPICS with

expert-coded CDI and PDI criterion scenarios, 90+% fidelity during assessed CDI and PDI Teach sessions (per PCIT's protocol's fidelity checklists; Eyberg & Funderburk, 2011), and received weekly in-session and out-of-session supervision from a certified PCIT therapist, trainer, and clinical psychologist.

Consistent with PCIT's standard protocol (Eyberg & Funderburk, 2011), treatment-participating caregivers completed the ECBI at each session. Apart from other protocol-prescribed assessments (e.g., broadband caregiver-report rating scales at pre- and post-treatment broadband, DPICS administrations), the PSICA was administered to caregivers at three timepoints: (1) an intake session prior to CDI (i.e., pre-treatment); (2) the session immediately following CDI mastery, before the second phase of treatment began with the PDI Teach session (i.e., mid-treatment); and (3) after PDI's completion during the post-treatment/graduation (i.e., post-treatment).

Analytic Plan

Preliminary analyses

Missing data. Visual inspection of missing data patterns across variables, cases, and items, in addition to independent *t* and Fisher's exact tests, indicated that PCIT completers (*n* = 20, 69%) and non-completers (*n* = 9; 31%) did not significantly differ on demographic or baseline treatment variables. Namely, these two groups' children did not significantly differ in (a) age (PCIT completers: *M* = 6.9, *SD* = 2.6; PCIT non-completers: *M* = 6.0, *SD* = 1.8; *t* [27] = 0.94, *p* = .35, *d* = 0.38), (b) pre-treatment conduct problems (i.e., pre-treatment ECBI Intensity scale scores; PCIT completers: *M* = 149.5, *SD* = 28.0; PCIT non-completers: *M* = 151.9, *SD* = 23.8; *t* [27] = -0.27, *p* = .82, *d* = -0.10), or (c) pre-treatment psychosocial competence (i.e., pre-treatment PSICA Frequency scale scores; PCIT completers: *M* = 143.5, *SD* = 21.0; PCIT non-completers: *M* = 157.7, *SD* = 15.2; *t* [26] = -1.80, *p* = .08, *d* = -0.73). Additionally, Fisher's exact tests confirm that PCIT completers and non-completers did not vary significantly on child gender

(completers: 75% boys, non-completers: 78% boys, p = 1.00) or caregiver gender (completers: 90% women, non-completers: 67% women, p = .29).

Among cases with pre-treatment ECBI and PSICA data, 4.2% of the variables, 8.7% of the cases, and 0.4% of the values were missing. Similarly, 4.2% of the variables, 7.3% of the cases, and 0.3% of the values were missing at mid-treatment, while 4.2% of the variables, 10.8% of the cases, and 0.5% of the values were missing at post-treatment. Notably, missing variables and values were exclusive to PSICA data (i.e., ECBI data had no missing values or variables). Thus, Little's (1988) missing completely at random (MCAR) test was utilized to assess for missing data patterns in PSICA item responses within each timepoint (i.e., pre-, mid-, and post-treatment). Results indicated that data were MCAR across all three timepoints (χs^2[69] = .00, ps = 1.00). Because the aforementioned analyses indicated missing data were MCAR and less than 5% of all values across all three timepoints, the expectation-maximization (EM) algorithm was employed to replace missing values for partially completed PSICAs, as EM–within these parameters–generates values similar to other best-practice methods (e.g., multiple imputation and observed data; Graham, 2009; Twala, 2009).

Outliers. To screen for potential outliers of PSICA Frequency scale, subscale, and/or ECBI Intensity scale scores, the study utilized the interquartile range (IQR) multiplier approach (Tukey, 1977), given its robustness across distributions (Seo, 2006). Further, a multiplier of 2.2 times the IQR was used to identify outliers, as research suggests it has a higher accuracy for identifying true outliers as compared to traditional 1.5 IQR methods (Hoaglin et al., 1986; Hoaglin & Iglewicz, 1987). Given these parameters, only three outliers were identified, each of which were from PSICA Frequency subscales. Specifically, an outlier existed for (1) mid-treatment Compliance subscale, (2) mid-treatment Attention Regulation subscale, and (3) post-treatment Compliance subscale scores. Each of these outliers were winsorized (i.e., truncated values one unit away from the closest-reported non-outlier value; Aiken & West, 1991; Cohen et al., 2003; Pedhauzer, 1997).

Power analyses. Given that past PCIT research has consistently reported large pre- to post-treatment reductions in child disruptive behavior (as reported by the ECBI; *d*s = -0.87–1.65; Thomas et al., 2017; Ward et al., 2016) and typically large pre- to mid- or post-treatment gains in psychosocial competencies (*d* = 0.89–1.39; Thomas et al., 2017; Bird et al., 2021), power analyses with G*Power (Faul et al., 2007) indicated that repeated measures ANOVAs needed at least 10 participants reporting data at pre-, mid-, and post-treatment, assuming a power of .80 and α = .05. Similarly, given past unpublished research on bivariate correlations between ECBI Intensity and the PSICA Frequency scores (*r*s = -0.58, Bird et al., 2021), power of .80, and α = .05, G*Power results indicated a sample size of at least 16 participants (with data for each timepoint) was required for conducted correlational analyses.

Primary analyses

Hypothesis 1. To assess the hypothesized significant, negative correlation between children's caregiver-reported psychosocial competence and disruptive behavior, bivariate correlations were computed between PSICA Frequency and ECBI Intensity scale scores at each time-point (i.e., pre-, mid-, and post-treatment). Since assumptions of normality (i.e., skewness and kurtosis) were met across all timepoints for all variables, Pearson product-moment correlations (*r*s) were conducted.

Hypotheses 2 and 3. To assess hypothesized pre- to post-treatment decreases in children's disruptive behaviors and increases in their psychosocial competencies (both overall and per domain), a series of repeated measures ANOVAs was conducted respectively using (1) ECBI Intensity scale and (2) PSICA Frequency scale scores as well as (3) PSICA Prosociality, (4) Compliance to Caregivers, and (5) Attention Regulation subscales from all three time points (i.e., pre-, mid-, and post-treatment). For significant main effects for time, follow-up paired samples *t*-tests were conducted to assess the phase-specific effects for CDI (i.e., pre- to mid-treatment) and PDI (i.e., mid- to post-treatment) for that variable. Assumptions of normality (i.e., skewness and kurtosis) and heterogeneity of variance were met for all analyses. Standardized

effect sizes were computed for all repeated measures ANOVAs (η_p^2) and paired-samples *t*-tests (*d*). Given the above number of conducted tests, the inflated risk of Type 1 errors was corrected with the false discovery rate method (Benjamini & Hochberg, 1995), though all tests maintained their statistical significance after these corrections.

Hypothesis 4. To assess the hypothesized pre- to post-treatment decrease in youth with clinically significant deficits in overall psychosocial competence (per caregiver-report on the PSICA), a McNemar's test was computed with its accompanying standardized effect size (*OR*).

***Sensitivity analyses*.** For all significant results of the primary analyses, post-hoc sensitivity analyses were conducted to ensure the inclusion or exclusion of children with a developmental disorder (e.g., ASD, IDD) or those aged 7 years or above did not significantly affect the results (i.e., *p*-values will remain below or above .05 and effect sizes will retain the same categorical magnitude irrespective of these youth's inclusion or exclusion). These analyses indicated that the inclusion or exclusion of youth with developmental disorders or youth ages 7 or more did not significantly impact the study's 24 tests, save for a correlational result at one timepoint. Thus, save for this one exception (which is detailed below), only results with the full sample are reported.

Chapter III: Results

Correlations Between Child Psychosocial Competencies and Disruptive Behavior

Consistent with hypothesis 1**,** caregiver-reports of their child's psychosocial competencies correlated significantly and negatively with caregiver-ratings of child disruptive behavior to a large degree at pre- (r = -.62, p < .001), mid- (r = -.68, p < .001), and post-treatment (r = -.62, p = .004). As previously noted, sensitivity analyses indicated that the relative magnitude, direction, and statistical significance of these correlations remained the same regardless of inclusion or exclusion of youth older than age 7 or those with a developmental disorder/disability, with one exception. Namely, when excluding youth ages 7+ (n = 11), so the sample was limited to children ages 2–6 (n = 18), pre-treatment ECBI Intensity and PSICA Frequency scores were still negatively correlated, but this association was only medium in magnitude (r = -.37) and marginally significant (p = .07 [one-tailed]), though the latter change may be due to this analysis being underpowered. Indeed, a post-hoc power analysis indicated that a sample size of 43 would be required to detect a significant correlation of -.37 (or 22 if conducting a one-tailed test). In contrast, when only including youth ages 7 or more, the pre-treatment correlation between ECBI and PSICA scores was larger (r = -.83) and significant (p = .001).

Reductions in Child Disruptive Behavior Across Treatment

Consistent with hypothesis 2, children's disruptive behavior (per ECBI Intensity scale scores) significantly decreased during PCIT (Λ = .14, F[2, 18] = 54.16, p < .001), to a large degree (η_p^2 = .86). Moreover, follow-up contrasts indicated that these decreases were significant and large across PCIT's entire duration (i.e., pre- to post-treatment) and each of its phases (i.e., CDI and PDI; see Figure 1). Specifically, at pre-treatment, caregiver-ratings indicated clinically elevated child disruptive behavior (M = 152.7, SD = 28.1), which, on average, significantly decreased during CDI to subclinical levels (M = 129.6, SD = 30.2), t(23) = -3.95, p < .001, d = -0.81). During PDI, children's caregiver-rated disruptive behavior further decreased from mid-

treatment (*M* = 132.1, *SD* = 29.0) to normal, healthy levels at post-treatment (*M* = 93.6, *SD* = 20.9), *t*(19) = -9.65, *p* < .001, *d* = -2.16. Consistent with these phase-specific results, the overall decrease in caregiver-reported child disruptive behavior during PCIT was large (*t*[19] = -8.87, *p* < .001, *d* = -1.98, 95% CI [-2.74, -1.21]), from typically clinical levels at pre-treatment (*M* = 149.5, *SD* = 28.0) to healthy normal levels at post-treatment (*M* = 93.6, *SD* = 20.9). Sensitivity analyses indicated that tests maintained the same relative magnitude, direction, and statistical significance regardless of the inclusion or exclusion of youth older than 7 years or children with developmental disorders.

