



Improved Perceptions of Emotion Regulation and Reflective Functioning in Parents: Two Additional Positive Outcomes of Parent-Child Interaction Therapy

Melanie J. Zimmer-Gembeck*

Jessica L. Kerin

Haley J. Webb

Alex A. Gardner

Shawna Mastro Campbell

Kellie Swan

Griffith University, School of Applied Psychology

Susan G. Timmer

CAARE Diagnostic and Treatment Center

University of California–Davis Children's Hospital

The purpose of this study was to test whether Parent-Child Interaction Therapy (PCIT), a widely used effective therapy for children's externalizing behaviors and parenting problems, was associated with improvements in parents' emotion regulation and reflective functioning. We also investigated whether these improvements had unique associations with children's improvements in externalizing and internalizing symptoms. Participants were 139 Australian children aged 29 to 83 months and their caregivers; all were referred for

child externalizing behavior problems coupled with parenting skill deficits or high parent stress. All data were gathered via a questionnaire completed prior to and after completion of PCIT. Significant improvements were found in parents' self-reported emotion dysregulation and capacity to use cognitive reappraisal for emotion regulation. There was also improvement in parents' self-report of children's symptoms, parenting practices, and reflective functioning in the form of prementalizing, which measured a low capacity to understand the emotional world of the child. Multiple regression showed that improvements in cognitive reappraisal, prementalizing, and negative parenting practices were associated with improvement in children's symptoms. The findings extend the existing evidence for PCIT as an effective parenting intervention, adding parents' perceived emotion regulation and reflective functioning to the list of positive outcomes from PCIT. Improved emotion regulation and reflective functioning, unique from changes in parenting practices, could be mechanisms that help explain why PCIT has been associated with improvements in children's externalizing behaviors.

This work was partially supported by funding from Future Directions Prevention and Early Intervention Trials, Queensland Department of Child Safety, Youth and Women, Australia to the Family Interaction Program. The authors wish to thank all members of the Family Interaction Program for assisting hundreds of families and collecting data on effectiveness of services along the way. We especially thank Tanya Hawes, Elia-Jade Polak, Melissa Harahan, Erinn Munro-Lee, and Julia Rudolph for help with so many important tasks. Thank you, also, to the families who have shared their experiences.

* Address correspondence to Melanie J. Zimmer-Gembeck, Ph. D., Griffith University, School of Applied Psychology, Parklands Dr, G40_7.86, Southport QLD 4222 Australia; e-mail: m.zimmer-gembeck@griffith.edu.au.

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Keywords: parent training; emotion regulation; reflective functioning; parenting; behavior problems

Please cite this article as: Melanie J. Zimmer-Gembeck, et al., Improved Perceptions of Emotion Regulation and Reflective Functioning in Parents: Two Additional Positive Outcomes of Parent-Child..., *Behavior Therapy* (2018), <https://doi.org/10.1016/j.beth.2018.07.002>

PARENT-CHILD INTERACTION THERAPY (PCIT) is a dyadic parenting intervention for young children with externalizing behaviors and their parents (McNeil & Hembree-Kigin, 2010). Derived from social learning theory (Patterson, 1982) and attachment theory (Bowlby, 1969), the aims of PCIT are to reduce child externalizing behavior by increasing positive parent-child interactions and parenting skills (McNeil & Hembree-Kigin, 2010; Webb, Thomas, McGregor, Avdagic, & Zimmer-Gembeck, 2017). In PCIT, parents receive direct coaching, whereby a therapist observes structured parent-child interactions through a one-way mirror and coaches the parent, via an earpiece, to attend warmly, consistently, and predictably to his or her child's behaviors and to apply adaptive behavior management strategies to manage child behavior problems. Progression and cessation of PCIT is determined based on parents' attainment of particular mastery criteria, and, thus, usually varies in length across families (McNeil & Hembree-Kigin, 2010). However, PCIT limited to 12 weekly sessions has been shown to produce equivalent or superior outcomes to time-variable PCIT (Thomas & Zimmer-Gembeck, 2012; Webb et al., 2017). Therefore, this 12-week format was used in the present study.

PCIT falls within the broader category of a parent behavioral training approach (Comer et al., 2013), which is considered the gold-standard treatment for children's externalizing behavior and parenting problems (Colalillo & Johnston, 2016). PCIT in particular has demonstrated effectiveness, both using self-report and observational measures, among highly distressed families and across multiple pediatric diagnoses (e.g., Webb et al., 2017). The research on PCIT is quite consistent with the findings for the general behavioral training approach, showing success (with some variability across studies) in improving parenting and reducing behavioral problems in children (Comer et al., 2013; Kaminski & Claussen, 2017). Yet, the focus in most of the investigations of PCIT (and similar to investigations of other parent behavioral training; see Colalillo & Johnston, 2016) has been on the outcomes of child behavior and parenting improvements, with only intermittent attention to secondary parenting outcomes. Those secondary parenting outcomes that have been studied tend to include dysfunctional discipline strategies (i.e., laxness, overreactivity, and verbosity); parents' child abuse potential; parental locus of control (i.e., the extent to which parents believe they can influence or control their child's behavior); and parental sensitivity (i.e., parents' ability to detect, interpret, and effectively respond to their children's

signals; Batzer, Berg, Godinet, & Stotzer, 2018; Thomas & Zimmer-Gembeck, 2011; Thomas, Abell, Webb, Avdagic, & Zimmer-Gembeck, 2017). Although not consistent across all studies, PCIT has been found to decrease self-reported parenting behaviors associated with child abuse risk (i.e., child abuse potential); to increase parents' observed positive verbalizations and sensitivity; and to help parents to feel more personal control over their actions. Taken together, the accumulating evidence does suggest some specific ways in which PCIT may change both parenting beliefs and practices. Yet, what is surprising is that there has been almost no attention to changes in parents' own beliefs about their children and in their capacity to regulate their emotions, which could be important parent factors positively altered through PCIT.

