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Emotion Regulation and Attrition in Parent-Child Interaction Therapy

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ABSTRACT

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As evidence of the importance of emotion regulation (ER) continues to mount, little is known about how families dealing with child behavior problems can better develop this important ability. This study explored the relations among a caregiver training program for children with severe problem behaviors (i.e., Parent-Child Interaction Therapy; PCIT), child ER, caregiver ER, parenting stress, and attrition. This study was part of a larger investigation evaluating the impact of incentives on treatment outcomes. Measures of caregiver and child ER, child behavior problems, and parenting stress were completed by caregivers referred for PCIT from a predominantly low-income community sample of 66 caregiver-child dyads. Caregiver-child interactions were coded for caregiver verbalizations during three play situations. ANCOVA, t-test, and logistic regression analyses were conducted to examine changes in ER across treatment and compare those who completed treatment with those who dropped out of treatment early. Results suggested that caregiver ER and child ER lability/negativity improved significantly across both phases of PCIT. Child adaptive ER improved significantly from pre- to post-treatment and during the PDI phase of treatment for those children in the non-incentives group only. Baseline levels of child and caregiver ER were not significant predictors of attrition; however, two models composed of baseline (e.g., caregiver-child interactions) and demographic variables significantly predicted attrition. The findings are discussed with respect to the importance of both caregiver and child ER in the provision of PCIT and other behavioral parent training programs.

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Emotional and behavioral problems among American youth are quite common, with at least 14 million suffering significant impairment (Kazdin, 2003). Childhood disruptive behaviors are the most common reasons for referrals to mental health services (Kazdin, 2003), and studies continue to show that difficulties with emotion regulation (ER) significantly predict these externalizing problems (Campbell, Shaw, & Gilliom, 2000; Caspi, Henry, McGee, Moffitt, & Silva, 1995; Gilliom, Shaw, Beck, Schonberg, & Lukon, 2002). In turn, ER difficulties are associated with a wide range of negative outcomes over the life course (Aldao, 2016; Trentacosta & Shaw, 2009).

Emotion Regulation

ER is a complex construct demonstrating little consensus in definition and conceptualization across the literature (Gratz & Roemer, 2004). James Gross, a pioneer in the contemporary study of emotion, defines emotion regulation as "all of the conscious and nonconscious strategies we use to increase, maintain, or decrease one or more components of an emotional response" (2001, p. 215). Gross conceptualizes a process model of ER in which emotional responses to stimuli unfold in a particular order: (1) Situation, (2) Attention, (3) Appraisal, and (4) Response (1998a). Because this model operates on a dynamic feedback loop, one can modulate resulting emotion through antecedent-focused strategies (situation selection, situation modification, attention deployment, and cognitive change) and a response-focused strategy (response modulation; Gross, 1998a; Gross, 1998b). Studies show that antecedent-focused strategies are typically more effective than response-focused strategies because they are implemented before or during emotional activation instead of after the emotional response is fully formed (Appleton, Loucks, Buka, & Kubzansky, 2014; Gross, 1998a; Richards & Gross, 2000).

Gratz and Roemer (2004) define emotion regulation as the combined abilities to be aware of, understand, and accept one's emotions, to control impulsivity and behave in a goal-consistent manner while in an aversive emotional state, and to use emotion regulation strategies allowing for

situationally appropriate and goal-consistent behavior. This conceptualization focuses mainly on ER during negative emotions which are of particular interest in working with behavior disorders and externalizing problems. While Gross's Process Model attempts to explain the stages in which emotions may be regulated, Gratz and Roemer's conceptualization evaluates the individual's ability to understand negative affect and manage behavior concurrently.

In contrast, Shields and Cicchetti (1997) view ER dichotomously, highlighting the importance of pathological and nonpathological regulation. This orientation recognizes ER in relation to both adaptive regulatory abilities and as a function of emotional lability and negativity. Shields and Cicchetti's conceptualization of ER emphasizes the development of children's abilities to manage the integration of internal experience and external expression.

ER is thought to develop on a continuum of increasing autonomy from heavy reliance on caregivers for soothing in infancy to the ability to apply intentional, internal ER strategies later in life (Kopp, 1989). Prefrontal cortex development throughout childhood and adolescence is associated with linear increases in ER capabilities (Casey, Getz, Galvan, 2008; Diamond, 2002). Younger children rely more heavily on reinforcement from the social environment to improve emotional competence, but over time increasing cognitive development and accumulating knowledge from social experiences informs emotional navigation of developmental milestones (Saarni, 2011).

Adaptive ER skills like acceptance and reappraisal allow emotions to facilitate appropriate responses to the environment (Aldao, 2013; Aldao, Nolen-Hoeksema, & Schweizer, 2010). ER is arguably the most influential component of emotional intelligence on social interaction because of its direct effects on emotional expression and behavior (Lopes, Salovey, Beers, & Cote, 2005). Increasingly, the ER literature suggests that ER has a direct, positive relationship with social functioning (Eisenberg, Fabes, Guthrie, & Reiser, 2000; Lopes et al., 2005), sympathy/empathy (Eisenberg, 2000), academic performance (Gumora & Arsenio, 2002; Hill & Craft, 2003) and positive well-being outcomes (e.g., affect, mood, life satisfaction; Haga, Kraft, & Corby, 2009). ER has also been found to buffer against the development of behavior problems (Cole, Michel, &

Teti, 1994). Consequently, ER is a frequent target of intervention programs for children and adolescents (Gilpin, Brown, & Pierucci, 2015; Houck et al., 2016; Keiley, Zaremba-Morgan, Datubo-Brown, Pyle, & Cox, 2015; Thomson, Riosa, & Weiss, 2015).

A growing body of research supports the idea that the development of psychopathology can be better understood through the study of ER (Bloch, Moran, & Kring, 2010). ER is viewed as a transdiagnostic pathological process of interest across a variety of disorders and dysfunctions (Aldao, 2016; Hofmann, Sawyer, Fang, & Asnaani, 2012). The connection between poor ER and many psychological disorders may be explained through the process of inflexible responses to the environment (Kashdan & Rottenberg, 2010). Maladaptive strategies of ER include rumination, avoidance, and suppression (Aldao et al., 2010). Problems with ER have been linked with a range of difficulties, for example, behavior problems (Gilliom et al., 2002; Trentacosta & Shaw, 2009), autism spectrum disorders (Thomson et al., 2015), personal distress (Eisenberg, 2000), disordered eating, self-harm, and substance misuse (Buckholdt et al., 2015).

Because ER is such a strong developmental predictor of positive and negative outcomes, it greatly impacts the well-being of children and their caregivers. Much research has been conducted on ER within the family context, and many studies have concluded that child and caregiver ER are highly intertwined through a complex web of correlates (Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997; Eisenberg, Cumberland, & Spinrad, 1998; Ramsden & Hubbard, 2002). In the "Tripartite Model of the Impact of the Family on Children's Emotion Regulation and Adjustment," Morris and colleagues postulate that family emotional climate, parenting practices, and modeling relate bidirectionally to the socialization of child ER (Morris, Silk, Steinberg, Myers, & Robinson, 2007, p. 364). In addition, researchers have concluded that parents influence child ER through responses to and discussion of child emotions and through their own emotional expression (Eisenberg et al., 1998). Moreover, Parke (1994) surmised that children model their parents' ER strategies, noting deficits in children of depressed mothers as compared with children of mothers who were never depressed. Although there is am-

ple evidence supporting the link between caregiver and child ER, it is still unclear, however, exactly *how* caregiver ER and child ER are co-regulated (Are & Shaffer, 2016; Carrere & Bowie, 2012; Cole, Teti, & Zahn-Waxler, 2003).