Increases in Child Psychosocial Competencies and Domains Across Treatment

Overall Competence

Consistent with hypothesis 3, children's overall psychosocial competencies (as measured by caregiver-rated PSICA Intensity scale scores) significantly increased during PCIT (Λ = *,24, F*[2, 16] = 25.26, *p* <.001) to a large degree (η_p^2 = .76). As with PCIT-related changes in ECBI Intensity scores, follow-up contrasts indicated that these increases were significant and large across PCIT's entire duration (i.e., pre- to post-treatment) and each of its phase (i.e., CDI and PDI; see Figure 2). Specifically, caregiver-ratings at pre-treatment indicated clinically significant deficits in overall psychosocial competence for their PCIT-referred child (*M* = 143.4, *SD* = 19.6), and these ratings, on average, significantly improved during CDI, but only to subclinical levels by mid-treatment (*M* = 161.8, *SD* = 29.4; *t*[21] = 3.69, *p* < .001, *d* = 0.79). During PDI, children's overall psychosocial competence, per caregiver-report on the PSICA, further increased from mid-treatment (*M* = 155.2, *SD* = 27.9) to normal, healthy levels at post-treatment (183.5, *SD* = 16.99; *t*[18] = 5.38, *p* < .001, *d* = 1.23). Thus, congruent with PCIT-related changes in child disruptive behavior, children's overall psychosocial competences (per PSICA Frequency scores) significantly improved during PCIT (*t*[18] = 7.52, *p* < .001), from clinical levels at pre-treatment (*M* = 140.4, *SD* = 20.2) to healthy normal levels at post-treatment (*M* = 181.5, *SD* = 17.5), to a large degree (*d* = 1.73, 95% CI [-2.43, -1.00]). As with ECBI

Intensity scale results, sensitivity analyses indicated that the above PSICA Frequency scale tests maintained the same relative magnitude, direction, and statistical significance regardless of the inclusion or exclusion of youth older than 7 years or children with developmental disorders.

Competence Domains

Further, the domain-specific psychosocial competencies of Prosociality (Λ = .50, F[2, 13] = 6.55, p = .01, η_p^2 = .50), Compliance to Caregivers (Λ = *.22, F*[2, 13] = 22.56, p < .001, η_p^2 = .78), and Attention Regulation (Λ = *.39, F*[2, 13] = 10.11, p < .001, η_p^2 = .61), as measured by PSICA Frequency subscales, also significantly increased to a large degree across PCIT's phases (see Figures 3–5). Specifically, Prosociality significantly increased from pre-treatment (M = 54.9, SD = 8.4) to mid-treatment (M = 58.3, SD = 9.6; t[19] = 1.90, p = .04 [one-tailed]) to a small-to-moderate degree (d = 0.43), from mid-treatment (M = 56.2, SD = 10.1) to post-treatment (M = 62.0, SD = 9.7; t[14] = 3.22, p = .006) to a large degree (d = 0.83), and across both phases to a large degree (pre-treatment: M = 52.4, SD = 7.8; post-treatment: M = 62.0, SD = 9.5; t[17] = 5.13, p < .001, d = 1.00, 95% CI [-1.57, -0.42]). Similarly, Compliance to Caregivers significantly increased from pre-treatment (M = 40.9, SD = 6.7) to mid-treatment (M = 45.5, SD = 11.9; t[19] = 2.34, p = .02) to a moderate degree (d = 0.52); whereas, the increases from mid-treatment (M = 42.6, SD = 12.0) to post-treatment (M = 54.9, SD = 3.5; t[14] = 4.25, p < .001, d = 1.10) and across both phases of PCIT were, on average, large (pre-treatment: M = 38.3, SD = 8.2; post-treatment: M = 54.8, SD = 5.2; t[17] = 7.64, p < .001, d = 1.80, 95% CI [-2.55, -1.03]). Lastly, this trend continued for Attention Regulation, such that caregiver-ratings of children's attention regulation rose significantly to a moderate degree during both CDI (pre-treatment: M = 28.0, SD = 7.1; mid-treatment: M = 31.3, SD = 6.0; t[19] = 3.01, p = .008, d = 0.67) and PDI (mid-treatment: M = 29.6, SD = 5.9; post-treatment: M = 33.9, SD = 6.1; t[14] = 2.94, p = .01, d = 0.76), while the cumulative effect of both phases was large (pre-

treatment: *M* = 26.9, *SD* = 7.9; post-treatment: *M* = 34.3, *SD* = 6.7; *t*[17] = 5.51, *p* < .001, *d* = 1.30, 95% CI [-1.92, -0.66]).

For all of these subscales, sensitivity analyses indicated that the above tests maintained the same relative magnitude, direction, and statistical significance regardless of the inclusion or exclusion of youth older than 7 years or children with a developmental disorder.

Decreases in Clinically Significant Deficits in Psychosocial Competence

Consistent with hypothesis 4, McNemar's test showed that the percentage of children with clinically significant deficits in overall psychosocial competence (per caregiver ratings on the PSICA Frequency scale) significantly decreased from 89.5% at pre-treatment (17 of 19 cases) to 26.3% at post-treatment (5 of 19 cases), *p* = .002, Cohen's *g* = .63, 95% [.33, .80], such that the odds of a child having normal versus clinical deficits in overall psychosocial competence was significantly better at post- versus pre-treatment, to a large degree, *OR* = 23.80, 95% CI [3.99, 141.96]. Sensitivity analyses revealed that the inclusion and exclusion of children older than 7 years or those with a developmental disorder did not significantly affect this result. Moreover, of the five cases with PSICA Frequency ratings still below the clinical cutoff at post-treatment, three were only four or less raw points below the cutoff (i.e., 170).

Chapter IV: Discussion

A robust literature supports PCIT as a well-established, best-practice treatment for reducing disruptive behavior (e.g., Armstrong et al., 2013; Costello et al., 2011; Eyberg & Boggs, 2008; Eyberg & Bussing, 2010; Eyberg & Funderburk, 2011; Lieneman et al., 2017; Niec et al., 2016; Niec et al., 2018; Nixon et al., 2003; Schuhmann et al., 1998; Thomas et al., 2017; Thomas & Zimmer-Gembeck, 2011; Ward et al., 2016). However, comparatively few studies have examined the phase-specific effects of PCIT on child disruptive behavior (i.e., CDI versus PDI; c.f., Allen et al., 2022; Eisenstadt et al., 1993), indicating a need for further replication to validate the gradient effects of PCIT's modular mechanisms of change (Weisz & Kazdin, 2017). Moreover, even fewer studies have examined PCIT's ability to promote children's adaptive psychosocial competencies, particularly in comparison to treatment-related changes in child disruptive behavior (Briegel et al., 2018). Of those that have, most have only assessed a single domain of psychosocial competence; such as emotion/affect regulation (i.e., Graziano et al., 2012; Lieneman et al., 2020), attention regulation (i.e., Tempel et al., 2013), or prosociality (i.e., Pemberton et al., 2013), or compliance (i.e., Allen et al., 2020; Eisenstadt et al., 1993); versus multiple competency domains focused on either pre- to post-treatment changes or a single phase of PCIT (typically CDI; e.g., Bagner et al., 2016; Ginn et al., 2017; Lieneman et al., 2020; Pemberton et al., 2013; Tempel et al., 2015), and/or studied such gains with atypical PCIT clients (e.g., premature-born toddlers, children with ASD or depression; Allen et al., 2020; Bagner et al., 2016; Graziano et al., 2012; Lenze et al., 2011; Luby et al., 2012, 2018; Parladé et al., 2020).

To address these gaps, the current study examined data from 29 families referred for PCIT who were predominately neurotypical and received PCIT's standard protocol and two phases (i.e., CDI and PDI). Specifically, the present studied analyzed standardized caregiver-reports of PCIT-participating children's disruptive behavior (as measured by the ECBI Intensity scale) as well as their psychosocial competencies (i.e., overall, prosociality, compliance, and

attention regulation; as measured by the PSICA Frequency scale and subscales) across PCIT's phases (i.e., pre-, mid-, and post-treatment). Using these data, the current study evaluated (1) the degree to which these children's psychosocial competencies and disruptive behavior inversely related across treatment, (2) the degree to which these behaviors changed during PCIT (both overall and per each phase), and (3) the clinical significance of these hypothesized improvements in children's overall psychosocial competences during PCIT. Notably, results of the present study (which are elaborated upon below) supported all of the study's hypotheses.

Correlations Between Child Psychosocial Competencies and Disruptive Behavior

As hypothesized, and congruent with past research indicating that psychosocial competencies are related to, yet distinct from, negative child behaviors (Briegel et al., 2018; Carter et al., 2003; Eisenberg & Mussen, 1989; Masten & Cicchetti, 2010; Todd & Niec, 2022), caregiver-ratings of child disruptive behavior (i.e., ECBI Intensity scores) and child psychosocial competencies (i.e., PSICA Frequency scores) negatively and significantly correlated within each timepoint (i.e., pre-, mid-, and post-treatment), to a large degree (*r*s = -.62, -.68, -.62, respectively). While these values indicate substantial shared variance in ECBI and PSICA scores (approximately 38%–46%) across PCIT's phases with the current study's sample, current results also evince around 54% to 62% of the variance in child psychosocial competence (as measured by PSICA scores) was unrelated to variance in child disruptive behavior (as measured by ECBI scores). Thus, in contrast to some PCIT research that has assumed reduced child misbehavior inherently indicates growth in adaptive behavior (e.g., Chronis-Tuscano et al., 2016; Lieneman et al., 2020; Luby et al., 2012; 2018; Rothenberg et al., 2019), the current findings emphasize the interrelated as well as unique presentation of psychosocial competence and conduct problems, particularly among clinic-presenting children.