EMOTION REGULATION

Emotion regulation refers to the ability to use internal and external resources to monitor, maintain, and modulate the occurrence, duration, and intensity of emotional responses (Thompson, 1994). Parental emotion regulation is argued to be one of the key ways in which parents act as important emotion socialization agents for their children (Bariola, Gullone, & Hughes, 2011), yet it remains a very understudied topic (Lorber, Del Vecchio, Feder, & Slep, 2017). Several emotion regulation theorists propose that children learn emotion regulation by observing and imitating their parents' emotional expression and emotion regulation capacities, with the proposed mechanisms being modeling, social referencing, and internalization (e.g., Morris, Silk, Steinberg, Myers, & Robinson, 2007). Specifically, these theorists suggest that parental emotion regulation creates an emotional climate through which children learn the appropriateness (or inappropriateness) of emotional displays in regard to context, valence, duration, and intensity (Bariola et al., 2011). Parenting is fraught with emotional interactions, conflicts and frustrations, making a lower capacity to regulate emotions, especially negative emotions, likely to affect parenting practices, whereby parental hostility and rejection may be more likely to occur for parents with lower emotion regulation, creating a context for the emergence of children's poorer emotional and behavioral adjustment (Crespo, Trentacosta, Aikins, & Wargo-Aikins, 2017; Zimmer-Gembeck & Thomas, 2010). For example, in one study, mothers' emotion dysregulation, measured as self-reported difficulty with their emotion regulation and lack of emotional awareness, significantly predicted higher levels of internalizing and externalizing symptoms in their school-aged

children (Crespo et al., 2017). Moreover, in a review of 29 studies evaluating associations between parental emotion socialization and child emotion regulation across clinical and nonclinical populations (Bariola et al., 2011), parental dysregulated emotion was described as a central predictor of poor emotional and social child outcomes.

The conceptual underpinnings and format of PCIT suggest that a key to successful outcomes for parents and children in PCIT is more effective parental emotion regulation. Specifically, PCIT is designed to recognize the importance of emotional co-regulation in fostering secure parent-child relationships, and minimizing disruptive child behaviors (McNeil & Hembree-Kigin, 2010). Furthermore, the PCIT protocol involves parents repeatedly practicing the identification and effective containment of children's emotional distress, via direct coaching from the therapist. This process requires the parent to stay calm, maintain positive affect, ignore minor child misbehavior, set clear limits to child behavior, and consistently follow through on stated consequences for child transgressions. All of these behaviors are good ways to practice emotion regulation and provide good emotion regulation modeling for children. Therefore, adaptive parental emotion regulation appears necessary for the containment of child emotional distress during PCIT; however, the hypothesis that parent emotion regulation could be improved during participation in PCIT, and that parents' improved emotion regulation may be related to children's improved symptoms following PCIT, have not been investigated.

PARENTAL REFLECTIVE FUNCTIONING

Slade (2005) described parental reflective functioning as parents' ability to understand their children's behaviors in light of underlying mental states and intentions. Reflective parents are believed to be better able to take the perspective of their child and acknowledge differences in perceptions regarding shared experiences. Parents' reflective functioning has been described as pivotal in fostering adaptive self-regulation in both parents and children, particularly affect regulation and stress tolerance (Fonagy, Gergely, Jurist, & Target, 2002). Specifically, difficult emotions in either the parent or child are believed to become manageable through the parent's ability to perceive such feelings or thoughts as merely mental states, rather than realities, which frees the parent to modulate these experiences over time (Kelly, Slade, & Grienenberger, 2005).

There is empirical support for these theoretical assertions (Slade, 2005, 2007). Parents with poorer reflective functioning are less tolerant of distress

(Rutherford, Booth, Luyten, Bridgett, & Mayes, 2015; Rutherford, Goldberg, Luyten, Bridgett, & Mayes, 2013). Parents with better reflective functioning are more likely to have a child with a secure parent-child attachment (see Koren-Karie, Oppenheim, Dolev, Sher, & Etzion-Carasso, 2002; Slade, 2005, 2007) and report more positive parenting practices (Luyten, Mayes, Nijssens, & Fonagy, 2017; Stacks et al., 2014). In particular, parents' reflective functioning has been associated with better parent-child involvement, communication, and limit setting (e.g., Rostad & Whitaker, 2016), and has been associated with offspring's poorer mental health and behavioral functioning across childhood and adolescence (Borelli, St. John, Cho, & Suchman, 2016; Ramsauer et al., 2014; Smaling et al., 2017; Suchman et al., 2011).

Founded on a recent analysis of the parental self-report reflective functioning scale (Luyten et al., 2017), three aspects of reflective functioning (also referred to as "mentalizing") were measured as outcomes of PCIT in the present study. The first aspect is prementalizing modes. Prementalizing modes is a single subscale that indicates significant problems with reflective functioning, such as limited attempts to understand the perspective and feelings of offspring. It also assesses malevolent attributions about the child's behaviors and a low capacity to understand the emotional world of the child. The second aspect of reflective functioning is certainty of mental states of the child, which has been defined as the "tendency of parents to be overly certain about the mental states of their child (i.e., to not recognize the opacity of mental states), reflecting intrusive mentalizing or hypermentalizing, to hypomentalizing, that is, an almost complete lack of certainty about the child's mental states" (Luyten et al., 2017, p. 8). The third aspect is interest and curiosity in the mental states of the child, which is considered to be an important element of reflective functioning because it captures parents' positive emotions about understanding their child's mental states. Not completely in support of the view that prementalizing and certainty of mental states reflect poorer reflective functioning when elevated, Luyten et al. found that prementalizing was positively associated with parents' distress ($r = .29$), whereas certainty of mental states had a smaller and negative correlation with distress, $r = -.16$; interest and curiosity was not significantly correlated with distress, $r = .11$. Further, prementalizing was consistently associated with less self-reported positive parenting across eight different parenting measures, whereas certainty of mental states and interest/curiosity in the child's mental states were associated (somewhat

more intermittently) with more positive parenting practices.