The connection between caregiver and child ER is likely a key component of child behavior problems. Several studies have specifically examined co-occurring symptoms of child and caregiver emotion dysregulation in connection with behavior disorders. For example, child ER difficulties predicted such negative outcomes as comorbid conduct disorders and depression among preschoolers with ADHD when mothers had ER deficits (Chronis-Tuscano et al., 2016). As theorized by Emde, Biringen, Clyman, and Oppenheim (1991), children internalize their caregivers' emotion-related messages to better understand and regulate their own emotions and behaviors. Furthermore, parents' expressiveness with negative emotions is highly correlated with children's disruptive behavior and ER problems (Duncombe, Havighurst, Holland, & Frankling, 2012).

Parenting Stress

In addition to its relationship with problem behaviors, ER has also been clearly linked with parenting stress in the childhood disruptive behavior literature (Duncombe et al., 2016; Graziano, McNamara, Geffken, & Reid, 2011). Abidin (1992) conceptualizes parenting stress as part of a complex model in which parenting stressors (e.g., daily hassles, child characteristics) influence parents' working models of themselves in the parenting role. This self-assessment predicts level of parenting stress and motivates parents to seek resources (e.g., social support). Abidin concludes that these factors, along with the availability of resources, ultimately determine parenting behavior (1992). Webster-Stratton (1990) also asserts that the way a parent "appraises" stressors impacts parenting behavior (p. 303). Parenting stress is defined differently throughout the literature; but for the purposes of this study, parenting stress will be defined as the level of distress experienced as a result of a parent's experience of parenting demands compared with available resources.

Recently, researchers have pointed to the need for additional studies of parenting stress to inform many aspects of the treatment of child behavioral problems (Bode, et al., 2016; Theise, 2014). Research has provided evidence for a strong link between child behavior problems and parenting stress (Crnic & Low, 2002; Deater-Deckard, 1998). Previous studies have also shown a connection between parenting stress and both children's and parents' ER abilities (Deater-Deckard, Li, & Bell, 2016; Graziano et al., 2011; Mathis & Bierman, 2015). In one study, Bai and Han (2016) found that the ER abilities of a parent who was abused in childhood mediated his or her level of parenting stress as well as his or her partner's level of parenting stress.

A wide range of relevant parenting stress correlates have been substantiated in the literature, including child aggression (Krahé, Bondü, Höse, & Esser, 2015), "feelings of incompetence and social isolation" (Butcher, Wind, & Bouma, 2008, p. 530), poor psychosocial well-being (Majnemer, Shevell, Rosenbaum, Law, & Poulin, 2007), and parenting style (Crnic, Gaze, & Hoffman, 2005).

Parent-Child Interaction Therapy

Parent-Child Interaction Therapy (PCIT) is one intervention associated with reductions in parenting stress (Leung, Tsang, Heung, & Yiu, 2009; Leung, Tsang, Sin, & Choi, 2015; Lyon & Budd, 2010; Thomas & Zimmer-Gembeck, 2007). PCIT (Eyberg & Robinson, 1983) is a manualized caregiver-training approach aimed at building strong parent-child relationships, increasing child compliance, and decreasing disruptive behavior problems. PCIT has tremendous empirical support for its efficacy across a variety of diagnoses and cultures (Capous, Wallace, McNeil, & Cargo, 2016; Luby, Stalets, Blankenship, Pautsch, & McGrath, 2008; Puliafico, Comer, Pincus, 2012; Wagner & McNeil, 2008). In PCIT, caregivers and children participate in therapy sessions together, focused first on strengthening their relationships during the Child-Directed Interaction (CDI) phase and later on practicing discipline strategies during the Parent-Directed Interaction (PDI) phase. Clinicians observe caregiver-child interactions using a two-way mirror and audio equipment. In addition, caregivers wear a bug-in-the-ear, so therapists may coach them remotely through a microphone.

During the CDI phase of PCIT, therapists train caregivers in play therapy techniques which are then implemented in session and during assigned, at-home practice sessions. Two of the main play therapy techniques caregivers learn are to 1) emphasize PRIDE skills (praise, reflect, imitate, describe, enjoy), and 2) avoid commands, criticisms, and questions. During therapy sessions, caregiver-child interactions are observed, coded for progress, and coached. Caregivers are also assigned "homework" in which they practice these CDI skills with the identified child for a five-minute session each day at home. Caregivers are deemed to have mastered the CDI skills when they are able to give 10 behavior descriptions, 10 reflections, and 10 labeled praises while using a total of less than 4 questions, criticisms, and commands during a 5-minute interval. The CDI portion of treatment typically takes about five to six weeks depending on the family's adherence to treatment (Eyberg & Funderburk, 2011).

Following CDI mastery, treatment continues with the PDI phase. PDI begins with a "teach session" where caregivers learn how to give effective commands and how to consistently respond to the child's compliance or noncompliance to these commands. This consistent responding adheres to a detailed set of guidelines tailored to specific child response contingencies. Caregiver response techniques include use of praises, warnings, a time-out chair, and a back-up room. After caregivers are taught this unique discipline structure, they are again coached through the bug-in-the-ear system until they demonstrate disciplinary skills to the level of mastery. Mastery is reached when, during a 5-minute coding period, a caregiver gives at least 4 commands of which at least 75% are deemed "effective," and the caregiver displays correct follow-through on at least 75% of effective commands (e.g., for defiance of a time-out warning; McNeil & Hembree-Kigin, 2010). In addition to their daily CDI homework, caregivers are assigned PDI homework during this phase. Mastery of the PDI phase of treatment is commonly achieved in about seven to eight weekly sessions (McNeil & Hembree-Kigin, 2010). PCIT also includes the application of techniques to in-home and public behavior contingencies. Treatment success requires that child behavior problems improve to within normal limits on the Eyberg Child Behavior Inventory (ECBI; Eyberg & Pincus, 1999).

There are several components of PCIT which contribute to its effectiveness from a theoretical framework. PCIT integrates behavioral theory (Skinner, 1965), authoritative parenting principles (Baumrind, 1965), social learning theory (Bandura, 1976), and attachment theory (Ainsworth, 1963; Bowlby, 1958). The CDI and PDI phases of PCIT are based on the Hanf two-stage model of parent training (Hanf, 1969; Reitman & McMahon, 2013). Caregivers learn to reinforce appropriate behavior and ignore or punish disruptive behavior. Therapists teach and coach caregivers to increase warm, nurturing parenting practices, decrease negative, punitive practices, and employ clear, reasonable discipline strategies. PCIT also promotes improved attachment security through responsive caregiving (Allen, Timmer, & Urquiza, 2014). Caregivers learn to model appropriate social behaviors and ER strategies especially by remaining calm when dealing with child behavior problems. In turn, the PCIT protocol for therapists includes applications of these theories to the therapist-caregiver and therapist-child relationship.

PCIT emphasizes the idea of "overpractice" of PRIDE skills during CDI and of consistent disciplinary follow-through in PDI (McNeil & Hembree-Kigin, 2010, p. 125). The concept of overpractice holds that caregivers who learn to employ skills at higher rates than would typically be necessary in everyday situations are better equipped to use them consistently in the real world. The idea of overpractice is incorporated into the unique, data-driven mastery requirements for progressing through PCIT (Masse, McNeil, Wagner, & Chorney, 2007). Finally, the efficacy of PCIT for children ages two through seven capitalizes on the powerful influence of caregivers on their children in this age range.