Notably, neither the inclusion nor exclusion of children older than 7 years old or those with a developmental/intellectual disorder significantly altered these results, with one exception. Namely, at pre-treatment, and only when including children aged 2–6 years and 11 months,

reports of child disruptive behaviors and psychosocial competencies still negatively correlated, but the magnitude of this correlation was no longer large. Instead, this relation had attenuated such that it was medium (r = -.37) and only marginally significant (with the latter likely due to this one sensitivity analysis being underpowered for a moderate correlation). In contrast, when analyses were restricted to only children older than 7 years, the pre-treatment correlation between the PSICA and ECBI was far larger (r = -.83, p = .001). These age-varying results may be indicative of developmental coupling (e.g., Denissen & Zarrett, 2007), whereby specific behaviors or sets of behaviors (such as psychosocial competencies and conduct problems) become increasingly linked (positively or negatively) as an individual develops endophenotypically in the context of accumulating gene-environment interactions (most notably in early childhood; Mash & Barkley, 2013). If this is the case, the present findings most strongly highlight the need for direct assessment of child psychosocial behaviors among younger children, or at least younger children with clinically significant psychosocial problems and/or deficits.

Indeed, the only other known study to examine ECBI-PSICA correlations (i.e., Todd and Niec's [2022] PSICA validation study) also reported a significant, inverse but larger relation (r = -.81) between PSICA Frequency and ECBI Intensity scores in community sample of 49 children ages 2–7 years. Demographically, their sample largely resembled the present one, being predominately White (82%) mothers (92%) reporting on White (18%) boys (51%) from a micropolitan community. Diagnostically, however, the samples were very different, as Todd and Niec's (2022) community-based sample was not presenting for PCIT (or treatment of any kind) and sample children, on average, did not present with clinical deficits in psychosocial competence (per PSICA Frequency ratings: M = 191.2; SD = 25.9) or clinical elevations of conduct problems (per ECBI Intensity ratings: M = 100.1; SD = 27.4). As a result, the current study is first to examine the statistical relation between PSICA and ECBI scores within a *clinical* sample, and it suggests the magnitude of this relation may differ between clinical and healthy

community groups. Consequently, while researchers should consider measuring both child misbehavior and adaptive behavior during developmental research, the present results highlight the unique importance of explicitly assessing both categories of behavior in clinical contexts, particularly with young children in need of, or engaging in, BPTs (including PCIT), during (1) initial pre-treatment case conceptualization and treatment planning, (2) treatment progress monitoring, and (3) post-treatment evaluations (Briegel et al., 2018; Korell & Peer, 2022; Todd & Niec, 2022).

Reductions in Child Disruptive Behaviors

Replicating results from PCIT's robust, 50-year literature base (e.g., Allen et al., 2022; Bagner & Eyberg, 2007; Bagner et al., 2010; Eisenstadt et al., 1993; Eyberg et al., 1995; Garcia et a., 2021; Masse et al., 2016; McNeil et al., 1991; Nixon et al., 2003; Querido, 2004; Schumann et al, 1998; Zlomke et al., 2017), the current study, as hypothesized, found significant, large pre- to post-treatment reductions in caregiver-rated child disruptive behavior (*d* = -1.98, 95% CI [-2.73, -1.21]). Notably, the magnitude of this overall treatment effect is above average for PCIT outcomes studies (e.g., Thomas and colleagues' [2017] meta-analysis of PCIT studies involving mastery criteria [which this study did], reported a large effect size (*d* = -1.09, 95% CI [-1.44, -0.73]), though not the highest reported in the literature (e.g., d = -2.72; Bagner, 2010).

Also in line with the comparatively fewer extant studies of PCIT's phase-specific effects on child conduct problems (e.g., Allen et al., 2022; Eisenstadt et al., 1993), the present results, as predicted, indicated significant, unique, and large reductions in reported child behavior problems during each phase of PCIT (i.e., CDI and PDI). Specifically, during CDI, ECBI ratings with the current sample decreased from typically clinical elevations at pre-treatment to subclinical elevations–though still well above PCIT graduation criteria (i.e., ECBI Intensity T-score < 55)–at mid-treatment. Rather, the last phase of treatment (i.e., PDI) was needed to bring ECBI ratings down to healthy, normal ranges, with the magnitude of PDI-related change

(i.e., *d* = -2,16) being approximately twice that of CDI-related change in ECBI scores (i.e., *d* = -0.81) for the current study's sample. Both of these findings comport with results from Eisenstadt et al.'s (1993) factorial study of PCIT's standard phases–though this is the first known study to report standardized effect sizes for PCIT's phase-specific effects (or the data needed to compute them; c.f., Allen et al., 2022; Eisenstadt et al., 1993). Notably, sensitivity analyses indicated that none of these ECBI-related results changed significantly regardless of inclusion or exclusion of children ages 7+ or those with ASD/IDD, which bodes well for the generalizability of these findings. Indeed, past and current findings support the nomothetic need for *both* PCIT phases for children with clinical conduct problems to achieve clinically significant improvements.

Increases in Child Psychosocial Competencies

Overall Competence

As previous PCIT outcome research has typically assessed only a single-domain psychosocial competency (e.g., Ginn et al., 2017; Pemberton et al., 2013; Tempel et al., 2013), this is the first known study to examine changes in overall psychosocial competence during PCIT. As hypothesized, and consistent with the aforementioned literature on domain-specific psychosocial gains during PCIT, the current results indicated that caregiver ratings of overall child psychosocial competence (i.e., PSICA Frequency scale scores) significantly increased across CDI (*d* = 0.79), PDI (*d* = 1.73), and the entirely of treatment (*d* = 1.23), each to a large degree. These effect sizes were comparable with the large, phase-specific and overall effect sizes of ECBI reductions in the current sample (*d*s = 0.81–2.16), suggesting that PCIT influences both child disruptive behavior ratings and child psychosocial competence ratings to a similar degree. Additionally, these results provide more evidence of explicit psychosocial competency gains found by other PCIT outcome literature (e.g., Allen et al., 2022; Bagner et al., 2016; Eisenstadt et al., 1993; Pemberton et al., 2013; Tempel et al., 2013), while granting novel insight into phase-specific changes. Specifically, ratings of child psychosocial competence, on average, indicated clinically significant deficits at pre-treatment, and these ratings improved to

subclinical ratings during CDI, and to normal, healthy levels by the end of PDI. McNemar's tests similarly confirmed the overall clinical significance of these gains.

Similar to multiphasic findings related to child compliance (i.e., Allen et al., 2022; Eisenstadt et al. 1993) and the aforementioned changes in ECBI scores, these results suggest that both of PCIT's standard phases uniquely and significantly affected *overall* child psychosocial competence, but that both phases were needed (at least for most of the current sample) to improve caregiver-ratings to average levels comparable with same-age children without clinical disruptive behaviors (Briegel et al., 2018; Korell & Peer, 2022; Todd & Niec, 2022). Additionally, these findings provide the first preliminary evidence that PDI may have a larger effect on overall child psychosocial competence than CDI did (which is In line with Eisenstadt's and colleagues' [1993] more limited research on phase-specific gains in child compliance). However, future research might aim to replicate, if not more specifically clarify, these results (e.g., which phase-specific components are responsible for the above differences). Regardless, the present study also provided details on PCIT-related changes in specific domains of psychosocial competencies (i.e., compliance, prosociality, and attention regulation).

Domain-Specific Psychosocial Competencies

Compliance. Like overall psychosocial competence ratings, findings demonstrated significant phase-specific gains in compliance ratings during CDI, as hypothesized, to a moderate degree (d = 0.52, 95% CI [-.99, -.05]). This finding contrasts prior studies finding no significant effect for CDI when assessing compliance by clinical observational coding (i.e., the DPICS) with neurotypical children (i.e., Eisenstadt et al., 1993 [d = 0.63]) and neurodivergent children (i.e., ASD) within an RCT (Allen et al., 2022). Because Allen and colleagues (2022) did not provide enough information to calculate individual effect sizes for compliance beyond proportions (i.e., pre- to mid-treatment; PLP: 34% to 33% compliance; CU: 47% to 39% compliance), this study provides some of the first independent insight of general phase-specific effects (c.f., Eisenstadt et al., 1993). This discrepancy could suggest that caregivers'

perceptions of their children's compliance may vary from compliance as measured by DPICS tasks (at least during CDI), though more research is needed. However, the findings of the current study are novel, in the sense that it is the first known evidence that CDI increases child compliance (as PCIT's CDI Teach session claims) nominally by improving caregiver-child interactions, emotion regulation (which can be a requisite for compliance), and reinforcement-related PRIDE skills (Eyberg & Funderburk, 2011). Alternatively, these findings may suggest that PCIT-participating caregivers may perceive their children as complying more as their interactions with their children become more positive. However, more research is needed to determine if either or both of these postulations explain the CDI-related increases in compliance ratings found by this study.

Specific to PDI, though, the current results largely paralleled prior findings for PDI-specific and overall PCIT-related gains in child compliance (d = 1.38; Eisenstadt et al., 1993), such that the current sample experienced large increases in caregiver-rated compliance during PDI (d = 1.10) and from pre- to post-treatment (d = 1.80). Collectively, these results suggest that that the use of PDI's discipline phase (i.e., which notably entails continued CDI skill use) had a larger influence on the improvement of caregivers' perception of their child's compliance than PRIDE skills alone, which comports with theoretical development of the treatment's discipline phase to directly target child compliance (Eyberg & Funderburk, 2011). However, these findings highlight the aid of both phases (i.e., CDI skills in conjunction with PDI skills) in order to achieve large, clinically significant magnitudes of rating reductions. Moreover, this study is the first known study to demonstrate that caregiver perceptions of explicit compliance (via the PSICA) align with their perceptions of noncompliance (via the ECBI) among clinic-referred families, and that both moved, in this sample, with similar trends, magnitudes, and significance levels. Specifically, ratings of child compliance at pre-treatment, on average, moved from clinical deficits at pre-treatment to just above the clinical cut-off by mid-treatment, and then well into normal, healthy levels by post-treatment. Further, sensitivity analyses showed that the study's

inclusion/exclusion terms did not significantly affect any the above results, aligning with past research showing that PCIT can be effective regardless of developmental disorder status (though the current study utilized caregiver perceptions versus clinically observed behavior; c.f., Allen et al., 2022), and adds preliminary support that PCIT's age-adapted protocol may be similar effective at increasing compliance with older children ages 7–11.