Although parental reflective functioning has not yet been directly examined in relation to PCIT, there are strong conceptual reasons as to why PCIT may foster it. PCIT emphasizes the importance of enhancing the parent-child relationship via positive changes enacted by the parent that facilitate a sense of security in the child. Such positive changes include the parent becoming more attuned to their child's psychological needs and responding to such signals in a predictable, consistent, and sensitive manner (McNeil & Hembree-Kigin, 2010). Therefore, while not explicitly highlighted in PCIT, parental reflective functioning seems to be inherently required in order for parents to begin responding to their child more sensitively. Moreover, successful completion of PCIT typically involves a conceptual shift within the parent, whereby they begin to acknowledge the important role that they play in interactions with their child, thereby displacing blame that is solely attributed to their child, and creating space for the parent to begin to reflect on the parent-child dynamic at large—a skill that intrinsically involves a parent's consideration of their own, as well as their child's, mental states. Thus, it may be that enhanced parental reflective functioning is a critical improvement expected for parents in PCIT.

Improvements in parents' reflective functioning may account for some of the successful parenting and child outcomes of a parenting program, despite such programs not directly targeting parental reflective functioning per se. Such an assertion remains untested with regard to PCIT, yet the recognized importance of parental reflective functioning is supported by the development of specific reflective parenting programs (e.g., Sadler et al., 2013; Slead et al., 2013). The preliminary effectiveness has been demonstrated for these reflective parenting programs, but it is also reasonable to examine whether existing evidence-based and time-tested parenting programs that focus on the parent-child relationship, such as PCIT, facilitate parental reflective functioning, albeit more indirectly. As such, another aim of the current study was to examine whether parental reflective functioning was improved through PCIT.

SUMMARY, AIMS, AND HYPOTHESES

In summary, the purpose of this study was to focus attention more specifically on parents' self-reported personal capacity to manage their own emotions and to consider the history and meaning of their parenting (i.e., be reflective in their functioning) as a way to move towards identifying new,

potential mechanisms for the improvements in children's symptoms repeatedly found following PCIT treatment. We focus here on parents' emotion regulation and reflective functioning, as these have each been described as possible secondary outcomes of PCIT that could help to explain why children's behavior improves following PCIT. We examined changes in parents' self-reported emotion regulation and reflective functioning from pre- to post-PCIT, and also investigated whether parents' improvements in emotion regulation and reflective functioning were associated with children's improvements in symptoms. To extend on these outcomes and to confirm the usual improvements in parenting and children's symptoms that have been related to participation in PCIT, we investigated whether there were positive improvements in parenting practices, and children's externalizing behaviors and internalizing symptoms from pre- to post-PCIT.

Method

PARTICIPANTS AND PROCEDURE

Participants

Participants were 139 caregivers (M age = 34.2 years, SD = 6.0, range 20 to 51 years) and their children (M age = 53.3 months, SD = 13.4, range 29 to 83 months; 70% boys and 30% girls). Caregivers included 129 mothers, 2 grandmothers, 2 foster parents, and 6 fathers. All but three of the children lived with the caregiver. Analyses were repeated including only the 129 mothers or only the 136 children living with caregivers; results did not change substantially, so all 139 caregivers were included in the analyses reported here. For brevity and to simplify language, the term "parent" is used to identify the group of caregivers in this study.

Of the 139, 110 parents were born in Australia or New Zealand, with the remainder born in 18 other countries (8 European countries, 6 Asian countries, 1 Mexico, 2 African countries, 1 Vanuatu); 3% reported they were First People of Australia or New Zealand. Most participating parents were married or in de facto relationships (70%), with 19% divorced/separated, 10% never married, and 1% (one person) widowed. Overall, 30% of caregivers reported employment for wages and 41% reported they worked in the home; others were full-time students, were unable to work, actively looking for work, or reported "other." About one-half (43%) completed high school only, with 23% reporting they had left high school prior to year 12; the remainder had completed some training or university training post-high school. Income ranged from

less than AUD \$25,000 (30%) to more than AUD \$130,000 (10%), with the median household income between AUD \$50,000 and \$75,000.

At the first assessment, children had a mean externalizing *t*-score of 72, with a range from 45 to 109, on the parent-report Behavior Assessment Scale for Children-Second Edition (BASC-2; Reynolds & Kamphaus, 2004). Children had a mean internalizing *t*-score of 62 with a range from 32 to 98. A *t*-score of 70 or above indicates problems in the clinically significant range. A *t*-score from 60 to 69 is considered in the at-risk range. For externalizing, 53% of children had a *t*-score of 70 or higher, with 26% between 60 to 69. For internalizing, 29% had a *t*-score of 70 or higher, with 27% between 60 to 69. No gender differences in the proportions were found, externalizing $\chi^2 = 2.45$, $p = .294$, internalizing $\chi^2 = 2.81$, $p = .245$.