PCIT and Emotion Regulation

Only a few PCIT researchers have examined correlates of ER in connection with this therapy. One research group at Florida International University studied respiratory sinus arrhythmia (RSA) in children born premature as a measure of cardiac vagal tone which is used as an indicator of ER capacity in children. Results in this research area have not only suggested that PCIT outcomes are associated with improvements in child RSA (i.e., ER) but that premature children with

the greatest deficits in baseline RSA show the largest decreases in behavior problems with exposure to PCIT (Bagner et al., 2012; Graziano et al., 2012; Rodríguez, Bagner, & Graziano, 2014).

Researchers at Washington University School of Medicine created an emotional development (ED) module which was incorporated into the standard PCIT format to produce PCIT-ED (Lenze, Pautsch, & Luby, 2011; Luby et al., 2008). PCIT-ED limits the traditional phases of CDI and PDI to four sessions each, followed by six sessions of the novel ED phase. During the ED phase, caregivers are taught and coached to recognize emotions in themselves and others, model ER strategies, and reinforce ER related components from CDI and PDI phases of treatment (Lenze, Pautsch, & Luby, 2011). This adaptation of PCIT has demonstrated effectiveness in improving ER for preschoolers with depression and bipolar disorder, but outcomes of PCIT-ED have not been compared with ER outcomes from standard PCIT (Lenze et al., 2011; Luby, Lenze, & Tillman, 2012). Chronis-Tuscano and colleagues (2016) further adapted the PCIT-ED program, establishing PCIT with Parent Emotion Coaching (PCIT-ECo) for preschoolers with ADHD. PCIT-ECo begins with CDI and PDI phases of treatment where caregivers are coached to standard PCIT mastery criteria, followed by eight sessions of a modified ED phase. Topics of the ED phase in PCIT-ECo include self-monitoring and self-regulation of caregiver emotions, teaching the child emotion identification and relaxation strategies, emotion coaching of the child by the caregiver (e.g., identifying emotions and triggers, tolerating emotion, encouraging use of ER strategies), and coaching during a task designed to elicit emotions like frustration or disappointment in the child (Chronis-Tuscano et al., 2016). PCIT-ECo has indicated ER improvements in a small sample (n = 9) of preschoolers with ADHD, but like PCIT-ED, has not been compared with ER outcomes from traditional PCIT (Chronis-Tuscano et al., 2016).

Finally, several other researchers have adapted PCIT to better address the ER-related components of specific anxiety disorders (e.g., The Coaching Approach behavior and Leading by Modeling Program; Comer et al., 2012; PCIT for Separation Anxiety Disorder; Pincus, Santucci, Ehrenreich, & Eyberg, 2008). However, more evidence is needed to understand how traditional

PCIT in a community sample impacts ER abilities in children. Additional research is also needed to determine how PCIT impacts caregiver ER.

Attrition in PCIT

Although PCIT is highly effective at producing clinically significant changes in problem behaviors (Eyberg et al., 2001), these therapeutic effects are severely limited by attrition. Overall, attrition for families receiving parent-training at community mental health centers has been estimated to be as high as 75% (Lavigne et al., 2010, Lyon & Budd, 2010). Attrition rates in the PCIT literature range from 10% in a small, highly controlled laboratory setting (Matos, Torres, Santiago, Jurado, & Rodríguez, 2006) to 69% in a large, community-based investigation (Lanier et al., 2011; as cited in Chen & Fortson, 2015, p. 29).

Researchers have examined a number of factors contributing to the likelihood of attrition in PCIT and other child behavior therapies. Attrition is more likely in families with single-parent status (Bagner, 2013; Kazdin & Mazurick, 1994), higher levels of parental stress (Kazdin et al., 1993; Werba, Eyberg, Boggs, & Algina., 2006), lower maternal intelligence (Fernandez & Eyberg, 2009), lower socioeconomic status (Dumas & Wahler, 1983; Kazdin & Mazurick, 1994), and more parental depression symptoms (Fernandez & Eyberg, 2009; Webster-Stratton & Hammond, 1990), to name a few. In addition, the odds of attrition in child behavior treatment programs, including PCIT, increase when children have severe or comorbid behavior problems (Kazdin et al., 1993; Webster-Stratton, 1996). Attrition rates are also higher for families with younger children and with children who have developmental delays (Bagner, 2013). These variables lend conceptual support to the theory of parenting stress, in which parenting demands outweigh parenting resources. If these burdens overwhelm family resources, it may follow that both parenting stress and likelihood of attrition will increase. The current literature search, however, revealed no studies of behavioral parent training specifically examining attrition and its relation to child or caregiver ER. It is important to understand which variables predict attrition from treatment to inform best clinical practices for retaining members of these most vulnerable populations.

Purpose

It is clear that PCIT is an effective treatment for reducing child behavior problems and parenting stress (Borrego, Klinkebiel, & Gibson, 2014; Chase & Eyberg, 2008; Leung et al., 2015; Niec, Barnett, Prewett, & Shanley Chatham, 2016), but few studies have examined the associations between PCIT and changes in ER (Bagner et al., 2012; Graziano et al., 2012; Rodríguez, Barner, & Graziano, 2014). The purpose of this study was to better understand the mechanism of ER in relation to PCIT because of its potential implications for improving mental and behavioral health outcomes. One goal was to determine whether children and/or their caregivers exposed to PCIT experienced changes in their ER abilities, and if so, how ER differed at three time points in treatment. Following the transdiagnostic approach to psychopathology, and given that PCIT is an empirically-supported treatment for several diagnoses associated with ER difficulties—oppositional defiant disorder, conduct disorder, and attention-deficit/hyperactivity disorder (ADHD; Eyberg et al., 2001; McNeil & Hembree-Kigin, 2010; Matos et al., 2006)—it was expected that PCIT would likely be linked with improved ER in children. It was also anticipated that PCIT treatment would be associated with improvements in caregiver ER due to the synchronistic and bidirectional nature of child-caregiver ER (Eisenberg et al., 1998; Feldman, 2001). It was theorized that increases in warmth during caregiver-child interactions during the CDI phase of treatment as well as the self-regulation required of both caregiver and child during the PDI phase of treatment may each uniquely predict changes in ER at these time points. Evidence provided by PCIT studies demonstrating decreases in parental stress (Scudder, McNeil, Chengappa, & Costello, 2014) and reduction of child maltreatment recidivism rates (Chaffin, Funderburk, Bard, Valle, & Gurwitch, 2011) also lent conceptual support to these hypotheses. The limited existing research in this area suggests that PCIT may be associated with ER change, but more evidence is needed (Bagner et al., 2012; Chronis-Tuscano et al., 2016). This study provides important effectiveness information on clinical treatment for improving caregiver and child ER skills.

Another goal of this investigation was to better understand the relations among caregiver ER, child ER, and attrition. Because consumers of child behavioral and mental health services are likely to suffer from emotion-related problems (Cole et al., 1994; Kazdin, 2003), discerning the role of ER in attrition may inform improved future implementation of PCIT. It is proposed that ER difficulties may act as an additional stressor, impeding treatment adherence as do maternal depression and distress (Werba et al., 2006).