Prosociality. In contrast to Pemberton and colleagues (2013), who examined time series analysis of three families' differential reinforcement as the mechanism by which their children's prosocial behavior changed in CDI (measured via the DPICS), this study's results indicated a phase-specific effect for CDI on prosociality ratings. However, Pemberton and colleagues noted that their study may not have been detected any changes due to high pre-treatment levels of prosociality (i.e., ceiling effects). Overall, the current study's larger sample size increases the generalizability of these results, in addition to the providing a novel finding that both CDI and PDI significantly improved caregivers' ratings of their child's prosociality. Where pre- to mid-treatment changes were moderate, prosociality gains from mid- to post-treatment and across both phases were large, suggesting the combination of both session's skills (i.e., PDI discipline in combination with CDI skills) had a greater influence than CDI skills, alone. Specifically, caregiver ratings of their child's prosociality, on average, indicated clinically significant deficits at pre-treatment, with improvement during CDI, but such that most ratings remained clinically low at mid-treatment; whereas, PDI was associated with further increases, such that most children rated at subclinical levels by post-treatment. In other words, the present results suggest that while PCIT did not, on average, improve children's prosociality ratings to healthy, normal ranges, it did significantly improve these deficits. Moreover, sensitivity analyses also confirmed that none of the study's inclusion/exclusion criteria significantly impacted the above results, suggesting that PCIT may improve child prosociality among both young and older children as well as those with ASD or IDD.

Related to clinical significance, decreasing the severity of these deficits, alongside the reduction of disruptive behavior, should reduce children's risk for negative developmental trajectories/cascades (Achenbach & Edelbrock, 1983; Carter, 2002; 2003; Cicchetti & Cohen, 1995; Eron & Huesmann, 1984; Keenan & Shaw, 1997; Mastern & Coatsworth, 1995; 1998). Similarly, increasing children's psychosocial competencies, in general, should provide a protective factor against the concurrent and future development of disruptive behavior problems (Cicchetti & Curtis, 2006; Masten & Cicchetti, 2010), increase the likelihood of fewer internalizing symptoms and caregiver-rated child difficulties in emotion regulation in later childhood (Bornstein et al., 2010; Burt et al., 2008; Kim & Cicchetti, 2010; Perren et al., 2007), and decrease the risks for things like academic deficits, peer rejection, and the development of psychopathology in adolescence and adulthood (Burt et al., 2008, Caprara et al., 2000; Kim & Cicchetti, 2010).

Attention Regulation. Congruent with Tempel and colleagues' (2013) findings and study hypotheses, results also indicated significant, moderate increases in caregiver-reports of child attention regulation during CDI, which aligns with Tempel et al.'s experimental findings that behavior descriptions (a CDI skill) significantly increased on-task child behavior than any other single skill, consistent with the CDI Teach content (Eyberg & Funderburk, 2011). However, while Tempel and colleagues (2013) measured children's on-task behavior via a school-based observation coding system (i.e., REDSOCS) and only within CDI, the current study expanded this literature by examining caregiver perceptions of children's adaptive attention skills, as well as investigating PDI-specific and overall PCIT changes in these ratings. Indeed, this significant improvement at CDI continued into PDI, and when looking across both phases (i.e., pre- to post-treatment), with both gains being large. While none of the average caregiver ratings for any of the timepoints indicated clinically deficit levels of attention regulation (i.e., average scores fell above the 22 raw score clinical cut-off), these scores continually improved across each phase of treatment. Yet, similar to the other psychosocial competence domains, CDI's effect was

moderate; whereas, PDI's effect, as well as PCIT's overall effect, was large, suggesting once again that while each phase had a significant, unique effect on attention regulation ratings, both were needed in order to see large effects in these changes. Lastly, and congruent with the other psychosocial domains, sensitivity analyses indicated that the study's inclusion/exclusion criteria had no significant effect on the aforementioned results.

Limitations and Future Directions

Notwithstanding the promising findings detailed above, the current study possesses several notable limitations, including those related to the sample's caregiver-child demographics, diagnostic characteristics and size; inclusion of multiple PCIT protocols, use of caregiver-report, assessed domains, lack of experimental manipulation, and unstudied sustainment of the above treatment gains. Regarding study demographics, the current sample was predominately non-Hispanic White (82%), with primarily maternal caregivers (79% biological mothers, 3% adoptive mothers) and boy clients (76%). Notably, this demographic composition largely matched the ethnoracial breakdown of Idaho (i.e., the nomothetic community from which this sample was drawn; U.S. Census Bureau, 2020) and the genders of most caregiver-dyads participating in PCIT (e.g., Bagner & Eyberg, 2007; Lieneman et al., 2020; McCabe et al., 2012; Schuhmann et al., 2010; Tempel et al., 2013; Thomas & Zimmer-Gembeck, 2011; Thomas et al., 2017; Webb et al., 2016), other BPTs (e.g., Bernard et al., 2012; 2015; Sprang, 2009; Yarger et al. 2016), and early child behavioral services in general (e.g., Erath et al., 2009; Farmer et al., 2003; Jensen-Doss et al., 2021; Sayal, 2006; Thurston et al., 2015). Nevertheless, this sample's relatively homogenous demographics may limit the generalizability of the current study's findings, particularly to PCIT cases involving non-White families, paternal caregivers, girls, or other-gendered clients, all of whom are comparatively underrepresented in early child behavioral health referral, access, and use, despite nomothetically greater behavioral healthcare needs (e.g., Alegria et al., 2010; Lu, 2017; Thurston et al., 2015). Relatedly, compared to maternal caregivers, paternal caregivers

generally report fewer positive *and* negative child behaviors (Briegel et al., 2019), with this gender effect occurring on both the ECBI (Eyberg & Pincus, 1999) and PSICA (Perez et al., 2019). At the same time, both of these measures have demonstrated strong inter-rater reliability across matched mother-father dyads (Eyberg & Pincus, 1999; Perez et al., 2019). Additionally, PCIT's efficacy at reducing child conduct problems, as previously detailed, has been validated across ethnoracially, internationally diverse populations (e.g., Bigfoot & Funderburk, 2011; Danko et al., 2016; Fernandez et al., 2011; Lanier et al., 2011; Matos et al., 2009; McCabe et al., 2012; McCabe & Yeh, 2009, Pearl et al., 2011; see Niec [2018] and Lieneman and colleagues [2017] for reviews), which suggests the current study's findings may still generalize to more diverse groups. Indeed, post-hoc analyses with the current sample indicated that pre- to post-PCIT improvements in PSICA and ECBI scores did not significantly differ by gender (child: *p*s = .08 and .22 caregiver: *p*s = .27 and .16, respectively) or ethnoracial identity (child: *p*s = .10 and .41, caregiver: *p*s = .16 and .19). Ultimately, though, future research should confirm whether the multiphasic, PCIT-related gains in caregiver-reported psychosocial competence occur–or occur to the same degree–with larger, more demographically diverse sample.

Secondly and related to the above, the current sample is limited by its size. While all analyses had sufficient statistical power (except for the one sensitivity analysis for the pre-treatment ECBI and PSICA correlation with children ages 2–6), the current findings would benefit from further replication with larger samples. This is particularly salient for the sensitivity analyses run for children with and without intellectual/developmental disorders (e.g., ASD, IDD), as the current sample only had three children with such disorders. Two of these children were within PCIT's standard age range and had ASD with accompanying moderate-to-severe IDD and related functional language deficits; whereas, the third youth also had ASD but was age 9 and did not have IDD or significant functional/nonpragmatic language impairments. Consequently, the current findings most strongly support PCIT's ability to improve psychosocial competence in children *without* ASD/IDD–even as they suggest these gains might similarly

occur for children with such disorders. Indeed, post-hoc analyses indicated that, despite pre-treatment PSICA values being substantially lower for children with versus without ASD/IDD (Frequency scale: Δ = -1.72), PSICA scores still increased substantively for these children, both overall [*g* = 1.37] and across each domain [*g*s = 0.67–4.24]). However, further replication with larger samples of both developmentally typical and divergent youth (and varied severity levels) may yield differing results. Nevertheless, these preliminary findings comport with past research demonstrating PCIT's effectiveness at reducing conduct problems with children with developmental disorders (specifically, ASD and/or IDD; e.g., e.g., Allen et al., 2022; Masse et al., 2016; Zlomke et al., 2017; c.f., Scudder et al., 2019), such that caregiver and child outcomes (namely ECBI and DPICS scores) do not significantly differ among PCIT-treated youth without and without ASD (Parlade et al., 2020). Still, it remains unknown whether psychosocial competency outcomes (as measured by the PSICA or otherwise) differ significantly for PCIT-treated youth with and without ASD/IDD (particularly at different stages of development), so future research with larger samples at needed.

A third, but related, limitation (and/or potential strength) of the current study is its inclusion of multiple PCIT protocols. Namely, most of the current sample (*n* = 16) received PCIT's standard protocol (Eyberg & Funderburk, 2011) without any adaptation or modification, but 13 cases received PCIT with systematic developmental adaptations. Specifically, two families (i.e., the ones with the aforementioned 3–4-year-old children with comorbid ASD and moderate-to-severe IDD) received PCIT's standard protocol with three PCIT-specific developmental adaptations for ASD/IDD (i.e., hand-over-hand prompts after commands, 1-minute versus 3-minute timeouts, parental reflections of child nonverbal vocalizations; see Girard et al. [2018] and McNeil et al. [2018]. The other 11 families received an age-adapted protocol of PCIT for middle childhood (i.e., PCIT-MC; Peer et al., 2019) which features an adapted PDI phase (i.e., addition of token economy, replacement of timeout chair with response cost). Notwithstanding, none of these adaptations altered PCIT's core components (i.e.,

assessment-guided treatment, phase-specific mastery criteria, and in vivo coaching of caregiver-child interactions; Eyberg, 2005), and no case received any module (PCIT or otherwise) other than CDI and/or PDI. However, this study did not examine the degree to which PSICA-measured competencies change in other PCIT protocols (e.g., PCIT-SM, TCIT, CALM, Brave START, PCIT-T; Carpenter et al., 2014; Gershenson et al., 2010; Girard et al., 2018; Mazza, 2018; Puliafico et al., 2013), as some of these other protocols vary more in modules (e.g., having a Bravery-Directed Interaction but not PDI, or having a third phase beyond CDI and PDI) and diagnostic targets (e.g., selective mutism versus conduct problems), even if they all share PCIT's core transdiagnostic components and similar evidenced-based behavioral change strategies grounded in social learning interaction theories (e.g., in vivo coaching; Niec, 2018). Thus, future research could investigate whether the gains in psychosocial competencies found by the current study replicate with other PCIT protocols and/or differ in degree or domains, and how any such disparities might relate to protocol-specific modules, techniques, and/or diagnostic targets.

Fourth, the current study also was limited due to its measurement of both child disruptive behavior and psychosocial competencies solely via caregiver-report, rather than with behavioral observation or multiple modalities (e.g., concurrent behavioral coding and caregiver-reports). Notably, caregiver-ratings can be affected by observer effects and demand characteristics (McCarney et al., 2007; Rosenthal et al., 2009), such that caregivers' perceptions, and reporting, of their child's psychosocial behaviors may have shifted after being told the importance of these behaviors and how PCIT would target and improve them. Additionally and/or alternatively, the PSICSA's repeated administration may have raised caregivers' awareness and apperception of their child's psychosocial competencies, potentially resulting in higher PSICA ratings during subsequent administrations, particularly as their child's negative behavior reduced and left room to better notice other, more adaptive behaviors. Notwithstanding these potential biases, caregiver perceptions of child behavior–even if skewed–remain clinically

salient, since they can affect (a) parenting practices, which can subsequently affect their child's behaviors (Briegel et al., 2018; Carter et al., 2001; 2004; Fonagy et al., 1995; Zeanah et al., 1986), and (b) mental health service-seeking and utilization (Briegel et al., 2018; Thurston et al., 2015). That said, preliminary data (from another unpublished study) indicate significant, moderate convergence (r = .40) between caregiver-ratings on the PSICA Compliance subscale and expert-coded child compliance during a validated standardized behavioral assessment (i.e., the DPICS) during a pre-PCIT assessment (Peer et al., 2019), which suggests PSICA scores likely represent veridical levels of–and thus PCIT-related changes in–child compliance and other psychosocial competencies. Still, future research in this area should use multi-modal assessment methods to better evaluate not only the PSICA's concurrent criterion validity but also PCIT's impact on child psychosocial competencies.

Fifth, and extending upon the above, the current study was the first to examine concurrent changes in *multiple* psychosocial competency domains during PCIT. The PSICA, though multidimensional, does not exhaustively measure all domains of psychosocial competence, so it is unknown the degree to which this sample (and other PCIT-receiving youth) benefited in other domains (e.g., motivation, language acquisition, social awareness, emotion regulation). Granted, past research indicates that the PSICA Frequency scores strongly correlate with emotion regulation (or at least validated caregiver-report of children's adaptive emotion regulation; i.e. Emotion Regulation Checklist; see Briegel et al. [2018]), and past PCIT research suggests some of these other competencies improve (at least for some developmental or diagnostic groups; e.g., Allen et al., 2022; Eisenstadt et al., 1993; Ginn et al., 2017; Hansen & Shillingsburg, 2016; Lieneman et al., 2020; Luby et al., 2012; Tempel et al., 2013). Still, future research might examine PCIT's phase-specific impact on other psychosocial competencies (e.g., social awareness within neurotypical samples).

Sixth, the PSICA's administration during treatment may have affected PCIT's delivery. More specifically, PSICAs and ECBIs are typically scored in-session, and their information is

often utilized by clinicians to inform session-specific goals and coaching targets, in addition to general case conceptualization across treatment. Notably, the changes that may have arisen after interpreting measure scores would not have broken treatment protocol but instead represented treatment tailoring for better outcomes (i.e., administering additional measures during treatment does not violate PCIT's standard protocol; Eyberg & Funderburk, 2011). For example, pre-treatment administration of the PSICA could have led a therapist to better identify a child's clinically significant deficits in prosociality, which could have affected the therapist's case conceptualization and tailoring of PCIT delivery (e.g., emphasizing in the CDI Teach session how the imitation skill teaches children prosocial skills, coaching caregivers to especially use PRIDE skills whenever their children shared or engaged in other prosocial behavior with them or their peers). This assessment-guided tailoring–but not adapting–of PCIT's components may have improved PCIT's delivery and related promotion of child psychosocial competencies. particularly as strengths-based assessment outside of PCIT has been found to improve treatment delivery and outcomes (Brazeau et al., 2012; Briggs-Gowan & Carter, 1998; Brun & Rapp, 2001; Carter, 2002; Cowger, 1994; Duckworth et al., 2005; Graybeal, 2001; Harniss et al., 1999; Rashid & Ostermann, 2009; Snyder et al. 2006; Tedeschi & Kilmer, 2005) across various child service sectors (e.g., child welfare, mental health, family services; Dunstet al., 1994; Saleebey, 1992; Stroul & Friedman, 1996). Such findings also comport with the more general literature on measurement-based care (MBC; see Connors et al., 2021; Fortney et al., 2017; Lewis et al., 2019), which indicates that repeated, standardized client progress monitoring and related feedback improve psychotherapy outcomes (e.g., larger or faster symptom reduction, stronger therapeutic alliance, greater; client retention and engagement; Anker et al., 2009; Duncan et al., 2006; Hawkins et al., 2004; Knaup et al., 2009; Lambert & Shimokawa, 2011; Lambert et al. 2001, 2002, 2003; Sapta et al., 2005; Whipple et al., 2003).

Seventh, and potentially related to the above points, the principal investigating faculty and student were not blind to the study's hypotheses, and that the graduate student was

involved in providing direct treatment to four of the 29 families involved within this sample. However, the current study was proposed when all but one of the 29 PCIT cases in the sample had graduated or terminated PCIT. Further, the PCIT practicum at Idaho State University employs a co-therapy model, whereby more experienced clinicians are matched with less experienced clinicians, so that the less experienced clinicians can receive appropriate scaffolding and modeling of PCIT treatment. Due to this co-therapy model, the graduate researcher involved in this thesis did not have sole influence over her four PCIT cases but was instead the less-experienced clinician, often receiving modeling demonstrations of PCIT didactic and coaching sessions. Indeed, this graduate researcher's co-therapist, like all other graduate clinicians involved in providing treatment to this sample, was kept intentionally blind to the study's aims and hypotheses (both before and after this study was proposed).

An eighth potential limitation relates to the COVID-19 pandemic, as this sample's data spanned 4 years (i.e., 2018–2022), including both pre- and peri-pandemic periods. More specifically, 13 of the 29 cases occurred prior to the pandemic; whereas, the remaining 16 cases received treatment after March 2020 (i.e., when COVID-19 first surged in Idaho and forced stepped closure of clinic services). This led to some protocol-consistent variation in assessment and treatment delivery during the pandemic, such that some PCIT Teach and Coach sessions, alongside ECBI and PSICA administrations, were conducted via telehealth (specifically over Zoom)–although prior research indicates that PCIT can be delivered via telehealth without loss of treatment effectiveness (Comer et al., 2017; Garcia et al., 2021). Yet, apart from telehealth delivery, the pandemic may have affected caregiver awareness of, if not actual development of, child problem and adaptive behaviors due to COVID-related educational, occupational, and social closures (e.g., Azis et al., 2022; Dudovitz et al., 2022; Raffaele et al., 2021; Takahashi & Honda, 2020), although a recent PCIT study during the pandemic suggests that PCIT's pre- to post-treatment effects, including those related to child compliance, have not been attenuated or otherwise affected by the pandemic (Garcia et al., 2021). Nevertheless,

more research on COVID-19's effects on PCIT and/or child psychosocial development would be beneficial.

Ninth, this study's nonexperimental design limits causal determination, particularly in regards to validating hypothesized mechanisms of change (i.e., PCIT's overall and phase-specific effect on child psychosocial competencies). According to Weisz and Kazdin (2017), full validation of a mechanism of change requires demonstrating: (1) a statistically and practically significant covariation, (2) non-spuriousness (i.e., ruling out alternative and plausible processes that are not related to the aforementioned change), (3) scientific plausibility (i.e., congruence with validated theories and the larger scientific literature, (4) temporality (i.e., changes in the proposed mechanism/mediator occur before the changes in the outcome variable), and (5) experimental manipulation, including the testing of gradient or dosage effects of the change mechanism(s). Notably, this study found statistically and practically significant covariation between PCIT's phases and caregiver-ratings of child psychosocial competencies (as well as child conduct problems). Additionally, the present study also demonstrates scientific plausibility via its explicit reference of past empirical research on PCIT-related gains in child psychosocial competencies and related theoretical underpinnings (e.g., Allen et al., 2022; Bagner & Eyberg, 2007; Bagner et al., 2010; Bagner et al., 2016; Eisenstadt et al., 1993; Eyberg et al., 1995; Garcia et a., 2021; Ginn et al., 2017; Hansen & Shillingsburg, 2016; Masse et al., 2016; McNeil et al., 1991; Nixon et al., 2003; Parladé et al., 2020; Querido, 2004; Schuhmann et al, 1998; Tempel et al., 2013; Thomas et al., 2017; Zlomke et al., 2017). Importantly, the current study also established phase-specific temporality, as well as dosage effects, in the use of pre-, mid- and post-treatment assessments. However, this non-experimental study did not use a control condition (much less random assignment), which would have better demonstrated non-spuriousness–and thus causality. Therefore, future studies might conduct an RCT, whereby PCIT's causal effects on child psychosocial competencies could be better determined.

Lastly, because of the archival nature of the data and the study design, sustainment of caregiver-report gains in overall and domain-specific psychosocial competencies were not tracked, leaving it unclear if and to what extent any PCIT-related gains in competency are maintained, attenuated, or further improved upon following treatment completion. As previously noted, ample, rigorous research indicates that PCIT-related improvements in child conduct problems typically persist well after treatment graduation, with significant sustainment found by even the longest PCIT follow-up studies (i.e., 6 years; Eyberg et al., 2001; Hood & Eyberg, 2003). In contrast, sustainment of PCIT-related gains in psychosocial competence have only been examined by a few studies, and only for one domain per study. Specifically, known sustainment studies have only been conducted for CDI's effect on language development (i.e., 3 and 6 months; Bagner et al., 2016), and social awareness in neurodivergent children (i.e., 6 weeks; Ginn et al., 2017)–with both findings reporting significant maintenance of treatment gains. Despite such promising findings, a large gap in the literature remains, where future investigation could elucidate the durancy of PCIT's effects on different psychosocial competencies and the potential need for booster work or related follow-up care–which might be particular salient given that psychosocial competence in early childhood predicts long-term psychological functioning, above and beyond child problem behavior (Achenbach & Edelbrock, 1983; Burt et al., 2008; Carter & Briggs-Gowan, 2006; Carter, 2002; Carter et al., 2003; Cicchetti & Cohen, 1995; Eron & Huesmann, 1984; Keenan & Shaw, 1997; Mastern & Coatsworth, 1995; 1998).

Conclusions

Notwithstanding the above limitations, the present study's results have several potential implications, both for clients, clinicians, clinical supervisors and trainers, and the larger behavioral healthcare community. Notably, despite past child clinical research often claiming that BPTs such as PCIT not only *reduce* child misbehavior but concurrently *increase* child psychosocial competencies (e.g., Chronis-Tuscano et al., 2016; Lieneman et al., 2020; Luby et

al., 2012; 2018; Rothenberg et al., 2019), the current study is one of few to explicitly assess changes in child psychosocial competencies during PCIT (c.f., Allen et al., 2022; Bagner et al., 2016; Eisenstadt et al., 1993; Ginn et al., 2017; Graziano et al., 2012; Lenze et al., 2011; Pemberton et al., 2013; Parladé et al., 2020 Tempel et al., 2013), and the first to validate PCIT's large, phase-specific effects on overall psychosocial competence as well as on multiple psychosocial domains; namely prosociality, compliance, and attention regulation, with a predominately typical PCIT sample. (c.f., Allen et al., 2022; Ginn et al., 2017). The current study was also the first to demonstrate the clinical significance of these changes in psychosocial competence. Collectively, these results further evince PCIT as a best-practice, evidence-based treatment for treating clinically significant, comorbid child disruptive behavior and deficits in psychosocial competencies in early to middle childhood, and thus further support PCIT's fidelitous dissemination to, adoption by, and sustainment in community mental health systems.

Additionally, correlational analyses from the current study furthered evinced how child psychosocial problem behavior and competencies are related, yet distinct, clinical targets that should be both assessed in research and practice contexts, particularly for younger children referred for and engaging in treatment (Briegel et al., 2018; Carter et al., 2003; Eisenberg & Mussen, 1989; Korell & Peer, 2022; Masten & Cicchetti, 2010; Todd & Niec, 2022). More specifically, assessing child psychosocial competencies, as well as problem behaviors, could improve child behavioral health screening and related referrals, initial and ongoing case conceptualization, and treatment planning, progress monitoring, tailoring and summative evaluation (Briegel et al., 2018; Korell & Peer, 2022; Todd & Niec, 2022). Although this recommendation comports with the literature on measurement-based care (e.g., Anker et al., 2009; Duncan et al., 2006; Hawkins et al., 2004; Knaup et al., 2009; Lambert & Shimokawa, 2011; Lambert et al. 2001, 2002, 2003; Sapta et al., 2005; Whipple et al., 200) and strengths-based assessment (e.g., Brazeau et al., 2012; Briggs-Gowan & Carter, 1998; Brun & Rapp, 2001; Carter, 2002; Cowger, 1994; Duckworth et al., 2005; Graybeal, 2001; Harniss et al., 1999;

Rashid & Ostermann, 2009; Snyder et al. 2006; Tedeschi & Kilmer, 2005), it is not currently required or even suggested by the current PCIT protocol manual (Eyberg & Funderburk, 2011).

One potential reason for this omission could be the historical lack of psychometrically validated, pragmatic, multidimensional measures of psychosocial competence in early through middle adulthood (Briegel et al., 2018; Korell & Peer, 2022; Todd & Niec, 2022). Indeed, many extant measures of child psychosocial competencies (e.g., Emotion Regulation Checklist, Vineland Adaptive Behavior Scales, biobehavioral measures like electrocardiogram signals, Social Responsiveness Scale; Costantino & Gruber, 2005; Shields & Cicchetti, 1995; Sparrow et al., 1984) entail significant administration time and/or financial costs, which create significant barriers to their widespread, repeated use in community settings. Other options are stymied by either a lack of sufficient psychometric validation and/or clinical utility, particularly those that lack treatment sensitivity/responsiveness, empirically supported clinical cutoff scores, and/or only measure one domain of psychosocial competency (e.g., Strengths and Difficulties Questionnaire; Goodman, 1997; 1999; Goodman et al., 1998; see Briegel et al. [2018], Korell and Peer [2022], and Todd and Niec [2022] for reviews). In contrast, this study–alongside past PSICA validation studies (Briegel et al., 2018; Korell & Peer, 2022; Todd & Niec, 2022)–suggest that the PSICA is a pragmatic (e.g., free and brief), psychometrically validated (e.g., treatment sensitive with cutoff scores), and multidimensional measure of psychosocial competency in early to middle childhood that may have particular clinical utility to PCIT, BPTs in general, and other child EBTs.

Ultimately though, further research is needed to better validate the degree to these PCIT-related improvements in child psychosocial competencies, as measured by the PSICA and/or other means, generalize to other PCIT adaptations, diagnostic and demographic populations, and service contexts (e.g., Girard et al., 2018; McNeil et al., 2018; Peer et al., 2019; see Briegel [2017], Lienaman et al. [2017], and Niec [2018])–and the specific mechanisms by which such treatment benefits occur. Nevertheless, the present findings,

particularly in concert with related PCIT literature on competency gains (i.e., Eisenstadt et al., 1993; Lieneman et al., 2020; Luby et al., 2012; 2018; Pemberton et al., 2013; Tempel et al., 2013), highlight another pathway by which PCIT may alter developmental trajectories by concurrently ameliorating negative cascades while also promoting positive ones (Briegel et al., 2018). Specifically, psychosocial competencies are both protective factors for both concurrent and future behavior problems (e.g., Achenbach & Edelbrock, 1983; Carter, 2002; 2003; Cicchetti & Cohen, 1995; Eron & Huesmann, 1984; Huber et al., 2019; Keenan & Shaw, 1997; Mastern & Coatsworth, 1995; 1998) as well as promotive factors for future psychosocial development/mastery (e.g., Masten & Coatsworth, 1998; van der Graaff et al., 2018). Thus, concurrently targeting psychosocial problem behaviors and competencies within treatment–as PCIT claims to do (Eyberg & Funderburk, 2011), and as the current findings suggest it does–can potentially improve child treatment outcomes (Bowman, 2013; Briegel et al., 2018; Masten & Cicchetti, 2010; Seligman & Csikzentmihalyi, 2000; Tedeschi & Kilmer, 2005).

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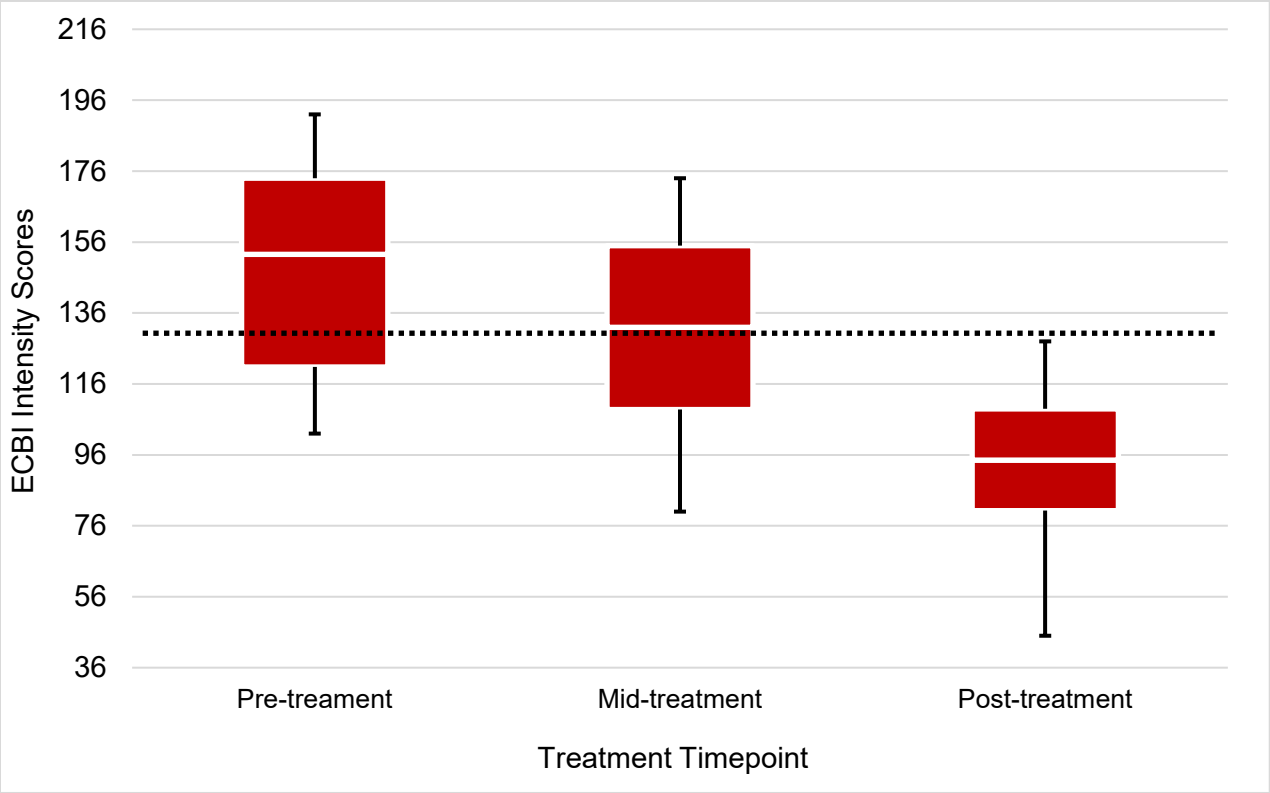
Table 1

Correlations Between PSICA Frequency and ECBI Intensity at Pre-, Mid-, and Post-Treatment

	Treatment timepoint		
Statistics	Pre-treatment	Mid-treatment	Post-treatment
n	28	23	20
r	-.62	-.68	-.62
p	< .001	< .001	.004

Figure 1

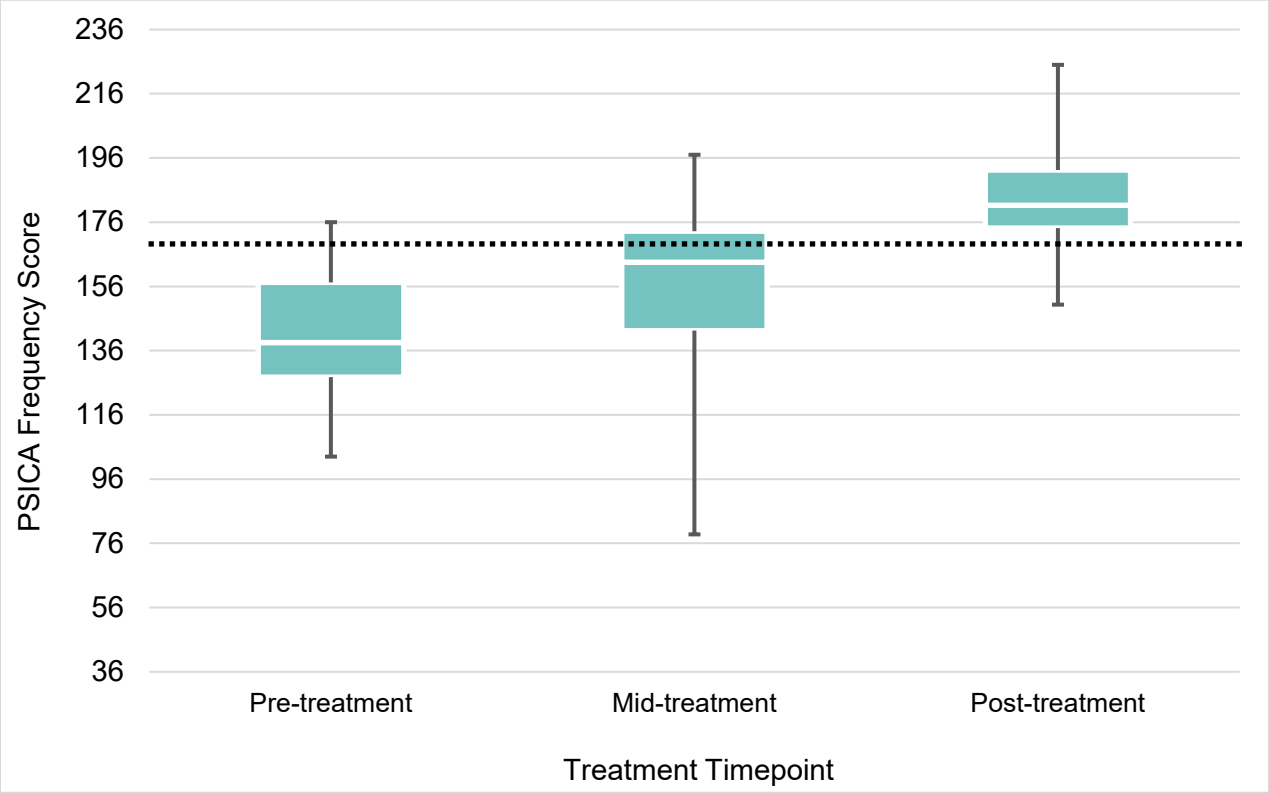
Reductions in Child Disruptive Behavior Across PCIT



Note. Scores above the black dotted line (ECBI Intensity score = 132) represent clinically significant child disruptive behaviors, per caregiver report. Scores on this measure can range from 36–252.

Figure 2

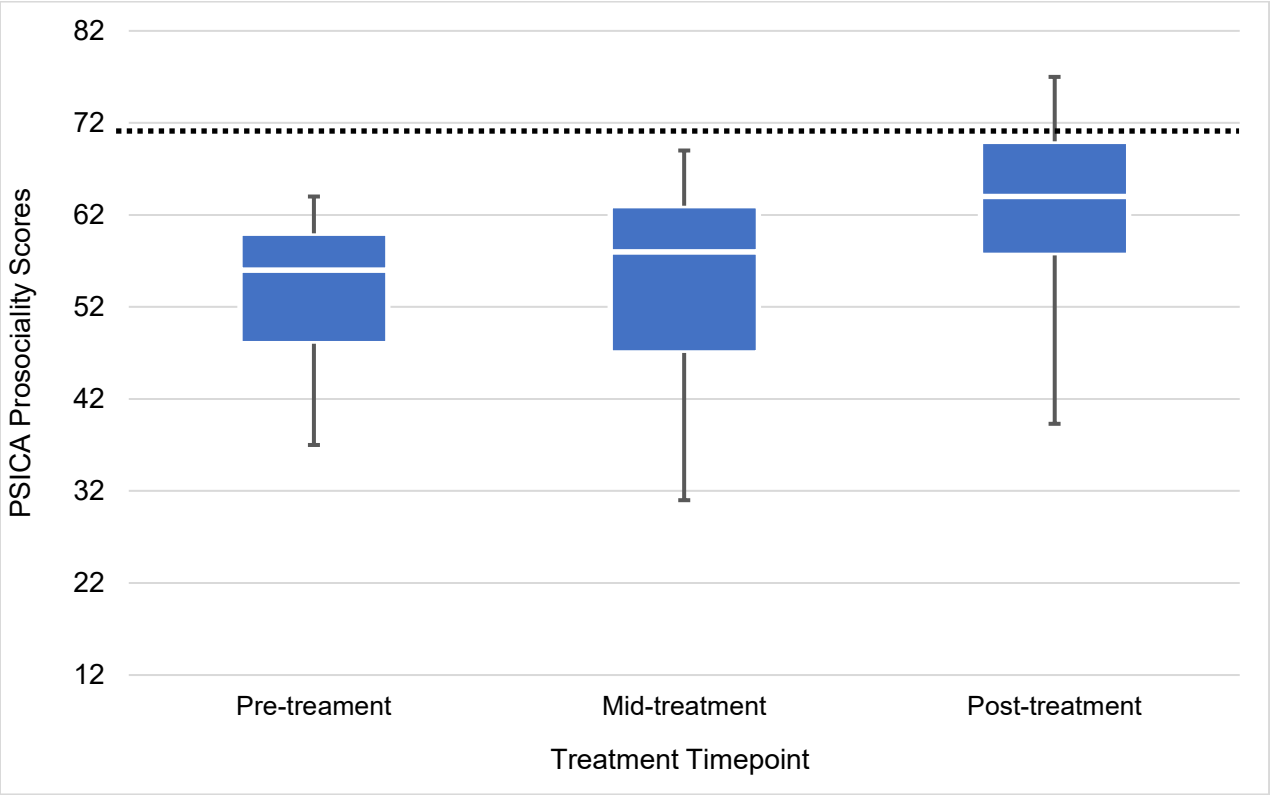
Increases in Overall Child Psychosocial Competencies Across PCIT



Note. Scores below the black dotted line (PSICA Frequency score = 170) represent clinical psychosocial deficits, per caregiver report. Scores on this measure can range from 36–252.

Figure 3

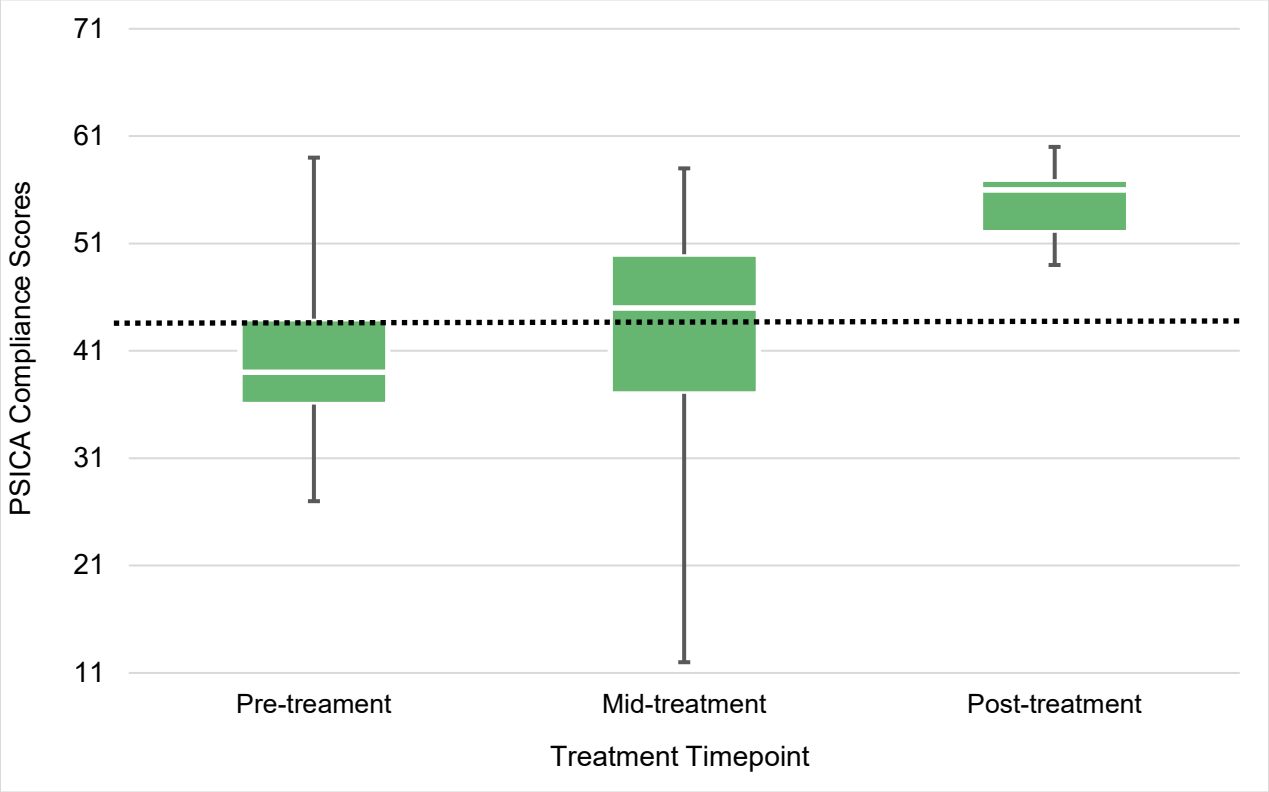
Increases in PSICA Prosociality Across PCIT



Note. Scores below the black dotted line (PSICA Prosociality score = 71) represent clinically significant deficits, per caregiver report. Because there are 12 items within the PSICA Prosociality subscale, total scores can range from 12–84.

Figure 4

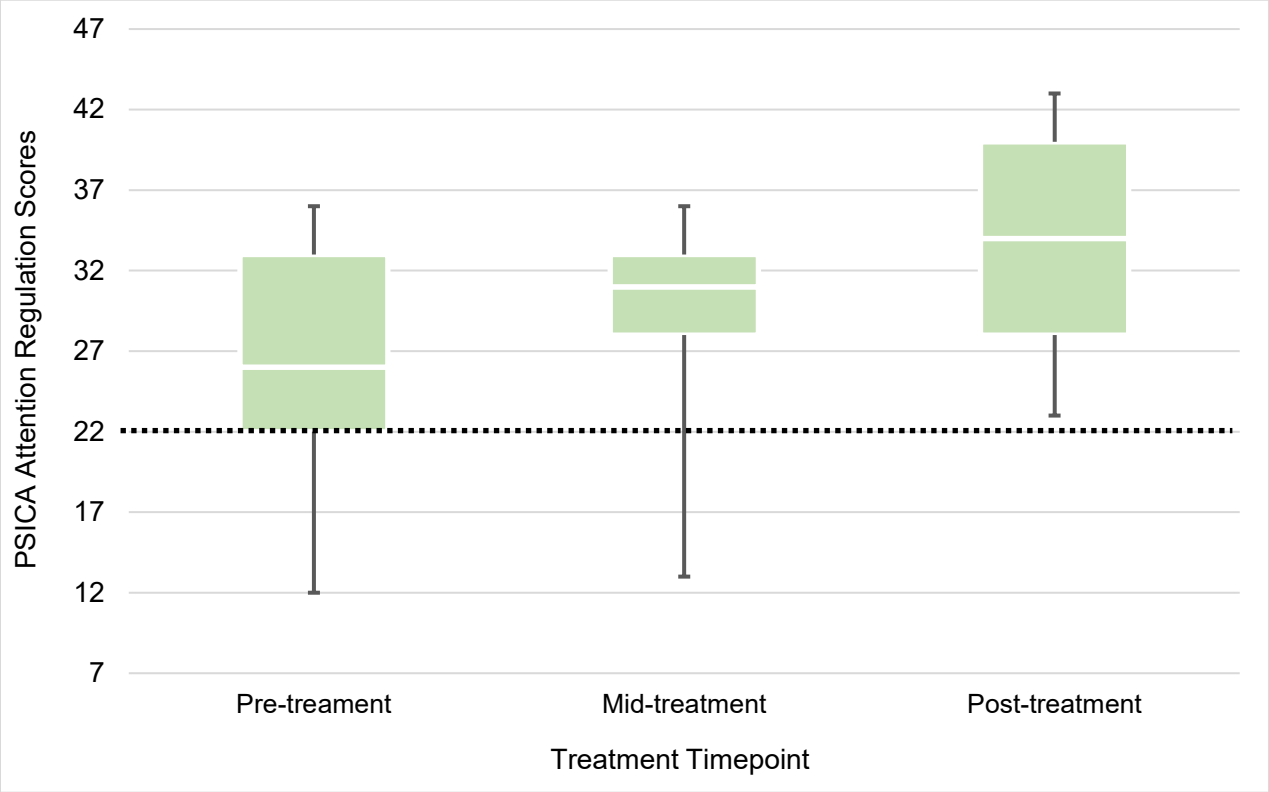
Increases in PSICA Compliance to Caregivers Across PCIT



Note. Scores below the black dotted line (PSICA Compliance to Caregivers score = 44) represent clinically significant deficits, per caregiver report. Because there are 11 items within the PSICA Compliance subscale, total scores can range from 11–77.

Figure 5

Increases in PSICA Attention Regulation Across PCIT



Note. Scores below the black dotted line (PSICA Attention Regulation score = 22) represent clinically significant deficits, per caregiver report. Because there are 7 items within the PSICA Attention Regulation subscale, total scores can range from 7–49.

Appendix

PSICA

Directions: Below are a series of phrases that describe children's behavior. Please (1) circle the number describing *how often* the behavior *currently* occurs with you child, and (2) circle 'yes' or 'no' to indicate whether you are satisfied *currently* with this behavior in your child.

	How often does this occur with your child?	**Never**	**Seldom**		**Sometimes**		**Often**	**Always**	**Are you satisfied with this behavior in your child?**	
1.	Gets dressed promptly when asked.	1	2	3	4	5	6	7	YES	NO
2.	Promptly comes to table for mealtime.	1	2	3	4	5	6	7	YES	NO
3.	Has good table manners.	1	2	3	4	5	6	7	YES	NO
4.	Is willing to eat most food presented.	1	2	3	4	5	6	7	YES	NO
5.	Completes chores when asked.	1	2	3	4	5	6	7	YES	NO
6.	Is willing to get ready for bed when asked.	1	2	3	4	5	6	7	YES	NO
7.	Goes to bed on time.	1	2	3	4	5	6	7	YES	NO
8.	Obeys house rules.	1	2	3	4	5	6	7	YES	NO
9.	Obeys without threat of punishment	1	2	3	4	5	6	7	YES	NO
10.	Acts willing when told to do something.	1	2	3	4	5	6	7	YES	NO
11.	Complies with parents about rules.	1	2	3	4	5	6	7	YES	NO
12.	Is calm if doesn't get own way.	1	2	3	4	5	6	7	YES	NO
13.	Can use words to express being upset.	1	2	3	4	5	6	7	YES	NO
14.	Speaks politely to adults.	1	2	3	4	5	6	7	YES	NO
15.	Asks appropriately for needs.	1	2	3	4	5	6	7	YES	NO
16.	Is relaxed.	1	2	3	4	5	6	7	YES	NO
17.	Smiles or laughs.	1	2	3	4	5	6	7	YES	NO
18.	Is respectful to parents.	1	2	3	4	5	6	7	YES	NO
19.	Plays gently with toys and other objects.	1	2	3	4	5	6	7	YES	NO
20.	Takes care of toys.	1	2	3	4	5	6	7	YES	NO
21.	Shares.	1	2	3	4	5	6	7	YES	NO
22.	Tells the truth.	1	2	3	4	5	6	7	YES	NO
23.	Helps other children.	1	2	3	4	5	6	7	YES	NO
24.	Speaks politely with friends own age.	1	2	3	4	5	6	7	YES	NO
25.	Speaks politely with brothers and sisters.	1	2	3	4	5	6	7	YES	NO
26.	Is affectionate toward friends own age.	1	2	3	4	5	6	7	YES	NO

OVER →

How often does this occur with your child?	Never	Seldom		Sometimes		Often	Always	Are you satisfied with this behavior in your child?	
27. Is affectionate toward sisters and brothers.	1	2	3	4	5	6	7	YES	NO
28. Plays independently.	1	2	3	4	5	6	7	YES	NO
29. Waits for turn.	1	2	3	4	5	6	7	YES	NO
30. Is focused.	1	2	3	4	5	6	7	YES	NO
31. Has good attention span.	1	2	3	4	5	6	7	YES	NO
32. Finishes tasks or projects.	1	2	3	4	5	6	7	YES	NO
33. Can entertain self alone.	1	2	3	4	5	6	7	YES	NO
34. Can concentrate on one thing.	1	2	3	4	5	6	7	YES	NO
35. Can sit calmly.	1	2	3	4	5	6	7	YES	NO
36. Stays dry overnight.	1	2	3	4	5	6	7	YES	NO