Procedure and Ethical Considerations

Participants were referred to a public allied health clinic specifically for PCIT. The clinic is located within a university building. Referral sources were other government services (e.g., child protection or health, 34%) or education and nongovernmental social service organizations (18%), with the remainder referred by other professionals (31%) or self-referred (17%). Following referral, in-person semistructured interviews with caregivers were scheduled, and caregivers were accepted to the program if children were between the ages of 2.5 and 6 years, and parents reported either significant levels of distress about parenting problems, inappropriate discipline strategies, aggressive parental communication, or challenges managing child behavior problems. PCIT is contraindicated for sexual abuse perpetrators; thus, caregivers were excluded if there was any suspected sexual abuse history based on information from child protection authorities or revealed during the initial interview with parents. The study protocol was discussed with parents and informed consent was obtained during the initial session. Ineligible caregivers were referred to alternative services. After this intake interview and receiving written consent for research participation, assessments were completed 1 week prior to the start of PCIT and 1 week after completion of a 12-week program of PCIT. The study design and all materials were approved by the university Human Research Ethics Committee.

Treatment. PCIT was developed to improve parenting skills and parent-child interactions among families struggling with their young children's (usually age 3 to 7) behavior problems (e.g.,

oppositional-defiant disorder; Eyberg, 1988; Hembree-Kigin & McNeil, 1995; McNeil & Hembree-Kigin, 2010). Standard PCIT has two didactic sessions and other sessions involve direct coaching of parents when interacting with their children during two distinct phases, Child Directed Interaction (CDI) and Parent Directed Interaction (PDI). Each phase is designed to emphasize specific skill development and mastery criteria. Parents also are expected to practice skills at home. Didactic sessions focus on teaching the specific skills related to each phase of the therapy (i.e., either CDI or PDI skills) and are conducted prior to the coaching sessions in each phase. CDI is the first phase and involves teaching relationship enhancement skills, and the use of differential reinforcement to shape child behavior (i.e., labeled praise, reflective listening, and actively ignoring minor misbehavior). Following meeting mastery criteria in CDI, the second phase of PDI begins, which focuses on teaching parents to effectively provide instructions and confidently practice a discipline protocol for managing noncompliance. The therapist communicates with the parent through a "bug-in-the-ear" device, which permits direct coaching of skills, immediate feedback and social reinforcement. In the present study, the mastery criteria for CDI was maintained before parents began PDI, but was relaxed, if needed, to allow all families to have at least four PDI sessions. The criteria were relaxed for 13% of families ($n = 18$). Overall, parents participated in two assessment sessions (pre- and post-PCIT assessment), two didactic information sessions, and a maximum of 12 in-vivo coaching sessions, with those who completed PCIT having an average of 6.9 CDI sessions ($SD = 1.0$; range 5–8) and 5.2 PDI sessions ($SE = 1.3$; range 4–7). Post-PCIT, all but four families (3%) met mastery criteria.

PCIT training and treatment integrity. During the data collection period, there were seven primary PCIT therapists who provided services to 78% of the families in this study. All had more than 3 years of experience with PCIT, and five were fully registered psychologists. Four other therapists provided therapy for the other 22% of families; three were provisionally registered psychologists and one was a specially trained PCIT therapist who had provided the therapy for more than 2 years. All therapists were trained and supervised by five senior PCIT psychologists, who are PCIT certified by the PCIT CAARE team in Sacramento (U.S.). Each therapist underwent extensive training over a period of approximately 12 months, including observation of a senior therapist with multiple

families, followed by co-facilitation of multiple families, practice under continuous and direct observation by a senior therapist, and then independent practice with at least weekly individual and also group supervision. Senior therapists were available during all hours of operation for consultation, as well as being available for weekly supervision of PCIT implementation. Individual consultation and observations of PCIT sessions, both when requested and at random, provided checks of treatment fidelity. Thus, regular supervision and observation ensured treatment fidelity, but fidelity was not systematically assessed. The service has provided the 12-week version of PCIT for more than 10 years and have published the results of its efficacy and effectiveness (Thomas et al., 2017; Thomas & Zimmer-Gembeck, 2012; Webb et al., 2017).

MEASURES

Parent Emotion Dysregulation

The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) was used to measure emotion dysregulation. Response options for the 36 items ranged from 1 (*almost never*) to 5 (*almost always*). Items assess nonacceptance of emotional responses (e.g., “When I’m upset, I become angry with myself for feeling that way”), impulse control difficulties (e.g., “I experience my emotions as overwhelming and out of control”), limited access to emotion regulation strategies (e.g., “When I’m upset, I believe that I will remain that way for a long time”), difficulties engaging in goal-directed behavior (e.g., “When I’m upset, I have difficulty getting work done”), lack of emotional clarity (e.g., “I have no idea how I am feeling”), and lack of emotional awareness (e.g., “I am attentive to my feelings”; reversed). After reversing some items, total emotion dysregulation scores were formed by averaging all items, with higher scores indicating more dysregulation. Cronbach’s α s were .89 at pre- and .87 at post-PCIT.

Parent Emotion Regulation Strategies

Emotion regulation was measured using the 10-item Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). Subscales on the ERQ tap cognitive reappraisal (e.g., “When I want to feel less negative emotion, I change the way I’m thinking about the situation”) and expressive suppression (e.g., “I control my emotions by not expressing them”). Response options ranged from 1 (*strongly agree*) to 7 (*strongly disagree*). Items were reversed and averaged, so that higher scores indicated more reappraisal or suppression, Cronbach’s α s at pre- were .84 for cognitive reappraisal and .70 for

suppression, and were .91 for cognitive reappraisal and .68 for suppression at post-PCIT.

Parental Reflective Functioning

Items from the Parental Reflective Functioning Questionnaire (PRFQ; Luyten et al., 2017) measured three aspects of parental reflective functioning, including prementalizing modes (e.g., “I believe there is no point in trying to guess what my child feels”), certainty about the mental states of the child (e.g., “I always know what my child wants”), and interest and curiosity in the mental states of the child (e.g., “I wonder a lot about what my child is thinking and feeling”). Each subscale was an average of six items, with response options from 1 (*strongly disagree*) to 7 (*strongly agree*). Items were averaged, with higher scores indicating greater prementalizing, certainty of mental states, and interest and curiosity, respectively. Cronbach’s α s at pre-PCIT were .62, .74, and .73 for prementalizing, certainty of mental states, and interest and curiosity, respectively. Post-PCIT, Cronbach’s α s were .54, .71, and .70, respectively.

Child Internalizing and Externalizing Symptomology

Child internalizing and externalizing symptoms were measured with the Parent Rating Scale of the Behavior Assessment Scale for Children-Second Edition (BASC-2; Reynolds & Kamphaus, 2004). Parents respond to items from 1 (*never*) to 4 (*almost always*). In the current study, Cronbach’s α s for internalizing symptoms (depression, anxiety, and somatization; 37 items) were .91 at pre- and .89 at post-PCIT, and for externalizing symptoms (hyperactivity and aggression, 22 items) were .91 at pre- and .93 at post-PCIT. Scores were formed by summing the appropriate items, with higher scores indicating more symptoms. Raw (rather than *t*-scores) were used for the primary analyses, but pre-PCIT *t*-scores were also calculated to provide a description of the children’s level of clinical symptoms prior to PCIT.

Positive and Negative Parenting Practices

Parenting practices were assessed with the Parent as Social Context Questionnaire for Young Children (PCSQ-YC; Zimmer-Gembeck, Webb, Thomas, & Klag, 2015). The PCSQ-YC contains 12 items to tap negative parenting practices of rejection, coercion, and chaos (e.g., “When my child does something wrong, my reaction may not be easy to predict”) and 14 items that tap positive parenting practices of warmth/involvement, autonomy support, and structure (e.g., “I am clear and consistent about what happens when my child does not follow rules”). Response options ranged from 1 (*not at all*

true) to 4 (very true). Items were averaged for each subscale of positive and negative parenting practices, so that higher scores indicated more positive or more negative parenting, respectively. Cronbach's α s for negative parenting were .82 at pre- and .72 at post-PCIT. Cronbach's α s for positive parenting were .82 at both pre- and post-PCIT.

OVERVIEW OF ANALYSES

Of the 139 participating parents, 90 (65%) completed PCIT, with the remaining 35% of families missing all post-PCIT data. No pre-data were missing. Results are reported for the 90 completers, and analyses were repeated after using multiple imputation to estimate posttreatment data for those who did not complete (20 imputed datasets). We also compared demographic information and all pre-PCIT measures between the 90 families who completed PCIT and the 49 families who did not. No significant differences were found between those who did or did not complete PCIT in pre-assessment measures, t values ranged from 0.20 to 1.59 and p values ranged from .114 to .845. There were also no significant differences in referral source (four groups: government services; education and nongovernmental social service organizations; other professionals; self-referred), $\chi^2(3) =$

3.4, $p = .33$, child age, $t(1,137) = 1.90$, $p = .51$, or child gender, $\chi^2(1) = 1.81$, $p = .18$. One group difference was found: caregivers who completed PCIT were slightly older ($M = 35.7$ years, $SD = 5.7$ years) compared to those parents who did not complete ($M = 32.0$ years, $SD = 6.5$ years), $t(1, 137) = -3.46$, $p < .01$.

For the primary analyses, we tested whether there were significant improvements in all measures from pre- to post-PCIT, on average, using paired t -tests. Regression analyses were then used to examine whether parental improvements from pre-PCIT to post-PCIT were associated with children's improvement in externalizing and internalizing symptoms. In these models, we alternately used difference scores and residuals, and provide more details on these analyses below. For all regression analyses, pooled results (across the 20 imputed datasets) are reported. Correlations between difference (i.e., improvement) scores from pre- to post-PCIT for all measures are also reported.

Results

IMPROVEMENT IN FUNCTIONING FROM PRE- TO POSTASSESSMENT

As shown in Table 1, parents showed significant improvement in 5 of the 8 measures, on average,

Table 1
Means, Standard Deviations, and Tests of Change From Pre- to Post-PCIT

Measure	Pre-PCIT <i>M</i> (<i>SD</i>)	Post-PCIT <i>M</i> (<i>SD</i>)	Paired <i>t</i> -test	<i>p</i> -value	Cohen's <i>d</i>
Completers (<i>N</i> = 90)					
P emotion dysregulation	2.46 (0.65)	2.30 (0.68)	3.17**	.002	.25
P ER cognitive reappraisal	4.77 (1.00)	5.26 (1.21)	-2.99**	.004	-.49
P ER suppression	3.18 (1.19)	3.10 (1.06)	0.78	.437	.07
RF: Pre-mentalizing	2.24 (0.78)	1.99 (0.79)	2.82**	.006	.32
RF: Certainty of mental states	3.69 (0.97)	3.82 (0.93)	-1.46	.149	-.13
RF: Interest & curiosity	5.65 (0.90)	5.57 (0.82)	0.86	.392	.09
P negative practices	2.18 (0.45)	1.92 (0.51)	5.68**	<.001	.58
P positive practices	3.18 (0.37)	3.41 (0.40)	-5.48**	<.001	-.62
Child externalizing behaviors ^a	35.93 (11.15)	29.35 (12.00)	6.68**	<.001	.59
Child internalizing symptoms ^a	33.84 (12.63)	28.51 (11.76)	5.37**	<.001	.42
All families (<i>N</i> = 139)					
P emotion dysregulation	2.53 (0.70)	2.36 (0.74)	3.08**	.002	.24
P ER cognitive reappraisal	4.71 (1.07)	5.13 (1.35)	-2.88**	.005	-.39
P ER suppression	3.23 (1.18)	3.14 (1.18)	0.67	.507	.08
RF: Pre-mentalizing	2.28 (0.82)	2.01 (0.87)	2.55*	.012	.29
RF: Certainty of mental states	3.63 (0.99)	3.76 (1.03)	-1.48	.140	-.13
RF: Interest & curiosity	5.63 (0.88)	5.57 (0.88)	0.67	.503	.07
P negative practices	2.16 (0.48)	1.91 (0.54)	5.74**	<.001	.52
P positive practices	3.19 (0.38)	3.39 (0.44)	-5.01**	<.001	-.52
Child externalizing behaviors ^a	35.42 (11.10)	29.04 (12.30)	6.63**	<.001	.57
Child internalizing symptoms ^a	34.53 (14.20)	29.02 (12.70)	5.59**	<.001	.39

* $p < .05$. ** $p < .01$.

Note. P = Parent self-report, ER = Emotion regulation, RF = reflective functioning.

^a Raw scores.

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whether analyses were conducted with only the 90 families who completed PCIT and postassessments or with the imputed dataset containing all 139 families with pretreatment data. Parents reported less emotion dysregulation, more use of cognitive reappraisal, less prementalizing (one negative subscale of reflective functioning), and more positive and fewer negative parenting practices post-PCIT compared to pre-PCIT. Given that there was no average difference in emotion suppression, certainty of mental states, or interest/curiosity in the child, we did not conduct further analyses with these measures. Parents also reported, on average, that their children exhibited fewer externalizing behaviors and internalizing symptoms at post-PCIT compared to pre-PCIT.

CORRELATES OF CHANGE IN CHILDREN'S EXTERNALIZING AND INTERNALIZING SYMPTOMS

To examine whether parents' improvements were associated with children's improvement in symptoms, we conducted four sets of regression analyses. We did this because there are ongoing discussions about how best to analyze change, and, when only two times of assessment are available, difference scores or residuals are often used but also debated (Malgady & Colon-Malgady, 1991). In the first set of multivariate regression models, parental difference ("improvement") scores were created by subtracting pre- and post-PCIT measures of emotion regulation, prementalizing reflective functioning, and parenting scores, so that higher scores reflected greater improvement. We then fit models regressing children's post-PCIT symptom level (either externalizing or internalizing symptoms)

on raw parental improvement scores and child pre-PCIT symptom level. Two parental improvements were significantly associated with a greater decline in children's externalizing behavior post-PCIT relative to pre-PCIT (see Table 2). More improvement in parents' cognitive reappraisal and negative parenting practices were each associated with a greater decline in children's externalizing symptoms. In the model of internalizing symptoms, no measure of parents' improvement was significant.

Because it might also be that raw symptom improvement is the most relevant outcome of interest, we conducted a second set of multivariate regression analyses by regressing the difference ("improvement") in children's symptoms on the parent improvement scores for emotion dysregulation, cognitive reappraisal, prementalizing, negative parenting, and positive parenting. In these models, the pattern of significant and nonsignificant IVs shown in Table 2 did not change. Next, in a third set of multivariate regression models, each post-PCIT symptom measure was regressed on the standardized residuals of emotion dysregulation, cognitive reappraisal, prementalizing, negative parenting and positive parenting (plus the pre-PCIT symptom score). These standardized residuals of parenting measures were saved as output from models regressing each post-test score on pretest score of the same construct. Again, the pattern of significant and nonsignificant IVs shown in Table 2 did not change, except that parents' cognitive reappraisal was only approaching significance in the model of externalizing behavior ($p = .08$).

Given that parental beliefs and behaviors were moderately correlated with each other (see Table 3

Table 2

Results of Regressing Children's T2 Externalizing and Internalizing Symptoms on Parents' Improvements in Emotion Regulation, Reflective Functioning, and Parenting ($N = 139$)

Independent Variables (IV)	DV = Externalizing behavior, Post-PCIT		DV = Internalizing symptoms, Post-PCIT	
	<i>B</i> (<i>SE B</i>)	β	<i>B</i> (<i>SE B</i>)	β
Pre-PCIT child symptoms (externalizing or internalizing)	0.74 (0.08)	.67**	0.66 (0.07)	.74**
Improvement in emotion dysregulation	-0.92 (1.83)	-.04 (-.17*)	-0.22 (1.86)	-.01 (-.10)
Improvement in cognitive reappraisal	-1.54 (0.79)	-.16* (-.20*)	-1.08 (0.69)	-.11 (-.12)
Improvement in pre-mentalizing	-0.83 (1.32)	-.06 (-.14)	-1.62 (1.18)	-.11 (-.17*)
Improvement in negative parenting	-5.28 (2.35)	-.20* (-.23*)	-3.70 (2.04)	-.13 (-.17*)
Improvement in positive parenting	-3.44 (2.35)	-.11 (-.14)	-3.51 (2.28)	-.11 (-.14 ¹)

¹ $p = .06$. * $p < .05$. ** $p < .01$.

Note. DV = Dependent variable. Externalizing $R^2 = .55$, $F(6,132) = 25.3$, $p < .001$. Internalizing $R^2 = .62$, $F(6,132) = 38.2$, $p < .001$. β values in parentheses are the results from models with the pre-treatment measure of externalizing or internalizing plus only one improvement IV entered at a time. Multivariate regression analyses were repeated using two other methods (results are not shown in the Table): First, we regressed the difference in symptoms between pre- and post-PCIT on all improvement (differences) scores; the pattern of significant and nonsignificant IVs did not change. Second, we regressed each post-PCIT symptom measure on the standardized residuals of all other measures (plus the pre-PCIT symptom score). In these models, the findings were also similar, except cognitive reappraisal was only approaching significance in the model of externalizing behavior ($p = .08$).

Please cite this article as: Melanie J. Zimmer-Gembeck, et al., Improved Perceptions of Emotion Regulation and Reflective Functioning in Parents: Two Additional Positive Outcomes of Parent-Child..., *Behavior Therapy* (2018), <https://doi.org/10.1016/j.beth.2018.07.002>

for Pearson correlations between all improvement scores), we completed one final set of regression analyses. We estimated models to examine the association of each measure of improvement in parents with changes in children's symptoms from pre- to post-PCIT, independent from the other parent measures. Results of these models are shown in parentheses in Table 2. Greater improvement in parents' emotion dysregulation, cognitive reappraisal, and negative parenting practices was associated with a greater relative decline in children's externalizing behaviors. More improvement in parents' prementalizing and negative parenting practices was associated with a greater relative decline in children's internalizing symptoms.

Discussion

In this cohort study of the parental outcomes of PCIT, we found improvements in parents' perception of their emotion regulation from pre- to post-PCIT, with an average decline in emotion dysregulation and an average increase in the capacity to engage in cognitive reappraisal to regulate emotions. On average, parents also reported improvement (i.e., decline) in prementalizing, which is one of three subscales of reflective functioning (also called "mentalizing"; Luyten et al., 2017) that was assessed. Prementalizing has been described by the authors of the measure as capturing "a nonmentalizing stance, and malevolent attributions and an inability to enter the subjective world of the child in particular" (Luyten et al., 2017, p. 8). In addition, consistent with past studies of PCIT (for a review, see Thomas et al., 2017), children's behaviors and symptoms improved significantly and parents reported that they had more positive parenting skills and engaged in fewer negative parenting practices when they were assessed post-PCIT

relative to pre-PCIT. Finally, multiple regression results revealed that more improvement in some aspects of parents' emotion regulation, reflective functioning, or parenting practices were associated with greater improvements in children's behaviors or symptoms.

PARENTAL EMOTION REGULATION, REFLECTIVE FUNCTIONING, AND PCIT

The improvement in emotion regulation reported by parents cut across assessments of general dysregulation of emotion and specific strategies of regulation. In particular, parents reported improvement in emotion-related regulatory failures, such as a lack of awareness or clarity about emotions, or feeling a general lack of access to strategies for managing emotions, as well as improvement in the capacity to use cognitive reappraisal to regulate both positive and negative emotion. Cognitive reappraisal is one important emotion regulation strategy often included in treatment programs to improve adult mental health (e.g., Goldin et al., 2013). Based on past research, PCIT can be described as a program that effectively assists parents to model and practice positive parenting interactions using reflection and praise with their children, to have more consistent and realistic expectations of children, and to minimize hostility and other coercive or chaotic practices (Cooley, Veldorale-Griffin, Petren, & Mullis, 2014; Thomas & Zimmer-Gembeck, 2011). Based on the present study findings, PCIT also seems to provide structured opportunities for parents to model and practice ways of better regulating their own emotions. This practice may yield more confidence in using adaptive emotion regulation skills, and, because the measures of emotion regulation we used were general (not parenting-specific), the findings also suggest that these emotion regulation

Table 3
Correlations Between Difference (i.e., Improvement) Scores From Pre- to Post-PCIT for All Measures ($N = 139$)

	Improvement from pre- to post-PCIT ^a :	1	2	3	4	5	6	7	8	9
1	Child externalizing symptoms	–								
2	Child internalizing symptoms	.56**	–							
3	P emotion dysregulation	.26*	.22*	–						
4	P ER cognitive reappraisal	.24*	.12*	.20	–					
5	P ER suppression	.15	.07	.26*	-.01	–				
6	RF: Pre-mentalizing	.14	.28**	.17	-.05	.23*	–			
7	RF: Certainty of mental states	.08	-.06	.11	.02	.01	-.12	–		
8	RF: Interest & curiosity	.09	.05	.20*	.36**	.15	.32*	-.04	–	
9	Negative parenting practices	.30**	.29*	.27*	.08	.14	.30**	.23*	.18	–
10	Positive parenting practices	.19	.09	.23	.08	.01	.19	.09	.20	-.06

* $p < .05$. ** $p < .01$.

Note. P = Parent. ER = Emotion Regulation. RF = reflective functioning.

^a Difference (i.e., Improvement) scores were created to reflect improvement from pre- to post-PCIT for each measure.

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skills may be used when parenting, but could also be impacting other areas of parents' lives, helping to explain why parents may report less stress following PCIT both within and outside the parenting domain (Thomas et al., 2017).

Parents' self-reported reflective functioning, specifically one subscale referred to as prementalizing, also improved from pre- to post-PCIT. Higher scores on prementalizing indicated problems understanding or limited attempts to understand the perspective and feelings of children. Thus, improvement was indicated by a decreased prementalizing score, and parents in PCIT did report improvements in their attempts to consider their children's perspectives and emotions. Such reflection is modeled and encouraged during PCIT coaching sessions, whereby it is used as a way to engage parents in positive interactions, and to help them interpret interactions and respond appropriately (e.g., with praise, rather than hostility or ignoring). For example, therapists will often draw parents' attention to a child's behaviors and how behaviors reflect how the child feels and thinks, which may not be consistent with what a parent interprets as the underlying cause of a behavior. Using this as a strategy in PCIT may help parents more frequently take into consideration their children's perspectives, and it may be this ability to model reflection via coaching that accounts for the improvements we found here. In addition, parents' direct in-session experience of the positive impact of effective parenting behaviors on children's emotions and behavior may also prompt reflection upon their children's inner world.

Two other aspects of reflective functioning did not show significant improvement, including certainty of the mental states of the child, and interest and curiosity in the mental states of the child. One possible reason for the lack of a significant improvement in certainty about mental states could be the lack of clarity about whether this subcomponent of reflective functioning is clearly a positive or a negative feature of parenting beliefs. For example, although the pattern of correlations of certainty of mental states with other parenting measures suggested that it should be a positive indicator of reflective ability, some literature describes both low and high certainty of mental states as a potentially problematic perspective (Luyten et al., 2017).

Regarding interest and curiosity in the child as an aspect of reflective functioning, the pattern of correlations did show that it may be a positive aspect of parents' reflective capacity and parenting, as it was correlated with fewer negative and more positive parenting practices. Nevertheless, the level

of interest and curiosity reported by parents prior to PCIT was quite high, on average, which suggests that most parents would be likely to report they have high interest and curiosity in their child before and after involvement in a parenting program, making it more challenging to find any improvement in this aspect of reflective functioning.

CORRELATES OF IMPROVEMENTS IN CHILDREN'S BEHAVIORS AND SYMPTOMS

Although correlational and rather small in strength, our multivariate findings suggest that parental improvement in self-reported emotion regulation may uniquely account for improvement in children's externalizing behaviors from pre- to post-PCIT. Further, although only found when we examined one parental improvement at a time, a larger improvement in parents' prementalizing was associated with a greater decline in children's internalizing symptoms from pre- to post-PCIT. Such findings support theory and basic research (Bariola et al., 2011; Crespo et al., 2017; Fonagy et al., 2002; Silk, Shaw, Skuban, Oland, & Kovacs, 2006; Zimmer-Gembeck & Skinner, 2016) that has identified that parents' capacity for emotion regulation exhibited by their ability to adaptively cope with their own distress, as well as their ability to understand their children's behavior related to mental states and intentions, are directly relevant to children's displays of symptoms.

It is important to note that the association between parents' emotion regulation improvement and parents' reports of improvements in children's externalizing behavior was unique from the associations of improvement in parenting practices and children's symptoms. In other words, our multivariate models simultaneously considered whether improvement in parenting practices was implicated in children's improved behavior and symptoms. In these models, we did find that a decrease in negative parenting practices, including less rejection, coercion, and chaos in the home, uniquely accounted for children's reduction in externalizing behavior post-PCIT relative to pre-PCIT. Thus, parents' self-reported emotion regulation and negative parenting practices were each uniquely associated with their reports of their children's improvement in externalizing behavior.

LIMITATIONS AND FUTURE RESEARCH

Consistent with most research, there were limitations of this study to consider. First, we found improvements on only one subscale of reflective functioning and this subscale had a reliability below .70. In addition, it was difficult to locate a measure of reflective functioning that has widespread use

and the measure used here is relatively new to the literature. The concept is quite useful for understanding parenting and the outcomes of parenting programs, so additional work seems needed to develop a more reliable assessment of reflective functioning. Second, this study was limited in the conclusions that can be drawn about the effect of PCIT, given that there was no control or comparison group, and the use of a time-limited (12-week) program of PCIT. Thus, the study has internal and external validity limitations, such as the possibility that improvements from pre- to post-PCIT are due to time or maturation, history, or other extraneous variables rather than a direct result of PCIT itself or that changes are due to testing because of completing the same measures twice. However, we did find improvements in parenting and children's behaviors and symptoms comparable to past randomized controlled trials of both standard forms of PCIT and modified forms (see Thomas et al., 2017, for a review and meta-analyses). Further, parental self-report measures were used in this study for all measures. Because of this shared method variance, it is likely that the size of the associations that were found here are inflated. It would be very useful to include observation of parents' emotion regulation and parenting or children's behavior in future research on the outcomes of PCIT. Finally, we conducted a number of tests because of the number of outcomes measures of interest. This could have resulted in Type I error.

CONCLUSIONS

In summary, PCIT was associated with improvements in parents' personal capacity to manage their own emotions and to reflect on their children's behaviors, among a group of parents where the average child had a clinical level of externalizing behavior problems. It was also found that improvements in emotion regulation and reductions in negative parenting practices, including rejecting, coercive, and chaotic parenting practices, were associated with great improvements in children's behavior. The findings extend the existing evidence (Thomas & Zimmer-Gembeck, 2011; Thomas et al., 2017; Timmer, Ware, Urquiza, & Zebell, 2010) for PCIT as an effective parenting intervention, and adds parents' own emotion regulation and reflective functioning to the list of the range of positive outcomes from PCIT. In addition, the findings also suggest that improved emotion regulation and reflective functioning of parents, unique from changes in parenting practices, are mechanisms that help to explain why PCIT has been consistently associated with improvements in children's behavioral and emotional problems, for children with a

range of histories and diagnoses. Future research is needed to extend this cohort study to include additional measures of emotion regulation, assess reflective functioning using other methods or measures, and include a comparison group.

Conflict of Interest Statement

The authors declare that there are no conflicts of interest.

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RECEIVED: January 18, 2018

ACCEPTED: July 7, 2018

AVAILABLE ONLINE: XXXX