A final goal of this research was to predict attrition from baseline measures of caregiver emotion regulation, child emotion regulation, and a variety of other variables shown to be correlated with attrition in the literature. Specifically, we wanted to know how differing levels of caregiver stress, child behavior problems, caregiver-child interaction difficulties, family income, and child age interact to predict attrition. Our choices of predictor variables were made with previous attrition studies and limitations of this existing dataset in mind. As previous research demonstrates, families with higher levels of child conduct problems and various indications of life stress are at increased risk of premature termination from treatment (Lyon & Budd, 2010; Kazdin & Mazurick, 1994). It is important to better understand predictors of attrition specific to populations likely to attend parent-training programs in general to inform future implementation science.

Hypotheses

1. It was hypothesized that caregivers' ER scores taken at baseline would improve significantly after exposure to PCIT. More specifically, caregivers' ER problems were expected to improve significantly between baseline and CDI mastery and again between CDI and PDI mastery.
2. It was hypothesized that children's ER would improve significantly with PCIT treatment. More specifically, child ER scores were expected to improve significantly between baseline and CDI mastery and again between CDI and PDI mastery.
3. It was expected that participants who completed PCIT would report significantly lower levels of baseline caregiver ER difficulties than those participants who did not complete PCIT.
4. It was expected that participants who completed PCIT would report significantly higher levels of baseline ER for children than those participants who did not complete PCIT.

Exploratory Question

How do baseline measures of caregiver, child, interaction difficulties, and demographic characteristics predict who will complete PCIT and who will drop-out of treatment prematurely? The goal was to better understand the nature of the relations among these predictors and attrition by evaluating the following variables: caregiver stress, caregiver and child ER, child behavior problems, caregiver-child interaction difficulties, annual income, child gender, and child age.

Method

Participants

Sixty-six caregiver-child dyads were recruited from Riverside University Health System - Behavioral Health (RUHS-BH); Preschool 0-5 Programs including both the Mobile Prevention and Early Intervention (MPEI) Services and Set-4-School Programs for Preschoolers (ages 0-5) in Riverside, California. All data were collected at (RUHS-BH) facilities in Riverside, California, while data were analyzed and stored in Dr. Cheryl B. McNeil's PCIT lab at West Virginia University. Families interested in receiving family therapy were recruited to participate in the research study during their initial contact at the Riverside facilities.

To be eligible for this study, dyads must have included a child, ages 2 through 8, and his or her primary caregiver who was a legal custodian, age 18 or older. Families consenting to study procedures were enrolled. Those who refused to participate in the study still received services as usual. Families were allowed to discontinue participation in the study at any time and continued to receive services with no penalty. For complete descriptive statistics for this sample, see Table 1.

Clinicians

Nine of the 25 PCIT-trained therapists employed in the (RUHS-BH): MPEI and Set-4-School Programs participated in this research. One of these therapists, a certified master trainer in PCIT, served as supervisor and monitored adherence to study protocol. Therapists worked full-time in mobile therapy units and outpatient clinics, each seeing about 15 PCIT cases per week.

All clinicians were trained in-house using the PCIT Protocol (Eyberg & Funderburk, 2011) by Emma Girard, PsyD, PCIT International Master Trainer and University of California Davis Trainer of Trainers. All clinicians demonstrated ≥ 80% live DPICS coding inter-rater reliability with a trainer on at least 10 coding sessions. Therapists were trained in protocol for this study and a concurrent study related to incentives by a WVU researcher (see procedure section for more on the incentives study). Clinicians participated in weekly supervision meetings with a PCIT master trainer supervisor and incentives study primary investigator to address questions and monitor protocol fidelity.

Measures

Demographics form. The demographics form included caregivers' self-reports of age, gender, ethnicity, annual income, and psychopathology, as well as caregiver-reports of child's gender, age, and relationship to caregiver.

Child Behavior Checklist (CBCL). The Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000; 2001) is a caregiver-report measure of maladaptive child emotional and behavioral difficulties. Parents rate their children's behavior over the past six months using a three-point Likert-type scale from 0 = "not true" to 2 = "often true." The CBCL yields scores on Internalizing, Externalizing, Total Problems, and the following DSM-IV related scales: Affective Problems, Anxiety Problems, Pervasive Developmental Problems, Attention Deficit/Hyperactivity Problems, Stress Problems, Autism Spectrum Problems, and Oppositional Defiant Problems. The CBCL also includes open-ended questions where caregivers may provide qualitative information. There are 2 forms of the CBCL, one for children ages 1 ½ - 5 years (99 items) and one for youth ages 6 - 18 years (112 items).

Results from the CBCL have demonstrated strong test-retest reliability (r = .95 - 1.0; Achenbach & Rescorla, 2001). Support for the eight factor structure (Anxious/Depressed, Withdrawn/Depressed, Somatic Complaints, Social Problems, Thought Problems, Attention Problems, Rule-Breaking Behavior, and Aggressive Behavior) of the CBCL has been found by cross-cul-

tural study in 29 societies worldwide (Ivanova et al., 2007). The CBCL has been used to distinguish between clinical and nonclinical populations (Seligman, Ollendick, Langley, & Baldacci, 2004). Further concurrent evidence is provided by its application to differentiating between children with and without psychiatric disturbance even when caregivers present with their own psychological problems (Friedlander, Weiss, & Traylor, 1986). There is evidence of strong internal consistency for the Internalizing Subscale (.90) and the Externalizing Subscale (.94; Achenbach & Rescorla, 2001). In addition, Externalizing Subscale scores correlate highly with child conduct problems and externalizing behavior disorders (Achenbach & Rescorla, 2000). The use of the CBCL's DSM-IV related scales has demonstrated strong reliability (.71 to .89; Nakamura, Ebesutani, Berstein, & Chorpita, 2009). The present study examined CBCL Internalizing, Externalizing, and Total Problem Scale raw scores.

Difficulties in Emotion Regulation Scale (DERS). The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is a 36-item, self-report measure of caregivers' emotion dysregulation. Caregivers rate statements related to the frequency of their own emotional coping strategies on a 5-point Likert-type scale from 1 = "almost never (0-10%)" to 5 = "almost always (91-100%)." The DERS yields a total score and six subscale scores of emotion dysregulation: (1) Nonacceptance of emotional responses, (2) Difficulties engaging in goal directed behavior, (3) Impulse control difficulties, (4) Lack of emotional awareness, (5) Limited access to ER strategies, and (6) Lack of emotional clarity. Total scores of emotion dysregulation from this measure may range from 36 to 180, with higher scores indicating greater difficulties with ER.

Scores from the DERS demonstrate good test-retest reliability (r = .88) and high internal consistency (α =.93; Achenbach & Rescorla, 2000; Gratz & Roemer, 2004), as well as evidence of adequate construct and predictive validity (Gratz & Roemer, 2004; Gratz & Tull, 2010). Resulting data from all subscales show adequate internal consistency (Cronbach's $\alpha > .80$). DERS subscale scores significantly correlate with the Generalized Expectancy for Negative Mood Regulation Scale scores, another widely used ER measure (r = .34 to r = .69; Gratz & Roemer, 2004).

The present study focused on the total score (SUM) and all six subscales (Nonacceptance of emotional responses, Difficulties engaging in goal directed behavior, Impulse control difficulties, Lack of emotional awareness, Limited access to ER strategies, & Lack of emotional clarity). Cronbach's αs ranged from .80 – .83 on DERS SUM scores in this sample across all three time points. The Spanish translation of the DERS was used for Spanish-speaking caregivers in this sample (Guzmán-González, Trabucco, Urzúa, Garrido, & Leiva, 2014). See Table 2 for a comparison of mean ERC scores among this and other research samples.

Dyadic Parent-Child Interaction Coding System-IV (DPICS). The Dyadic Parent-Child Interaction Coding System, Fourth Edition (DPICS; Eyberg, Chase, Fernandez, & Nelson, 2014; Eyberg, Nelson, Ginn, Bhuiyan, & Boggs, 2013) is an observational measure of parent-child social interactions. The DPICS is used to assess parenting practices and child behaviors before, during, and after treatment. A clinician observes each caregiver-child dyad using a two-way mirror and speaker system, coding three independent five-minute interactions varying in level of parental control (Child-Led Play (CLP), Parent-Led Play (PLP), & Clean-Up (CU)). During CLP, the caregiver is directed to let the child play with whatever he or she chooses and to play along with the child. In PLP, the caregiver is instructed to inform the child that it is the caregiver's turn to choose the activity and to get the child to play by the caregiver's rules. In CU, the caregiver is directed to tell the child it is time to pick up the toys and make sure the child cleans-up. In addition, dyads are coded for five-minute segments of CDI and/or PDI during most treatment sessions. In these situations, a clinician may code for child compliance, specific parenting behaviors, and verbalizations (e.g., labeled praises, reflections, behavioral descriptions, negative talk, and commands).

DPICS scores have been used to discriminate between families clinically referred for child behavior problems and families with typically developing children (Eyberg et al., 2005; Robinson & Eyberg, 1981). Inter-rater reliability using the DPICS is quite high, with mean scores of .91 for parent behaviors and .92 for child behaviors (Robinson & Eyberg, 1981). DPICS scores have also been shown to be sensitive to interventions for families of behaviorally disordered children

(Eisenstadt, et al., 1993; Eyberg & Robinson, 1983; McNeil & Hembree-Kigin, 2010). Evidence of reliability and validity for sessions has been demonstrated for coding of live and video-recorded sessions (Eyberg et al., 2005). The present study evaluated the ratio of positive parenting composite score (sum of labeled praises, reflections, and behavior descriptions during CLP) to combined positive parenting composite score and negative parenting composite score (sum of commands, questions, and negative talks during CLP) at pre-treatment only. The ratio format helped anchor the amount of positive talk in the overall amount of talk so that lower percentages were indicative of less positive and more negative talk and vice versa (Majnemer, Shevell, Rosenbaum, Law, & Poulin, 2007). Pre-treatment scores were targeted as we wanted to understand the ability of families' initial characteristics as predictors of attrition. We utilized the DPICS ratio as a predictor in our attrition regression analyses only.

Emotion Regulation Checklist (ERC). The Emotion Regulation Checklist (Shields & Cicchetti, 1997) is a 24-item caregiver-report measure which assesses the frequency of a child's positive and negative behaviors related to ER. Caregivers rate intensity, lability, flexibility, and appropriateness of the child's positive and negative emotions on a 4-point, Likert-type scale from 1 ("never") to 4 ("always"). The ERC yields scores on two subscales: Adaptive Regulation (i.e., ER) and Lability/Negativity. The Adaptive ER Subscale is comprised of items assessing positive ER skills like emotional understanding and empathy, with high scores indicative of better ER. The Lability/Negativity Subscale includes items about emotional dysregulation like angry reactivity, with high scores indicative of poorer ER.

Previous research provides evidence that ERC scores can be used to discriminate between regulated and dysregulated children as well as between well-adjusted and maltreated youth (Shields & Cicchetti, 1997; Shields, Ryan, & Cicchetti, 2001). More specifically, the use of the Adaptive ER Subscale shows good construct validity evidence in correlation with the Child Behavior Checklist (Achenbach, 1991) and high internal consistency (.89; Shields & Cicchetti, 1997). Both subscales also demonstrate high internal consistency (Cronbach's α for Lability/Negativity = .96, Adaptive ER = .83; Shields & Cicchetti, 1997). The ERC provides highly

reliable scores: Lability/Negativity Subscale (.96) and Adaptive ER Subscale (.83) and good convergent evidence using a behavioral observation rating system of children's abilities (Shields & Cicchetti, 1997).

The present study involved both the Lability/Negativity and Adaptive Regulation Subscales. Reliability analyses from this study revealed Cronbach's $\alpha = .42 – .50$ for the Adaptive Regulation Subscale and $\alpha = .62 – .71$ for the Lability/Negativity Subscale over the course of all three time points. In addition, clinicians were given definitions of more advanced vocabulary words included in the measure (e.g., modulate, exuberance) to be provided to participants upon request for clarification. The ERC was translated into Spanish for Spanish-speaking caregivers in this sample. See Table 2 for a comparison of mean ERC scores among this and other research samples.

Eyberg Child Behavior Inventory (ECBI). The Eyberg Child Behavior Inventory (ECBI; Eyberg & Pincus, 1999) is a caregiver-report measure of the frequency and problematic nature of disruptive behaviors for children ages 2 through 16. The 36-item questionnaire yields an Intensity Score (IS) and a Problem Score (PS). IS is rated by estimated frequency of each behavior on a seven-point Likert-type scale (1 = Never, 7 = Always). The PS is made up of the caregiver's response to whether each behavior is or is not problematic.

More than 20 studies provide evidence for the valid and reliable use of the ECBI both internationally and cross-culturally (Funderburk, Eyberg, Rich, & Behar, 2003; Sivan, Ridge, Gross, Richardson, & Cowell, 2008). The ECBI is commonly used in conjunction with PCIT and is sensitive to treatment effects for disruptive behaviors (Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993; Nixon, Sweeney, Erickson, & Touyz, 2004). The ECBI demonstrates acceptable test-retest reliability after ten months for IS ($r = .75$) and PS ($r = .75$; Funderburk et al., 2003). Interrater reliability between mother and father ratings of child behavior on the ECBI has been indicated for IS ($r = .69$) and PS ($r = .61$; Eisenstadt, McElreath, Eyberg, & McNeil, 1994). The ECBI shows high internal consistency for IS ($\alpha = .94$) and PS ($\alpha = .93$; Colvin, Eyberg, &

Adams, 1999). There is also concurrent evidence among the ECBI and Child Behavior Checklist's Internalizing (r = .67) and Externalizing (r = .75) Subscales (Boggs, Eyberg, & Reyonlds, 1990). The present study used data from both subscales (IS & PS) of the ECBI.

Parenting Stress Index: Short Form (PSI-SF). The Parenting Stress Index: Short Form (PSI-SF) is a 36-item caregiver-report measure which is highly correlated with the full-length, 120-item PSI (r = .94; Abidin, 1990). This well-researched, widely used measure of parenting stress is designed for caregivers of children from ages 1 month to 12 years. The PSI-SF yields a Total Stress Score (TS) and three subscores: Parental Distress (PD), Parent-Child Dysfunctional Interaction (PCDI), and Difficult Child (DC).

Results from the PSI-SF show good test-retest reliability for all scores: TS (.84), PD (.85), PCDI (.68), and DC (.78; Abidin, 1995). Results from the TS and its three subscales are highly correlated, ranging from .97 – .99 (Abidin, 2012). Internal consistencies of (α = .75) for PD, (α = .85) for PCDI, (α = .82) for DC, and (α = .91) for TS have been reported (Barroso, Hungerford, Garcia, Graziano, & Bagner, 2015). The present study employed the raw TS and raw scores from all three subscales (PD, PCDI, and DC).

Attrition. This study examined attrition in three ways. First, standards of treatment completion outlined by PCIT International were employed. Namely, a caregiver was to have completed the following requirements: (1) attained mastery of CDI skills in the session prior to graduation (i.e., used 10 of each of the 3 positive parenting skills and less than 4 total negative parenting skills while ignoring non-harmful inappropriate behaviors during the 5-minute coding interval at the start of session), (2) attained mastery of PDI skills in the session prior to graduation (i.e., used commands of which at least 75% were deemed effective, correctly followed-through after commands at least 75% of the time, and correctly completed the PDI procedure if a time-out was necessary in session), (3) reported an ECBI Intensity Scale score of 114 or below at the start of the graduation session, and (4) indicated feeling confident in successfully managing the identified child's behavior independently (Eyberg & Funderburk, 2011). All participants who met these four criteria were considered to have completed treatment, and all participants who discontinued

treatment without meeting these criteria were deemed non-completers. Second, PCIT International standards for CDI mastery alone were used as a measure of attrition differentiating between those who met CDI mastery and those who did not. Third, participants were split into three groups: those who dropped out early in treatment (before CDI mastery), those who dropped out later in treatment (after CDI mastery but before PDI mastery), and those who completed treatment (through graduation). Decisions about criteria for determining categorization were informed by examining patterns of attendance during initial data analyses.

Procedure

Clinicians in the PCIT Program asked families already referred to the MPEI and Set-4-School Preschool 0 – 5 Programs for their voluntary participation in this study. During the initial assessment for families receiving PCIT, an IRB-approved researcher described the study and obtained informed consent including the right to withdraw from the study at any time without penalty. Later, the study was described to the identified child in each participating family. Researchers explained and obtained signatures of assent from children ages seven and above. This study occurred in tandem with an investigation of the effectiveness of incentivizing PCIT treatment. The incentives study provided inexpensive tangible prizes (e.g., a clothing item) for pre-specified markers of treatment involvement and success including attendance, homework completion, and milestone attainment. Therefore, all participating families were randomly assigned to either the incentives group (receiving PCIT with incentives) or the control group (receiving PCIT with no incentives).

During the first session, caregivers completed the demographics form, ECBI, CBCL, DERS, ERC, and PSI-SF. Throughout this study, Spanish language translations of some measures (e.g., DERS, ERC), verbal translations, and therapy conducted in Spanish were available to those families who were primarily Spanish-speaking. Participants again filled out the ECBI, CBCL, DERS, ERC, and PSI-SF at mid-treatment and treatment completion. Clinicians followed the Parent-Child Interaction Therapy Protocol (Eyberg & Funderburk, 2011) for subsequent sessions including administration of the ECBI at each session, DPICS observations of the

three, five-minute situations at pre-, mid-, and post-treatment sessions, and DPICS observations for five minutes of CDI and/or PDI at each coaching session. Electronic copies of de-identified study data were sent securely for analysis and storage at West Virginia University's PCIT lab weekly. See Table 3 for a concise list of dependent measures included in the analyses.

Results

Preliminary Analyses

Data were screened for missingness with multiple measures of emotion regulation (i.e., ERC subscale scores, DERS) demonstrating 10.6% - 71.2% missing, with increasing rates of missing data as the treatment timeline progressed due to participant drop out (i.e., at mid- and post-treatment). Elevated rates of missing data at pre-treatment were also noted in ECBI scores (12.1% - 13.6% missing), DPICS scores (16.7% missing), and caregiver report of household income (13.6% missing). Little's MCAR test was not significant ($p = .747$), so data were considered to be missing completely at random. Mean scores were imputed for missing items when computing partially incomplete (≥ 1 item present) subscale and total scale scores. Expectation-maximization was used to impute completely missing DERS and ERC subscale and total scores at mid- and post-treatment. This procedure was employed to allow inclusion of all initial participants' data given our limited power and small sample size.

Data were evaluated for problems with normality, outliers (univariate, bivariate, and multivariate), multicolinearity, and homogeneity of variances and covariances. A univariate outlier was identified on DERS at post-treatment. Analyses were run with and without this participant's data, and results did not vary, so the outlier was retained to conserve power. It was noted that the DERS total score was positively skewed at mid-treatment ($Z_{skewness} = 3.59$) and skewed and kurtotic at post-treatment ($Z_{skewness} = 4.21$; $Z_{kurtosis} = 6.93$). A square-root transformation was applied, resulting in acceptable levels of skewness at mid-treatment ($Z_{skewness} = 2.12$) and skew and kurtosis at post-treatment ($Z_{skewness} = 1.88$; $Z_{kurtosis} = 3.14$). Slight potential for problems with multicolinearity (condition indices > 15) was noted among such variables as ECBI Intensity and

Problem scores, ERC subscales scores, and CBCL scores. We used an alpha level of .05 for all statistical tests.

Descriptive statistics are reported in Table 1. Overall, families in this sample attended as many or more sessions compared to typical community-based PCIT research samples (*Mo* = 9; x_{max} = 40) with 20% of families attending more than 25 sessions (Liebsack, 2016; Werba et al., 2006). Paired-samples *t*-tests were calculated to understand differences among the following treatment variables collected at pre-, mid-, and post-treatment: ECBI Intensity, ECBI Problem, CBCL Total Score, and PSI-SF Total Stress (see Table 4). It should be noted that mid- and post-treatment means for these four variables included completers only which may have inflated estimates of positive outcomes.

Power analysis. Post-hoc power analyses using *G*Power 3.1.9.2* (Faul, Erdfelder, Buchner, & Lang, 2009) showed that for our proposed ANCOVAs with power (1 - β) set at 0.80 and α = 05, a total sample size of 52 participants would be needed to detect a medium effect (*d* = .40) and 128 participants would be needed to detect a small effect (*d* = .25; Cohen, 1988).

Hypothesis 1

It was hypothesized that caregivers' DERS scores (Gratz & Roemer, 2004) taken at baseline would decrease significantly after exposure to PCIT. More specifically, DERS scores were expected to decrease significantly between baseline and CDI mastery and again between CDI and PDI mastery. A one-way repeated measures ANCOVA (with incentive status as covariate) was run to compare changes in DERS scores across baseline, CDI mastery, and PDI mastery. Mauchly's test indicated that the assumption of sphericity had been violated, x^2 (2) = 25.37, $p < .001$, therefore Greenhouse-Geisser corrected tests are reported (ε = .75). There was a significant interaction between DERS scores over time and incentive status, F (1.5, 96.1) = 3.92, p = .034, η_p^2 = .058. See Figure 1 for a graphical representation using non-transformed scores.

Separate one-way repeated measures ANOVAs were run for the incentives and non-incentives group. Again, Mauchly's test demonstrated sphericity violations for the incentives (x^2 (2) =

9.17, $p = .010$) and non-incentives groups (x^2 (2) = 16.37, $p < .001$), so Greenhouse-Geisser corrected tests are reported ($\varepsilon = .83$; $\varepsilon = .66$). Significant decreases in DERS scores were found for both the incentives, $n = 41$; F (1.7, 48) = 13.75, $p < .001$, $\eta_p^2 = .256$, and non-incentives groups, $n = 25$, F (1.3, 48) = 13.28, $p < .001$, $\eta_p^2 = .437$. Post-hoc tests (Bonferonni) revealed that there were significant decreases in DERS scores from pre- to mid-treatment (CDI mastery) and mid- to post-treatment (PDI mastery) for both groups. To compare effect sizes of ER change from this sample with those noted in other studies, Cohen's *d* calculations are included in Table 2. No clinical cutoff guidelines are available for the DERS; see Table 2 for mean score comparisons among this and other samples.

Hypothesis 2

It was hypothesized that children's ER scores (ERC; Shields & Cicchetti, 1997) would improve significantly after exposure to PCIT. Furthermore, it was expected that ERC Regulation Subscale scores would increase significantly between baseline and CDI mastery and again between CDI and PDI mastery. It was also expected that ERC Lability/Negativity Subscale scores would decrease significantly between baseline and CDI mastery and again between CDI and PDI mastery.

ERC Regulation Subscale. A one-way repeated measures ANCOVA (with incentive status as covariate) was run to compare changes in ERC Regulation Subscale scores across baseline, CDI mastery, and PDI mastery. Mauchly's test indicated that the assumption of sphericity had been violated, x^2 (2) = 26.13, $p < .001$, therefore Greenhouse-Geisser corrected tests are reported ($\varepsilon = .75$). There was a significant interaction between ERC Regulation Subscale scores and incentive status, F (1.5, 95.6) = 4.94, $p = .016$, $\eta_p^2 = .072$. See Figure 2 for a graphical representation.

Separate one-way repeated measures ANOVAs were run for the incentives ($n = 41$) and non-incentives ($n = 25$) groups. Again, Mauchly's test demonstrated sphericity violations for the incentives (x^2 (2) = 16.22, $p < .001$) and non-incentives groups (x^2 (2) = 11.60, $p = .003$), so Greenhouse-Geisser corrected tests are reported ($\varepsilon = .75$; $\varepsilon = .72$). Significant differences in ERC

Regulation scores were found only for those in the non-incentives group, F (2, 48) = 14.52, p < .001, η_p^2 = .377. Bonferonni post-hoc tests revealed significant increases in ERC Regulation scores from mid- (CDI mastery; M = 25.2, SD = 2.7) to post-treatment (PDI mastery; M = 28.0, SD = 2.3) and therefore from pre- (M = 24.7, SD = 3.3) to post-treatment (PDI mastery), but not from pre- to mid-treatment. In order to compare effect sizes from this and other research, Cohen's d are included in Table 2. Although there are no published clinical norms for the ERC, comparing mean scores from this sample with those from other studies provides context for our findings (See Table 2).

ERC Lability/Negativity Subscale. Next, a one-way repeated measures ANCOVA (with incentive status as covariate) was run to compare changes in ERC Lability/Negativity Subscale scores across baseline, CDI mastery, and PDI mastery. Mauchly's test indicated that the assumption of sphericity had been violated, x^2 (2) = 14.19, p = .001, therefore Greenhouse-Geisser corrected tests are reported (ε = .83). Significant differences were found among ERC Lability/Negativity Subscale scores across treatment, F (1.7, 106.5) = 18.92, p < .001, η_p^2 = .228. See Figure 3 for a graphical depiction. There was not a significant interaction with incentive status.

A one-way repeated measures ANOVA was run to compare ERC Lability/Negativity changes across the three time points without incentive status as a covariate (n = 66). Mauchly's test indicated that the assumption of sphericity had been violated, x^2 (2) = 13.79, p = .001, so Greenhouse-Geisser corrected tests are reported (ε = .84). ERC Lability/Negativity scores showed significant differences across treatment, F (1.7, 108.9) = 129.90, p < .001, η_p^2 = .666. Post-hoc analyses (Bonferroni) revealed that ERC Lability/Negativity Subscale scores decreased significantly from baseline (M = 39.6, SD = 6.5) to mid-treatment (CDI mastery; M = 34.1, SD = 6.1) and again from mid- to post-treatment (PDI mastery; M = 28.1, SD = 5.9). To compare effect sizes across similar studies, Cohen's d calculations are included in Table 2. See Table 2 for mean score comparisons across other research samples.

Hypothesis 3

The association between baseline ER among caregivers and attrition was examined in two ways. First, it was expected that participants who ultimately completed PCIT according to treatment graduation criteria would have reported significantly lower levels of baseline caregiver ER difficulties (DERS; Gratz & Roemer, 2004) than those participants who withdrew from PCIT prematurely. Therefore, an independent samples t-test was conducted comparing pre-treatment DERS total scores of those who successfully completed PCIT with those who dropped out prematurely. No significant differences were found between those who completed treatment (n = 24, M = 70.8, SD = 21.3) and those who dropped out early (n = 42, M = 70.8, SD = 18.5), t (64) = -0.009, p = .993. To further understand potential difference in baseline levels of specific types of ER among caregivers, independent samples t-tests were performed to compare treatment completers with those who dropped out early on all DERS subscales (Nonacceptance of emotional responses, Difficulties in engaging in goal directed behavior, Impulse control difficulties, Lack of emotional awareness, Limited access to ER strategies, and Lack of emotional clarity). No significant differences were found.

Second, baseline levels of caregiver ER were compared among three groups: (1) families who dropped out before mid-treatment (CDI mastery), (2) those who dropped out after mid-treatment but before graduation, and (3) those who completed graduation requirements (PDI mastery). It was hypothesized that those in the first group would have more ER problems than those who dropped out later (group 2) and those who graduated (group 3) and that those who dropped out later (group 2) would have more baseline ER difficulties than those who graduated from treatment (group 3). A between-subjects one-way ANOVA was analyzed comparing baseline DERS scores for families in these three groups. No significant differences were found among those who dropped out during the first phase of treatment (n = 37, M = 72.9, SD = 18.0), those who dropped out during the second phase of treatment (n = 5, M = 55, SD = 16.2), and those who graduated from treatment (n = 24, M = 70.8, SD = 21.3), F (2, 63) = 1.93, p = .154.

Hypothesis 4

Similarly, baseline child ER was examined in comparison with two measures of attrition. First, it was hypothesized that participants who completed PCIT would have reported significantly higher levels of baseline child ER and lower baseline levels of child ER problems (ERC Regulation and Lability/Negativity Subscales; Shields & Cicchetti, 1997) than did those participants who dropped out prematurely. An independent samples t-test was conducted comparing ERC Regulation Subscale scores. No significant differences were found between those who completed treatment (n = 24; M = 25.3, SD = 3.1) and those who dropped out early (n = 42, M = 24.0, SD = 3.3), t (64) = -1.556, p = .125. Another independent samples t-test was conducted comparing ERC Lability/Negativity Subscale scores. No significant differences were found between those who completed treatment (n = 24, M = 38.8, SD = 7.0) and those who dropped out early (n = 42, M = 40.1, SD = 6.2), t (64) = 0.794, p = .430.

Second, it was expected that participants who dropped out during the first phase of treatment (before CDI mastery) would have had the lowest baseline scores on the ERC Regulation Subscale, followed by those who dropped out during the second phase of treatment (before PDI mastery), followed by those who met treatment graduation criteria, who were expected to have the highest baseline scores on the ERC Regulation Subscale. Contrary to hypothesis, no significant differences were found among those who discontinued treatment during phase one (n = 37, M = 24.0, SD = 3.07), phase two (n = 5, M = 24.6, SD = 5.0), and those who graduated (n = 24, M = 25.3, SD = 3.1), F (2, 63) = 1.27, p = .287. In a similar hypothesis, children's baseline scores on the ERC Lability/Negativity Subscale were expected to be highest among families who dropped out before CDI mastery, next highest among families who dropped out between CDI and PDI mastery, and lowest for families who graduated from PCIT. Contrary to hypotheses, no significant differences were found among those who discontinued treatment during phase one (n = 37, M = 40.2, SD = 6.3), phase two (n = 5, M = 39.8, SD = 5.3), and those who graduated (n = 24, M = 38.8, SD = 7.0), F (2, 63) = 0.32, p = .729.

Exploratory Question

How do caregiver-, child-, interaction-, and demographic-level characteristics predict who will complete PCIT and who will drop-out of treatment prematurely? The goal of these analyses was to better understand the nature of the relations among these predictors and attrition. A two-stage hierarchical logistic regression model (Model 1) was analyzed to examine relations among attrition, defined as meeting graduation criteria versus earlier termination, and the following pre-treatment predictor variables: incentive status, caregiver stress (PSI-SF: TS), caregiver and child ER (DERS: SUM; ERC: Adaptive Regulation & Lability/Negativity), child behavior (CBCL: Total Problems; ECBI: IS & PS), caregiver-child interaction scores (DPICS: ratio of Positive Parenting Composite to Positive & Negative Parenting Composite total), and demographic variables (caregiver age, annual income, child gender, & child age). Theory suggested that parenting stress would account for significant variance in whether or not families completed treatment (Nock & Kazdin, 2001), but we wanted to see if demographic and emotion regulation variables would predict variance above and beyond parenting stress. Overall, 42 out of 66 families in this sample (63.6%) dropped out of treatment before graduation and 29 out of 66 families in this sample (56.1%) dropped out of treatment before CDI mastery.

Surprisingly, results showed that at step one, parenting stress did not account for significant variance in treatment completion outcome, x^2 (1) = .886, p = .347. Further analysis revealed that after adding the other baseline predictors at step two, the model was significant in predicting attrition, x^2 (13) = 29.92, p = .013. Nagelkerke's R^2 = .524, indicating a moderately strong association between predictors and classification of treatment completion status. The overall success rate of prediction was 77.2% (68.2% for graduation and 82.9% for early termination). Wald criterion demonstrated that only caregiver age (B = .13, p = .034) uniquely contributed to the variance. Odds ratios revealed that for caregivers, each additional year of age at the start of treatment was associated with being 14% more likely to successfully complete PCIT. See Table 5 for model statistics and Table 6 for correlations among variables used in the model.

A series of additional two-stage hierarchical logistic regression models were run including the same variables as before with varying substitutions including: (1) CBCL Internalizing and Externalizing Subscale scores in place of the CBCL Total score, (2) differing combinations of PSI Subscale scores of Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child for the Total score in the first block. No differences in model significance were noted, and none of these substituted subscales uniquely contributed to the variance.

Finally, a two-stage hierarchical logistic regression (Model 2) was run to predict achievement of CDI mastery versus early termination using our original predictors: incentive status, caregiver stress (PSI-SF: TS), caregiver and child ER (DERS: SUM; ERC: Adaptive Regulation & Lability/Negativity), child behavior (CBCL: Total Problems; ECBI: IS & PS), caregiver-child interaction scores (DPICS: ratio of Positive Parenting Composite to Positive & Negative Parenting Composite total), and demographic variables (caregiver age, annual income, child gender, & child age). Again, results showed that at step one, parenting stress did not account for significant variance in CDI mastery outcome, x^2 (1) = .60, p = .440. Further analysis revealed that after adding the other baseline predictors at step two, the model was significant in predicting attrition, x^2 (14) = 27.71, p = .016. Nagelkerke's R^2 = .515, indicating a moderately strong association between predictors and classification of CDI mastery status. The overall success rate of prediction was 75.4% (83.9% for no CDI mastery and 65.4% for CDI mastery). Wald criterion demonstrated that only caregiver age (B = .14, p = .049) uniquely contributed to the variance. Odds ratios revealed that for caregivers, each additional year of age at the start of treatment was associated with being 15% more likely to successfully complete PCIT. See Table 5 for more details.

Discussion

Summary of Findings

In accordance with hypotheses, this study provides evidence that children and their caregivers showed improvements in ER during and after participation in PCIT. Specifically, caregivers showed significant reductions in ER difficulties with medium to large effect sizes during both CDI and PDI phases of treatment. Children also showed decreases in ER lability and negativity

during both CDI and PDI, as expected, with very large effect sizes. Significant improvements were found in adaptive child ER from pre- to post-treatment and during the second phase of treatment (PDI) alone but not during the first phase (CDI) alone for those families not receiving incentives. Contrary to hypotheses, children in families who received incentives during treatment did not show significant improvements in adaptive child ER.

Results of analyses using ER as a predictor of attrition did not support hypotheses. No significant differences were found between baseline levels of caregiver ER for those who eventually graduated versus those who dropped out of PCIT prematurely. There were no significant differences in baseline levels of child ER when comparing those who graduated versus those who dropped out early. Examining scores for those who completed CDI mastery criteria to those who did not, there were no significant differences in baseline levels of child ER. No significant differences were found comparing baseline caregiver ER between those who completed CDI and those who dropped out before CDI mastery. When categorizing families into three groups according when they left treatment (during CDI, during PDI, and after graduation), there were no significant differences among groups on baseline levels of child or caregiver ER.

Finally, our exploratory models using baseline measures of ER, parenting stress, child behavior problems, caregiver-child interaction, and demographic variables to predict attrition received mixed support. Unexpectedly, parenting stress did not independently predict significant differences in attrition. Combinations of these predictors significantly predicted the likelihood that families would graduate from treatment versus drop out prematurely (Model 1) and the likelihood that families would meet CDI mastery criteria (complete phase 1) versus drop out prematurely (Model 2), but only caregiver age uniquely contributed to these models.

Caregiver ER Changes and PCIT

Overall, caregivers showed improvement in ER across treatment with medium to large effect sizes from pre- to post-treatment. In addition, an unexpected interaction was found between incentive status group and adult ER. It appears that caregivers who did not receive incentives experienced slightly larger, more rapid improvements in ER than those receiving incentives. This is

likely a spurious interaction. Incentives group membership was included as a covariate in the model to control for the possible impact of some families receiving small, tangible prizes in connection with another study. Given our small sample and unequal assignment of families to incentive and non-incentive groups in this study (see Table 1 for descriptive statistics), one or two families with wide fluctuations in scores may have arbitrarily weighted means in one group more heavily than in the other. Significant correlations between incentive status, income, and child age were also discovered such that those families with higher income and older children were more likely to be randomly assigned to the non-incentives group, which may also impact our findings.

This is the first PCIT study to explicitly examine changes in caregiver ER. Challenges with ER are thought to underlie many manifestations of psychopathology and behavior problems (Aldao, 2016; Buckholdt et al., 2015; Eisenberg, 2000; Gilliom et al., 2002; Hofmann et al., 2012; Thomson et al., 2015; Trentacosta & Shaw, 2009). A growing evidence base shows the potential for improvement in adult ER through adult-focused individual therapy (e.g., dialectical behavior therapy, cognitive behavior therapy) geared toward different classes of disorders (e.g., depression, anxiety, personality, eating, substance use), but this area of research is just beginning (Holzhauer, & Gamble, 2017; Sloan et al., 2017; Winter et al., 2017). Effect sizes comparing pre- and post-treatment measures of ER in a meta-analysis of studies which looked at ER along with designated treatment outcomes of interest ranged from d = 0.18 - 2.87 (Sloan et al., 2017).

There is comparatively less evidence of improved adult ER in connection with parenting interventions or interventions targeting children as identified clients. In recent years, several parenting-focused interventions have been developed or augmented specifically to target adult emotion regulation (David, Capris, & Jarda, 2017; Eddy, Sheeber, & Davis, 2014; Fabrizio, et al., 2015), with many incorporating a caregiver mindfulness component (Bögels, Hoogstad, van Dun, de Schutter, & Restifo, 2008; Singh, 2006; Singh, 2010). For example, Gershy, Meehan, