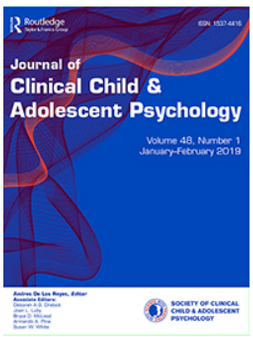

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Parent-Child Interaction Therapy Adapted for Preschoolers with Callous-Unemotional Traits: An Open Trial Pilot Study

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Children with co-occurring conduct problems and callous-unemotional (CU) traits show a distinct pattern of early starting, chronic, and aggressive antisocial behaviors that are resistant to traditional parent-training interventions. The aim of this study was to examine in an open trial the acceptability and initial outcomes of a novel adaptation of Parent–Child Interaction Therapy, called PCIT-CU, designed to target 3 distinct deficits of children with CU traits. Twenty-three Australian families with a 3- to 6-year-old (*M* age = 4.5 years, *SD* = .92) child with clinically significant conduct problems and CU traits participated in the 21-week intervention and 5 assessments measuring child conduct problems, CU traits, and empathy at a university-based research clinic. Treatment retention was high (74%), and parents reported a high level of satisfaction with the program. Results of linear mixed models indicated that the intervention produced decreases in child conduct problems and CU traits, and increases in empathy, with "medium" to "huge" effect sizes (*d*s = 0.7–2.0) that maintained at a 3-

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month follow-up. By 3 months posttreatment, 75% of treatment completers no longer showed clinically significant conduct problems relative to 25% of dropouts. Findings provide preliminary support for using the targeted PCIT-CU adaptation to treat young children with conduct problems and co-occurring CU traits.

The risk factors for childhood conduct problems vary considerably across individuals, and effective intervention requires individualizing treatment to the unique needs of children on different developmental pathways (see Frick, Ray, Thornton, & Kahn, 2014, for a review). The importance of this causal heterogeneity is recognized in the most recent edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5*; American Psychiatric Association, 2013), which for the first time includes a specifier for the diagnosis of conduct disorder (CD) called "with limited prosocial emotions" (LPE). This change was informed by decades of research supporting that callous-unemotional (CU)[1] traits designate a distinct subgroup of antisocial youth with early starting, severe, persistent, and aggressive conduct problems (CP), at risk for the later development of psychopathy (Frick et al., 2014; Hawes, Byrd, Waller, Lynam, & Pardini, 2017). A child meeting diagnostic criteria for CD is given the LPE specifier if he or she persistently (≥ 12 months) shows two or more LPE criteria across multiple relationships/settings: (a) lack of remorse or guilt, (b) callous-lack of empathy, (c) lack of concern about performance (at school, work, in other important activities), and (d) shallow/deficient affect (American Psychiatric Association, 2013). Although the *DSM-5* only stipulates the LPE specifier be considered for a diagnosis of CD, research supports that this distinction is a marker for a distinct group of children with CP more generally, including those with oppositional defiant disorder (ODD; Longman, Hawes, & Kohlhoff, 2016).

The CP of children with CU traits are resistant to the most established evidence-based interventions that are effective for children without CU traits (Hawes, Price, & Dadds, 2014). For example, CU traits moderated treatment outcomes for clinic-referred/court-ordered adolescents randomized to Multi-systemic Therapy versus services as usual for CP (i.e., individual counseling/supervision, family therapy delivered by juvenile justice, child welfare/health agencies; Manders, Dekovic, Asscher, van der Laan, & Prins, 2013). That is, youth high on CU traits showed more severe CP posttreatment than their low CU counterparts, and Multi-systemic Therapy did not confer advantages over TAU for high-CU youth. These and other findings have contributed to pessimism regarding treatment and psychosocial outcomes of children with CP and co-occurring CU traits (hereafter abbreviated to CP+CU children; Salekin, 2002). Although increased levels of CU traits are often associated with more severe CP pretreatment, CU traits have generally been found to predict or moderate treatment response independent of these baseline differences (Hawes et al., 2014; Waller, Gardner, & Hyde, 2013).

This poorer treatment response has been attributed to the distinct familial, cognitive-emotional, and biological factors involved in the development of CP for CP+CU children relative to CP-only children, for whom traditional interventions were developed (Frick, 2012). For example, dysfunctional parenting practices (i.e., coercive and inconsistent parenting) that are targeted by parent-training interventions are thought to have a lesser role in the development of antisocial and aggressive behavior for children with CP +CU relative to those with CP only (e.g., Oxford, Cavell, & Hughes, 2003; Wootton, Frick, Shelton, & Silverthorn, 1997). Even more specifically, CP+CU children don't appear to show the same responsivity to cues of punishment (Byrd, Loeber, & Pardini, 2014) or to parental consequences provided as part of parenting training interventions (Hawes & Dadds, 2005). Thus, although the field has developed a better understanding of the unique deficits and needs of CP +CU children (Moul, Hawes, & Dadds, 2018), research is only beginning to develop and test interventions that comprehensively target them. Targeting the unique putative risk factors for the development and maintenance of antisocial and aggressive behaviors in CP+CU children is critical to improving treatment effectiveness with this population.

CP+CU children differ from CP-only children in three key ways relevant to the development of a targeted intervention. First, although harsh and inconsistent parenting is *less* strongly related to CP in CP+CU children, low warmth and responsivity in parenting seems to be *more* important to the development of CP for CP+CU children (Kroneman, Hipwell, Loeber, Koot, & Pardini, 2011; Pasalich, Dadds, Hawes, & Brennan, 2011). Longitudinal studies find that exposing children with elevated CU traits to warm, sensitive, and responsive parenting reduces CP and CU traits in later development (Pardini, Lochman, & Powell, 2007; Pasalich et al., 2011; Waller et al., 2014). These findings are consistent with developmental research suggesting that parenting styles promoting greater attachment security (i.e., sensitive responding to child emotion, parental warmth) are critical to socializing and fostering conscience development (Kochanska, 1997). Taken together, these findings suggest that improving the affective quality of the parent–child relationship by increasing parental warmth, sensitivity, and

[1] The term CU "traits" is used throughout the article to reflect how this construct is typically referred to in past research and to highlight the fact that that these characteristics are typically shown by the child in multiple relationships and settings and are not isolated behaviors shown in certain circumstances. However, it is important to note that this is not meant to imply temporal stability in that these traits do appear to be more developmentally transient in children than in adults, similar to other personality traits and behaviors.

responsiveness represents an important component of a targeted intervention for CP+CU children.

Second, CP+CU children possess a distinct temperament style that is characterized by an absence of fearful inhibitions and abnormalities in the processing of punishment and reward cues (Byrd et al., 2014). For example, CP+CU children show decreased sensitivity to punishment cues in laboratory and social settings and heightened sensitivity to reward after learning that a behavior is reinforcing (see Blair, Peschardt, Budhani, Mitchell, & Pine, 2006; Frick & White, 2008). Similarly, child fearless temperament at age 2 predicted CU traits at age 13 (Barker, Oliver, Viding, Salekin, & Maughan, 2011). This lack of sensitivity to threat and punishment could be why parents of CP+CU boys (*M* age = 6.29 years) rated the discipline component (i.e., time-out) of a manualized parent training program as more ineffective than parents of CP-only children (Hawes & Dadds, 2005; see also Haas et al., 2011). Thus, the differential response of CP+CU children to traditional interventions may be partly a function of the emphasis these programs place on discipline strategies (Forehand, Lafko, Parent, & Burt, 2014). However, reward-based strategies are likely to be more effective at reducing CP in CP+CU children. In support of this, Hawes and Dadds (2005) found that parents perceived reward-based strategies as effective for reducing CP, irrespective of the child's level of CU traits. Thus, these findings suggest that focusing on improving child behavior through reward-based strategies represents another important component of a targeted intervention for CP+CU.

Third, CP+CU children are characterized by deficits in emotional processing, most notably to others' distress cues (Frick et al., 2014; Marsh & Blair, 2008). These deficits constitute the third and arguably most important risk factor to consider in relation to the development and maintenance of CP in CP+CU children. CP+CU youth are less accurate in recognizing facial, vocal, and postural expressions associated with sadness and fear in others (Dawel, O'Kearney, McKone, & Palermo, 2012; Marsh & Blair, 2008). They are also less attentively engaged by others' distress cues (Kimonis, Frick, Fazekas, & Loney, 2006), are less distressed by the negative effects of their behavior on others and more impaired in their moral reasoning and empathic concern toward others (Pardini, Lochman, & Frick, 2003), and show deficits in brain areas associated with empathic processing (Marsh et al., 2008) relative to CP-only youth. For example, studies using functional magnetic resonance imaging reported reduced amygdala activity to fear faces in CP+CU children compared to typically developing children, children with attention deficit hyperactivity disorder, and CP-only children (Viding et al., 2012). Thus, deficient responding to emotional stimuli, in particular others' distress cues, constitutes a third critical intervention target for CP+CU children.

Despite the centrality of emotional deficits to developmental theory for CU traits and associated antisocial behaviors, few studies have examined interventions to improve emotional functioning in CP+CU children. In one notable exception, Dadds, Cauchi, Wimalaweera, Hawes, and Brennan (2012) found that when CP+CU children (6–16 years of age) were randomized to a parent training intervention plus an adapted computer-based intervention targeting emotion recognition and understanding (adapted from the autism literature; Baron-Cohen, Golan, Wheelwright, & Hill, 2004), they showed improved empathy and superior treatment outcomes to those who received parent training alone. Thus, emotional training may be a valuable adjunctive treatment for CP+CU children to remediate their core emotional and empathic deficits; however, further study is needed with younger samples for two primary reasons. First, emotional literacy training may be more powerful if designed to target the specific deficits of CP+CU children in recognizing and responding to distress cues (i.e., sadness, fear), and refocusing attention to associated critical micro-expressions (Dadds et al., 2006; Ekman, 2002). For example, directing gaze to the eye region of face stimuli normalized fear recognition in youth with CU traits (Dadds, El Masry, Wimalaweera, & Guastella, 2008a). Second, the effectiveness of the intervention may be greater when focused on younger children. Important milestones in moral development and emotion recognition occur prior to age 6; by 3 years old, typically developing children can express empathy and caring attitudes (Decety & Svetlova, 2012; Dunn, Brown, & Maguire, 1995; Ellis, 1990). Further, CU traits can be reliably and validly measured at age 3 (Kimonis et al., 2016), and preschool CU traits are moderately stable into school age (intraclass correlation coefficient = .93) and predict later aggression and diagnoses of disruptive behavior disorders (Ezpeleta, Osa, Granero, Penelo, & Domènech, 2013). Thus, early childhood represents a key period for targeting CU traits at a time when they may still be showing normal developmental malleability and before they start leading to more serious behavior problems later in development.

Parent–Child Interaction Therapy (PCIT) is a compelling platform for meeting all of these important goals for intervening with CP+CU children. First, its emphasis on strengthening the parent–child relationship via positive parenting strategies is theoretically consistent with the importance of the parent–child relationship for conscience development and the inverse association between parenting warmth, and CP and CU traits. For example, an infant adaptation of PCIT increased maternal warmth and sensitivity, which was mediated by improvements in core PCIT parenting skills (Blizzard, Barroso, Ramos, Graziano, & Bagner, 2017). Second, research supports the feasibility, acceptability, and preliminary efficacy of PCIT adaptations that integrate targeted emotional skills training delivered by parents to improve emotional outcomes for other childhood disorders (i.e., pediatric depression; Luby, Lenze, & Tillman, 2012). Third, PCIT is empirically supported for

children between ages 2:5 and 6:9 years old (Lyon & Budd, 2010; Thomas, Abell, Webb, Avdagic, & Zimmer-Gembeck, 2017). Fourth, meta-analytic findings suggest that treatment effects were larger and attrition rates lower for PCIT relative to other parent-training programs (30%–35% vs. 40%–65%; Thomas & Zimmer-Gembeck, 2007) for child CP. Indeed, standard PCIT (without adaptation) was effective at reducing CP to subclinical levels for very young children (*M* age = 3.87 years) with CU traits, albeit not to the same levels as CP-only children (Kimonis, Bagner, Linares, Blake, & Rodriguez, 2014).[2] That is, despite showing a reduction in CP during treatment, CP +CU still children had greater posttreatment CP (B = .57, p = .006) and were more likely to drop out than CP-only children, even after accounting for their more severe pretreatment CP. Thus, although promising, standard PCIT requires some enhancement for CP+CU children.

As a result, PCIT was enhanced to address the three distinct risk factors of CP+CU children, with the aim of improving treatment efficacy. PCIT-CU, as this targeted intervention is known, differs from standard PCIT in three key ways: It (a) systematically and explicitly coaches parents to engage in warm, emotionally responsive parenting; (b) shifts emphasis from punishment to reward to achieve effective discipline by systematically supplementing punishment-based disciplinary strategies (i.e., time-out) with reward-based techniques (i.e., dynamic and individualized token economy); and (c) delivers an adjunctive module called Coaching and Rewarding Emotional Skills (CARES) to target the emotional deficits of CP+CU children. To date, no targeted intervention has been developed and tested specifically for young CP+CU children.

THE PRESENT STUDY

The purpose of this open trial pilot study was to test the acceptability and preliminary efficacy of PCIT-CU for young CP+CU children. Acceptability was evaluated by testing the hypothesis that parents of treated children would report a high level of satisfaction with treatment and show good compliance with intervention components and high intervention completion rates. Preliminary treatment efficacy was evaluated by testing the hypothesis that participants would show improvement in primary outcomes at posttreatment and 3-month follow-up, as demonstrated by medium to large effect sizes and indicators of clinically significant and reliable change. Primary outcome measures were parent-reported child CP, CU traits, and empathy. CP were also assessed through observational codings of child compliance.

[2] These findings require replication in a sample of nondelayed children with CP.

METHOD

Participants

Participants were 23 families and their 3- to 6-year-old children (*M* age = 4.5 years, *SD* = .92) with elevated CP and CU traits. Sample size was contingent on the number of families deemed eligible and who agreed to participate during the recruitment period from May 2014 until October 2015. The majority of children were boys (n = 20, 87%) and were Caucasian (n = 21, 91.3%; 2 mixed race). The majority of mothers and fathers self-identified as Caucasian (78.3% and 91.3%, respectively), followed by Asian (4.3% mothers) and other race/ethnicity (4.3% mothers), with the remaining parents choosing not to report. Most parents were married (73.9%) or cohabiting (8.7%) and lived in an urban location (91%). The majority of mothers (57%) and fathers (70%) reported current employment, and the median total household income was AUD$120,000 (range = $50,000–$500,000). Six families did not report income data. Families either self-referred for treatment in response to an advertisement in print or digital media, including child-oriented magazines (34.8%), or were referred by their general practitioner, pediatrician, psychologist/psychiatrist, preschool educator (34.8%), community parenting organization (17.4%), or word of mouth (13%). Advertising was targeted at families of children with CP and CU traits; advertising text offered help to families in managing their preschooler's difficult behaviors, including temper tantrums, disobedience, anger and irritability, low motivation, little remorse, little empathy, shallow emotions, and discipline is ineffective.

Families were eligible to participate if they had a child between the ages of 3 and 6 years who (a) showed elevated CU traits on the Inventory of Callous-Unemotional Traits (ICU), Preschool Version (Kimonis et al., 2015) *and* (b) scored in the clinically significant range (T scores ≥ 70 for syndrome/DSM-oriented scales and ≥ 64 for composite scale) on at least one of the Achenbach System of Empirically Based Assessment (ASEBA) disruptive behavior problem scales according to parent report: aggressive behavior, rule breaking, *DSM* ODD or CP, or externalizing composite (Achenbach & Rescorla, 2000; 2001).

Families were ineligible if the participating caregiver (s) did not speak fluent English as PCIT is heavily language based or if the child had received a primary mental health diagnosis other than ODD or CD (e.g., moderate/severe autism spectrum given its overlap with CU traits; Leno et al., 2015), was deaf, or receiving concurrent psychological treatment for behavioral problems as reported by the parent. Because intervention research on CD is often compromised by exclusion of the common and naturally occurring comorbidities, children with attention deficit hyperactivity disorder, internalizing disorders, and learning problems were permitted to enroll as long as

these problems were secondary and less severe than the CP and the child was not receiving a psychoactive medication in relation to them at the time of assessment. This was determined on the basis of semi-structured clinical interview questions administered to the parent(s) in the initial intake call and the baseline comprehensive assessment.

Figure 1 presents the participant flow throughout the study. During the recruitment period, 68 families were screened for eligibility, and of the 34 determined eligible on the basis of screening questionnaires, 23 (67.6%) agreed to participate. Reasons for ineligibility were problems below the clinical range (n = 20), other primary diagnoses (e.g., autism spectrum disorder, psychosis; n = 8), child out of age range (n = 4), primary caregiver not fluent in English (n = 1), and receiving treatment for behavioral problems elsewhere (n = 1). Of the 11 eligible families who decided not to participate, reasons given were the time commitment of treatment (n = 3), pursuing other treatment (n = 3), relocating (n = 1), with the remainder not responding to attempts to schedule the baseline assessment (n = 3) or citing logistical reasons (n = 1).

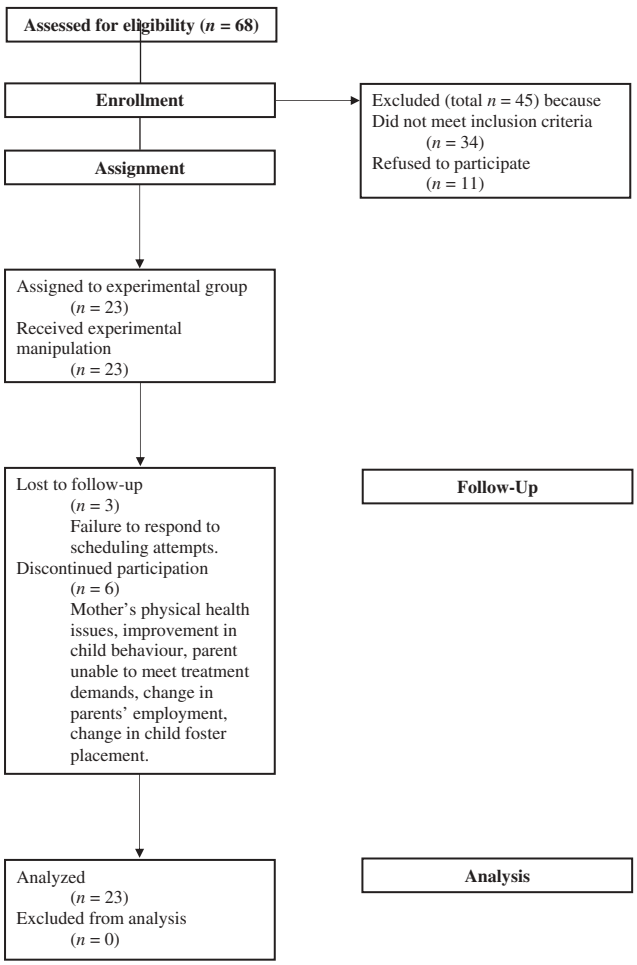

FIGURE 1 Flow of participants across study.

Procedure

Description of the Targeted Intervention

The PCIT-CU adaptation protocol was developed and refined using an iterative consumer (i.e., treated families), user (i.e., treating therapists), and expert (i.e., international advisory panel with expertise in CU traits, PCIT and treatment of CP) feedback process following treatment of six pilot families (Kimonis, 2012; Kimonis, Hunt, & Bagner, 2013). Standard PCIT comprises two distinct sequential phases delivered via in vivo coaching of parents using a wireless headset from behind a one-way mirror. In standard PCIT, the first Child-Directed Interaction (CDI) phase teaches parents a set of positive parenting skills to improve the parent–child relationship, including use of descriptive **P**raise, speech **R**eflections, behavior **I**mitation and **D**escription, and expressions of **E**njoyment. Known as the PRIDE or CDI "Do" skills, parents are coached to use these strategies with the child within a play context. In PCIT-CU, CDI was adapted by replacing the "Enjoyment" PRIDE skill with '**E**motional Expression' to explicitly coach parents to increase their use of verbal (i.e., tone/pitch of voice, vocally expressed affection) and physical (i.e., touch, facial expressions) expressions of warmth. The second PDI phase involves standard coaching of parent(s) in implementing a consistent, predictable time-out procedure, used in response to child noncompliance or major rule violations. In PCIT-CU, the PDI procedure was adapted by integrating an intensive reward-based behavior modification system involving the development and use of an individualized token economy system to motivate and reinforce positive child behaviors (i.e., compliance with commands and rules).

Following PCIT-CU treatment, families received the adjunctive CARES module designed to address the child's insensitivity to distress cues (Datyner, Kimonis, Hunt, & Armstrong, 2016; Kimonis & Armstrong, 2012; Kimonis & Hunt, 2012). The timing of CARES was carefully considered and delivered immediately following the Parent-Directed Interaction (PDI) phase to ensure that the child was at his or her most compliant because it involves participation in various interactive activities. The CARES protocol was developed through translation of basic science findings for CU traits and drew from evidence-based practices known to be effective for improving socioemotional competence and emotional literacy in young typically developing children, youth, and adults with autism spectrum disorder who share similar deficits to CP+CU children in empathy and emotion recognition (for a detailed description, see Datyner et al., 2016). The key treatment objectives of

CARES are to (a) enhance attention to critical facial cues (i.e., microexpressions) signaling distress to improve emotion recognition; (b) improve emotional understanding by linking emotional expression to context and identifying situations that trigger anger and frustration in the child; (c) teach and positively reinforce prosocial and empathic behavior with parent modeling, role-play, and social stories; and (d) increase frustration tolerance through modeling, role-play, and reinforcing use of learned cognitive-behavioral strategies to decrease the incidence of aggressive behavior. (The Template for Intervention Description and Replication checklist is provided in Appendix A.)

University and local health district Human Research Ethics Committees approved all study procedures and informed consent was obtained for all families. Families completed a comprehensive assessment taking approximately 2 hr on five separate occasions: prior to treatment (baseline), following the CDI phase (post-CDI), following the PDI phase (post-PDI), following the adjunctive CARES module (posttreatment), and 3 months following treatment completion, with all follow-up assessments completed by September 2016. Assessors were not masked to assessment time point. Families individually received the PCIT-CU intervention for 21 weekly 1-hr sessions delivered in a university research clinic, one parent-only Teach session and six parent–child Coach sessions each for CDI and PDI phases, followed by one parent-only CARES Teach Session and six parent–child CARES sessions. This fixed format approach was selected over a variable treatment length format as in standard PCIT as it was found to yield improved outcomes and lower attrition rates for high-risk populations (Thomas & Zimmer-Gembeck, 2012). Attrition was also addressed using planned procedures including weekly appointment reminders via text message, offering flexible hours, and monthly calls during the follow-up period. The average length of treatment was 36.22 (*SD* = 7.59) weeks, which was provided at no cost to the family. One primary, constant caregiver, typically the mother, completed all treatment/assessment sessions. In a majority of cases, fathers participated in at least one treatment session (91.3%), although 40% involved mothers only, as defined by fathers attending less than one fourth of treatment sessions; however, all primary caregivers were encouraged to attend, given research finding father involvement enhances treatment effects (Bagner, 2013). Three-month follow-up assessments were conducted with all families, regardless of dropout; however, despite repeated scheduling attempts three families failed to complete this assessment, one family only completed questionnaire measures, and one family only completed the Eyberg Child Behavior Inventory (ECBI) measure. Therapists (*n* = 5; 100% female) were licensed clinically trained psychologists who received intensive in vivo training from PCIT-CU developer, certified PCIT trainer, and first author, involving cotreatment roles on two cases and ongoing clinical supervision to maintain treatment fidelity. Therapists on average administered intervention to 5.8 cases (*SD* = 3.5, range = 4–11).

Measures

Eligibility Measures

One parent/caregiver completed brief measures of CU traits and CP during the initial intake telephone call to determine eligibility. Since it was important for this call to be brief (<30 minutes), we used 10 items from the Inventory of Callous-Unemotional Traits (ICU; Frick, 2004; see below for full description) to assess for CU traits. These items were selected because they made up four and nine-item criteria sets guiding formation of the DSM-5 LPE specifier. Parents rated children on a 4-point Likert scale: 0 (*not at all true*), 1 (*somewhat true*), 2 (*very true*), and 3 (*definitely true*). CU traits were considered "present" when at least two of four LPE criteria were endorsed, as indicated by a 2 or 3 rating on its respective ICU item(s): (a) lack of remorse or guilt, (b) callous–lack of empathy, (c) unconcerned about performance, and (d) shallow or deficient affect. This method for operationalizing nonnormative levels of CU traits using ICU scores best identified antisocial youth with severe externalizing problems, according to item response theory analyses with a cross-national sample (see Kimonis et al., 2015). In the current study, this method identified a sample with average pretreatment 24-item total ICU scores (resolved score = 40.67, *SD* = 8.75) that fell 1.8 *SD*s above the mean for a large sample (*n* = 622) of preschoolers (Ezpeleta et al., 2013). To assess for the CP eligibility criterion, this parent responded to items from externalizing-oriented scales on the Child Behavior Checklist (CBCL) from the ASEBA (Achenbach & Rescorla, 2000, 2001).

Outcome Measures

Participants completed the following self-report and independent evaluator-rated measures at each of the five assessment points.

Conduct problems. Child CP were assessed using the 36-item ECBI (Eyberg & Pincus, 1999). Parents rated the frequency of the child's problem behaviors (e.g., "whines") on a 7-point scale from 1 (*never*) to 7 (*always*) and indicated whether they currently considered the behavior problematic (*Yes/No*), with scores summed to compute Intensity and Problem Scales respectively. Intensity and Problem Scale scores range between 36–252 and 0–36, respectively, and have demonstrated excellent internal consistency (αs =.95 and .93), interparent reliability (.69 for Intensity Scale), and test–retest reliability across 12 weeks and 10 months (.80 and .75 for Intensity Scale). In the

present study, total Intensity scores showed good to excellent internal consistency (αs = .89–.97). Mother and father scores were combined in a conservative fashion by taking the higher rating between raters (i.e., resolved score). This method is beneficial for circumventing potential underreporting (e.g., Pardini, White, & Stouthamer-Loeber, 2007). Studies that combine multiple informants in this way report similar results to those using different procedures (Piacentini, Cohen, & Cohen, 1992). The intraclass correlations (ICCs) for average measures between mother and father ECBI Intensity Scale raw scores ranged between .66 and .91 (*p*s < .05) across all assessment time points. All ICCs reported were based on absolute-agreement, two-way mixed effects models.

Externalizing problems were also assessed using resolved scores from selected Syndrome and *DSM*-Oriented Scales from the ASEBA CBCL/1½–5 . These included aggressive behavior (e.g., "hits others") and oppositional defiant problems (e.g., "defiant"), as well as the aggregate externalizing scale. Aggressive behavior, oppositional defiant problems, and externalizing scales yielded mean test–retest reliability coefficients of .87, .87, and .87 over approximately 1 to 2 weeks, respectively, and mean interparent reliability coefficients of .66, .65, and .67, respectively (Achenbach & Rescorla, 2000, 2001). In the present study, resolved scores on these scales demonstrated acceptable to excellent internal consistency across all assessment time points (αs = .87–.94, .72–.88, and .86–.95, respectively). ICCs for average measures between mother and father ratings on these scales ranged between .63 and .86 (*p*s < .05), .60 and .73 (*p*s = .02–.14), and .73 and .85 (*p*s < .05), respectively, across assessment points. A small number of children transitioned from the preschool to school-age version of the CBCL/6–18 during the course of the study. Because items comprising syndrome/*DSM* scales and scales comprising composite scales differ between age versions, analyses did not include children who completed the older version of the ASEBA (*n* = 7 at 3-month follow-up).

Child compliance was assessed using the Dyadic Parent–Child Interaction Coding System, fourth edition (DPICS-IV; Eyberg, Nelson, Ginn, Bhuiyan, & Boggs, 2013) by an independent evaluator with assessment point masked. This evaluator coded observed parent–child behaviors during three standard 5-min observational interaction tasks (i.e., low-demand child free play, medium-demand parent-led play, high-demand cleanup). Child compliance with parental commands was computed as a resolved score averaged across parent-led play and cleanup scenarios (total number of times complying divided by total number of commands; Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993). The DPICS system has intercoder reliability coefficients of .64, .54, and .54 for the categories of child compliance, noncompliance, and no opportunity to comply following parent commands, combined across the three observational interaction tasks (Shanley & Niec, 2010). Coders were trained to reliability by an expert DPICS coder. Coders were deemed reliable once they achieved 80% agreement with the expert coder on criterion videos.

CU traits. For all time points except the initial intake screening call, CU traits were assessed using total scores from the 24-item preschool version of the ICU (e.g., "Does not know right from wrong"; Frick, 2004), which range from 0 to 72. ICU total scores have demonstrated acceptable internal consistency and expected correlations with criterion measures such as reduced emotional responding to distress cues and severe aggression, across a wide age range, sex, types of samples, and different language translations (e.g., Ezpeleta et al., 2013; Kimonis et al., 2016). Preschool children rated high on the ICU by parents and teachers were more likely to be antisocial and aggressive, score high on other psychopathy dimensions, and show emotion recognition impairments than low-scoring children (Kimonis et al., 2016). In the present study, total resolved scores showed acceptable to excellent internal consistency across all assessment time points (αs = .84–.93). The ICCs for average measures between mother and father ICU total scores ranged between .58 and .89 (*p*s < .05) across assessments.

Empathy. Empathy was assessed using the 23-item Griffith Empathy Measure (GEM; Dadds et al., 2008b), in which parents rate each item on a 9-point Likert scale from −4 (*strongly disagree*) to +4 (*strongly agree*). Items include cognitive (e.g., "My child has trouble understanding other people's feelings") and affective (e.g., "Seeing another child sad makes my child feel sad") indicators of empathy. Prior studies have demonstrated good test–retest reliability of scores over 1 week (*r* > .89) and 6-month (*r* > .69) intervals, good internal consistency, a stable factor structure across age and sex groups, interparental agreement (*r* > .47), and convergence with child reports (*r* = .41; Dadds et al., 2008a). In the present study, resolved total GEM (αs = .83–.96) and affective scale scores demonstrated good to excellent reliability (αs = .82–.96), with poorer reliability for cognitive scale scores (αs = .45–.77). The ICCs for average measures between mother and father GEM total, affective, and cognitive scores ranged between .38 and .75 (*p*s = .02–.22), .19 and .71 (*p*s = .02–.36), and .14 and .75 (*p*s = .02–.41), respectively, across assessments.

Treatment acceptability. Treatment acceptability was assessed using the Therapy Attitude Inventory (TAI; Brestan, Jacobs, Rayfield, & Eyberg, 1999), a 10-item rating scale measuring parents' level of satisfaction with the process and outcome of therapy. Parents rated each item on a scale from 1 (*dissatisfaction with treatment or worsening of problems*) to 5 (*maximum satisfaction with treatment or improvement of problems*). TAI total scores demonstrated excellent internal consistency (α = .91) and test–retest reliability (*r* = .85) across 4 months from posttreatment to

follow-up assessments (Brestan et al., 1999). In the present study, total TAI scores demonstrated acceptable to excellent internal consistency across assessment points (αs = .74– 94).

Treatment acceptability was also assessed using indicators of treatment adherence and engagement, including session attendance, compliance with weekly homework activities, and premature attrition from treatment. Attendance was measured by recording the number of missed or cancelled sessions for each participating family. Homework compliance was measured using weekly homework sheets completed by parents during all treatment phases, which were reviewed and collected at the beginning of each treatment session excepting CDI Teach sessions. Homework compliance was calculated for CDI/PDI phases as a percentage of the total number of days of homework completion by the total number of days since the previous session and averaged across sessions by parent. As the homework format was different for the CARES phase, compliance was calculated as a count of the number of weeks completed. Attrition was measured by recording the number of families who dropped out of treatment prior to completing all treatment sessions, indicated by explicit notification of their wish to discontinue treatment or failure to attend treatment sessions and respond to therapist attempts to contact and reschedule appointments.

Planned Analyses

Acceptability of the targeted intervention was tested using descriptive analyses to examine mean scores on the resolved treatment satisfaction measure at follow-up assessments, average rates of session attendance and homework completion across treatment, and the participant dropout rate.

The preliminary efficacy of the targeted intervention was tested by examining change in primary outcomes during and post treatment using linear mixed models with a random intercept, including week of measurement as a repeated factor. For DPICS child compliance, scores were logit-transformed for analyses as use of raw proportion values is not appropriate, and separate variances were estimated at each time point. HLM mixed-effects models were run in SAS Version 9.4 (2003) using data from the full intent-to-treat sample (n = 23) and estimated using restricted maximum likelihood estimation to account for missing data. Two specific planned comparisons examined change in outcomes during the active treatment period (mean change from pretreatment to posttreatment) and the follow-up period (mean change from posttreatment to 3-month follow-up), with 95% confidence intervals (CIs) for these effects as effect sizes calculated.

To test for clinically significant differences, Cohen's d effect size differences between pre and post scores (pretreatment vs posttreatment, pretreatment vs 3-month follow-up) for primary outcomes were examined. Reliable change index scores were calculated to determine whether the magnitude of individual-level change on parent-rated measures from pretreatment to posttreatment exceeded the margin of measurement error (pretest scale score – posttest scale score)/SE_{diff}. Individual reliable change index scores greater than 1.96 (reliable improvement) were considered statistically significant (p < .05; Jacobson & Truax, 1991). Descriptive analyses identified the proportion of treatment completers no longer showing clinically significant CP by 3 months post-treatment, according to ECBI Intensity T scores, relative to dropouts.

RESULTS

Acceptability

Treatment retention was high, with 17 of the 23 enrolled families completing treatment (74%). Reasons identified for treatment dropout included mother's physical health issues (e.g., brain surgery, pregnancy-related bed rest), improvement in child behavior, parent feeling unable to meet treatment demands, change in parents' employment, parent disinclination to implement time-out, and change in child's foster care placement. Treatment completers perceived the intervention as highly acceptable both immediately (resolved M TAI = 4.69 of 5, SD = .40, range = 3.8–5.0) and 3 months posttreatment (resolved M TAI = 4.66, SD = .39, range = 3.6–5.0). These scores correspond to a very high level of satisfaction with the process and outcome of therapy. On average, mothers were more satisfied than were fathers both immediately (M = 4.76, SD = .26 vs., M = 4.43, SD = .28), $t(11)$ = 3.00, 95% CI [.09, .58], p = .012, and 3 months (M = 4.71, SD = .24 v. M = 4.38, SD = .33) posttreatment, $t(10)$ = 2.92, 95% CI [.08, .58], p = .015. Treatment dropouts that returned for 3-month follow-up (n = 3, resolved M = 3.37, SD = .76) were less satisfied with the intervention than completers, $t(17)$ = 4.56, 95% CI [.70, 1.90], p < .001.

The average number of missed or cancelled sessions for the full sample was 2.57 (range = 0–8), with nonsignificant differences between treatment completers (M = 2.94, SD = 2.19) and dropouts (M = 1.5, SD = 1.64), $t(21)$ = 1.46, 95% CI [−.61, 3.49], ns. With regard to homework compliance, on average the full sample of mothers and fathers completed 63% and 53% of CDI practice, 76% and 64% of PDI practice, and 58% and 21% of CARES practice, respectively. Treatment completers did more CDI home practice than dropouts, $t(19)$ = 2.47, 95% CI [−.01, .18], p = .02, but there were no other group differences.

Treatment Outcomes Across Time

Results of linear mixed models are presented in Supplemental Tables 1–10. None of the models showed violations of normality and homogeneity of variances

assumptions. Plots of observed and model-predicted means are presented in Figure 2. For logit-transformed child compliance scores, model-estimated proportions, back transformed to the original scale, are presented. All outcomes showed significant improvements from pre- to posttreatment: (a) ECBI intensity, $\pi 1 = -52.62$ (6.17), 95% CI [−64.91, −40.34], $p < .0001$, Cohen's $d = 1.73$, and problem, $\pi 1 = -14.61$ (1.55), 95% CI [−17.70, −11.53], $p < .0001$, $d = 2.0$, scales; (b) CBCL aggressive behavior, $\pi 1 = -12.29$ (1.83), 95% CI [−15.96, −8.62], $p < .0001$, $d = 1.69$; externalizing, $\pi 1 = -15.65$ (2.07), 95% CI [−19.81, −11.49], $p < .0001$, $d = 1.77$, and oppositional defiant $\pi 1 = -4.55$ (0.78), 95% CI [−6.11, −2.99], $p < .0001$, $d = 1.72$, scales; (c) ICU total, $\pi 1 = -10.54$ (2.00), 95% CI [−14.53, −6.55], $p < .0001$, $d = 1.13$; (d) GEM total, $\pi 1 = 19.84$ (5.74), 95% CI [8.39, 31.29], $p = .0009$, $d = 0.7$; cognitive, $\pi 1 = 4.8$ (1.73), 95% CI [1.35, 8.25], $p = .007$, $d = 0.72$; and affective, $\pi 1 = 6.27$ (2.44), 95% CI [1.40, 11.13], $p = .0123$, $d = 0.47$, empathy scores; and (e) DPICS child compliance proportions, $\pi 1 = 2.36$ (0.38), $p < .0001$, $d = 1.68$. Moreover, all outcomes showed nonsignificant mean change from posttreatment to 3-month follow-up, and the associated effect sizes were small (0.0–0.46), suggesting that the improvements made during the treatment phase persisted.

Missing Values

Associations between missingness at each time point and demographic variables of sex, age, race/ethnicity, socioeconomic status, marital status, and pretreatment scores were examined using Fisher's Exact Test for categorical variables and Wilcoxon–Mann-Whitney test for continuous variables. For ECBI, ICU, and GEM there were no significant associations. For CBCL, as expected given the aforementioned issue about some children transitioning to the older age version, there were significant associations between missing values and age at post-CDI and 3-month follow-up assessments; however, further inspection revealed that across time points, associations with age were inconsistent and descriptives for age were similar, suggesting missingness is ignorable.

Clinical Significance

Within-subjects effect sizes (Cohen's *d*) across primary outcomes are presented in Table 1. Effects for child CP from pre- to posttreatment and from pretreatment to 3-month follow-up were all "large" to "huge," for CU traits were "large," and for empathy were "medium" to "large" (Cohen, 1988; Sawilowsky, 2009). As shown in Table 2, more than three fourths of children showed reliable change in externalizing

TABLE 1
Means and Standard Deviations for Primary Outcomes with Clinical Significance of Change in Scores between Pretreatment and Posttreatment/Follow-Up Assessments (Cohen's *d* Effect Sizes)

	Descriptives					Clinical Significance	
Variable	Pretreatment	Post-CDI	Post-PDI	Posttreatment	3 MoFU	Pretreatment vs. Posttreatment	Pretreatment vs. 3-Month Follow-Up
	n = 23	*n* = 22	*n* = 18	*n* = 17	*n* = 20		
ECBI Intensity	177.08 (24.02)	147.49 (31.18)	118.80 (30.60)	120.79 (33.39)	121.30 (34.70)	−1.81	−1.76
ECBI Problem	24.39 (5.66)	18.27 (8.60)	10.61 (7.52)	10.00 (8.09)	9.85 (7.36)	−2.09	−2.21
	n = 23	*n* = 19	*n* = 13	*n* = 11	*n* = 12		
CBCL Aggressive	27.83 (6.29)	21.68 (8.69)	13.77 (5.92)	14.73 (6.53)	15.67 (8.97)	−1.96	−1.51
CBCL Externalizing	33.96 (7.82)	26.63 (10.45)	16.92 (7.19)	17.91 (8.18)	19.92 (11.45)	−1.96	−1.43
CBCL Oppositional	10 (2.41)	7.37 (2.81)	4.77 (2.09)	5.64 (2.62)	6.08 (3.34)	−1.81	−1.45
	n = 23	*n* = 22	*n* = 18	*n* = 17	*n* = 19		
ICU Total	40.67 (8.75)	35.59 (8.24)	29.89 (8.07)	29.41 (10.16)	29.74 (11.93)	−1.11	−1.00
GEM Total Empathy	−20.70 (20.80)	−13.02 (27.69)	2.83 (33.73)	1.35 (31.62)	2.35 (29.46)	.74, .88	.88
GEM Affective	−9.00 (9.91)	−5.61 (13.54)	.22 (15.36)	−1.82 (14.13)	−2.37 (13.66)	.51	.56
GEM Cognitive	−4.65 (6.78)	−3.86 (5.31)	−.83 (7.68)	.47 (7.72)	.57 (6.01)	−.66	−.76
	n = 20	*n* = 21	*n* = 16	*n* = 15	*n* = 16		
DPICS Compliance (proportion)	.68 (.23)	.55 (.37)	.73 (.19)	.89 (.15)	.80 (.20)	−1.45	−.75

Note. CDI = Child-Directed Interaction; PDI = Parent-Directed Interaction; MoFU = Three Month Follow-Up; ECBI = Eyberg Child Behavior Inventory; CBCL = Child Behavior Checklist; ICU = Inventory of Callous-Unemotional Traits; GEM = Griffith Empathy Measure; DPICS = Dyadic Parent–Child Interaction Coding System.

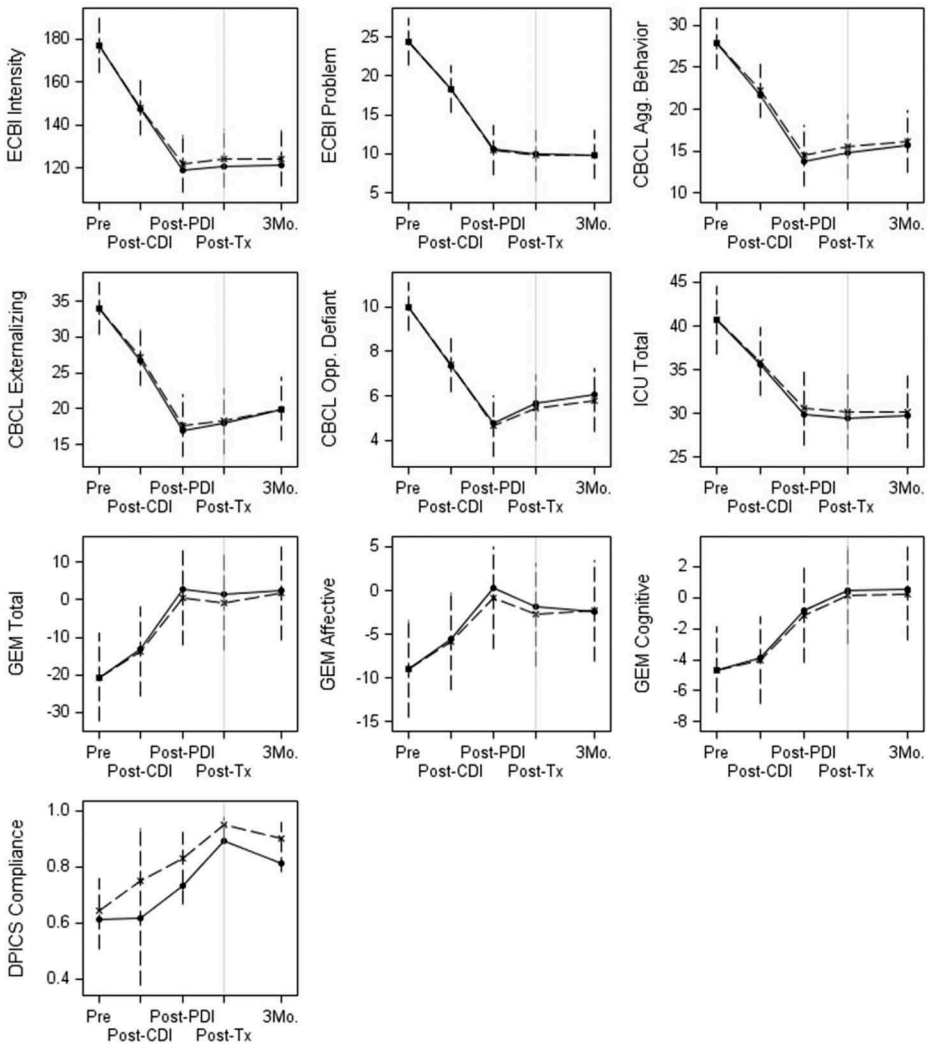

FIGURE 2 Plots of observed (solid line) and model-predicted (dashed line) means for primary outcomes; the vertical gray line signifies the end of the active treatment phase.

problems and CU traits by posttreatment, and more than half of children in empathy levels. At 3 months posttreatment, 75% of treatment completers had CP below the clinically significant range (T score = 60) according to resolved ECBI Intensity T scores (58.8% at posttreatment). In contrast, 75% of dropouts that completed the ECBI (n = 4) continued to show clinically significant CP, χ^2 (1, N = 20) = 3.52, p = .06.

DISCUSSION

The CP of children with CU traits are particularly resistant to behavioral and family-based treatments that have proven efficacy for reducing disruptive behavior problems in children without CU traits (Comer, Chow, Chan, Cooper-Vince, & Wilson, 2013; Hawes et al., 2014; Scott & O'Connor, 2012). Behavioral parent training targets specific processes that research has shown to be important in the development of CP (i.e., inconsistent parenting, coercive processes) but does not generally target processes unique to those with elevated CU traits (Frick, 2012). Accordingly, the focus of this research was on improving our current treatments by enhancing an evidenced-based treatment for CP by addressing several unique developmental needs of young CP+CU children. Consistent with hypotheses, our results support the acceptability and preliminary efficacy of PCIT adapted for preschoolers with CU-type CP.

Pre- to posttreatment change was greatest for measures of CP, according to effect sizes (ds = 1.67– 2.00). The majority of children (≥ 82%) showed reliable change in the expected direction across various indices of externalizing problems. This is interesting in light of findings that the CP of children

TABLE 2
Number (Percentage) of Treatment-Completing Participants with Reliable and Clinically Significant Improvement

	Reliable Change		Clinically Significant Change	
Variable	Post	3 MoFU	Post	3 MoFU
ECBI Intensity	15 (88.2)	14 (87.5)	10 (59)	12 (75)
ECBI Problem	15 (88.2)	14 (87.5)	12 (71)	10 (63)
CBCL Aggressive Behavior	10 (90.9)	9 (100)	11 (100)	9 (100)
CBCL Externalizing	10 (90.9)	9 (100)	9 (81.8)	6 (66.7)
CBCL Oppositional Defiant	9 (81.8)	9 (100)	9 (81.8)	8 (88.9)
ICU Total	13 (76.5)	11 (68.8)		
GEM Total	9 (52.9)	7 (43.8)		
GEM Affective	10 (58.8)	7 (43.8)		
GEM Cognitive	9 (52.9)	6 (37.5)		

Note: Reliable change was determined on the basis of reliable change index (RCI) scores calculated for pre- to post-treatment change, and was considered statistically significant when greater than 1.96. Clinical significance of change was determined on the basis of *T*-scores: ECBI intensity/problem ≥ 60 (Eyberg & Pincus, 1999), CBCL aggressive behavior/oppositional ≥ 70 for scales, CBCL externalizing ≥ 64 (Achenbach & Rescorla, 2000); *T*-scores were not available for ICU and GEM scores. MoFU = Three Month Follow-Up.

with CU traits respond poorly to parent training and family-based interventions (Hawes et al., 2014; whereas these interventions improve CU trait outcomes). Although the large improvements in CP produced by PCIT-CU appear promising, the design and size of this open trial study preclude addressing whether the degree of change is superior to what PCIT could achieve in its standard form or is equivalent to what would be observed for CP-only children. These questions represent important avenues for future research that is currently under way.

With intervention research on CU traits being in its infancy, there has been little study into treatment mechanisms. In one notable exception, Dadds et al. (2012) found that an adjunctive child-focused emotion recognition training (ERT) delivered with parent training increased children's empathy levels, which partly explained improved CP outcomes relative to those who received parent training alone. The authors hypothesized that changes in CP outcomes occurring independently of changes in empathy levels might be explained by the inadvertent effect of the ERT intervention on improving levels of warmth in the parent–child relationship. Notably, the ERT intervention was not associated with changes in the emotion recognition skills it was designed to target. Our open trial study is underpowered to address whether parent-reported improvements in child outcomes are explained by changes in parental warmth and responsivity, child's sensitivity to others' distress cues, or some other mechanism. This will be an important goal for future research.

Our results showing large effect sizes, and reliable improvement in CU traits from pre- to posttreatment for more than two thirds of participants, are consistent with past research suggesting that parent training programs delivered in early childhood produce sustained improvements in CU traits (Hawes et al., 2014). This change has been attributed to improvements in parenting that can directly impact the child's CU traits (Waller et al., 2013). For example, one study found that improvements in mothers' harsh and inconsistent parenting following parent training with supportive therapy partly accounted for reductions in levels of CU traits among children (4–9 years) with ODD/CD recruited from domestic violence shelters, relative to services-as-usual in the community (McDonald, Dodson, Rosenfield, & Jouriles, 2011).

Some prior studies found that CU traits predicted lower therapeutic engagement. For example, families who dropped out of standard PCIT treatment had children who scored higher on CU traits than treatment completers (Kimonis et al., 2014). The dropout rate of 26% in this open trial study was at the lower end of the range reported in the literature for standard PCIT; attrition rates ranged between 31% in university-based clinical trials and 69% in community settings (Lanier et al., 2011; Webb, Thomas, McGregor, Avdagic, & Zimmer-Gembeck, 2017). However, addressing attrition is critical because families who drop out of PCIT have worse outcomes 1–3 years later relative to treatment completers (Boggs et al., 2005). Several of the reasons that parents provided for either prematurely terminating or choosing not to initiate treatment raise important considerations in intervening with this population and for future research on the PCIT-CU adaptation. First, whether or not unique to children with CU traits, the issue of accessibility of treatment to our parents with physical health, employment, and other logistical demands suggests the need for investigating the utility of treatment adapted for online delivery. PCIT delivered via video teleconferencing to families located in their own homes, known as Internet-delivered PCIT or I-PCIT, has evidence supporting its preliminary efficacy (Comer et al., 2017), and has promise for reducing treatment drop-out and nonstarting by addressing barriers affecting treatment accessibility. Research testing the feasibility, acceptability, and preliminary efficacy of the PCIT-CU adaptation delivered via teleconferencing is in progress (Fleming, Kimonis, Datyner, & Comer, 2017).

Second, supplemental therapeutic strategies such as motivational interviewing or psychoeducation may be necessary for engaging parents who share similar antisocial and callous traits to their children in an intensive intervention such as PCIT-CU (Chaffin et al., 2009). For example, therapists' use of psychoeducation strategies (explaining rationale for treatment, causes of misbehavior) increased parent engagement in intervention for child CP relative to other strategies (e.g., collaborative goal setting, problem-solving barriers to treatment; Martinez, Lau, Chorpita, Weisz, & Research Network on Youth Mental Health 2017). These strategies may be particularly beneficial in changing negative parental attributions

that may maintain cold, harsh, and inconsistent parenting behaviors common among CP+CU children (Hawes et al., 2014; Pasalich et al., 2011). Third, in light of accumulating evidence for a secondary developmental pathway to CU traits involving adverse life experiences and comorbid anxiety (Dadds, Kimonis, Schollar-Root, Moul, & Hawes, 2018), it will be important for future research to investigate the utility of PCIT-CU for children with co-occurring CU traits and anxiety and when involving abusive parents and foster carers. Evidence from several trials supports PCIT as an efficacious intervention for maltreating populations (Batzer, Berg, Godinet, & Stotzer, 2018) and children with anxiety disorders (Carpenter, Puliafico, Kurtz, Pincus, & Comer, 2014), but there is a scarcity of studies exploring CU traits as an outcome variable, moderator, or predictor in this literature. It will be important for future research to examine whether adapting PCIT to more specifically meet the needs of the CP+CU subpopulation improves family engagement and retention in treatment relative to standard PCIT in diverse populations.

Our results must be considered within the context of several study limitations. First, this was a preliminary open trial study of a relatively small number of families ($n = 23$) and so cannot fully address the efficacy of the targeted intervention. It was conducted in a university research clinic within a relatively affluent region of Sydney, as reflected by the reported sociodemographic characteristics of the sample. As such, the performance of the targeted PCIT-CU intervention was evaluated under ideal and highly controlled circumstances, likely overestimating the intervention's effect when implemented under conditions more closely resembling "real-world" clinical practice or within more sociodemographically diverse populations. Thus, alongside further support for its efficacy, an effectiveness trial is needed to examine the performance of the intervention under such "real-world" conditions as it accounts for external patient, provider, and system-level factors that may modify its effects. Further, as previously mentioned, without a control condition it is impossible to evaluate whether PCIT-CU is superior to standard PCIT in improving outcomes of CP+CU children, or even whether it is better than no treatment or natural maturational processes. Another limitation is that families were followed up to only 3 months posttreatment. This may have impacted on our ability to capture change in empathy outcomes, for which only approximately half of the children were classified with reliable improvement. That is, a longer follow-up may be necessary for parents to observe and register sustained change in children's empathic responses to the types of infrequently occurring events that our empathy measure assessed (e.g., child doesn't understand why other people cry out of happiness). It will be important to examine whether CP+CU children show comparable maintenance of PCIT-CU treatment gains to that reported for young children with CP treated with PCIT (Boggs et al., 2005; Hood & Eyberg, 2003).

Limitations notwithstanding, this study has several key strengths. First, a multimethod approach, including behavioral observation, was used to assess child CP. Second, this is the first study to exclusively recruit a sample of children with CU-type CP in investigating outcomes associated with parent training intervention. Third, the targeted treatment was specifically designed to intervene at an early age when CU can first be reliably identified (Ezpeleta et al., 2013; Kochanska, Kim, Boldt, & Yoon, 2013). Intervening early results in the largest and most durable improvements in CP over time (Bakker, Greven, Buitelaar, & Glennon, 2017). This may be particularly important for treating children with elevated CU traits by intervening during a critical period for conscience development. Fourth, the targeted intervention under investigation was nested within an established treatment model, PCIT. Because PCIT is a widely known and accepted treatment, PCIT-CU can be readily disseminated and implemented by practitioners working in "real-world" settings when evidence of its effectiveness is established. Cost-effectiveness studies report PCIT costs approximately $1,025 per child, contrasted against the more than > $125,000 lifetime public service cost for each child with CP (Goldfine, Wagner, Branstetter, & McNeil, 2008; Scott, Knapp, Henderson, & Maughan, 2001).

Given the significant societal burden of this seriously impaired subpopulation of children, this line of research has a clear public health benefit. This study represents a timely and persuasive challenge to a long history of psychotherapeutic pessimism and even stigma regarding the treatability of CU or "psychopathic" traits in childhood. It incrementally adds to a growing body of evidence that recognizes the failure of traditional treatments to adequately meet the unique needs of this subpopulation. Accordingly, it continues the important process of designing, implementing, testing, and disseminating comprehensive and individualized intervention approaches for children with CP and elevated CU traits.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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SUPPLEMENTARY MATERIAL

Supplemental data for this article can be accessed on the publisher's website.

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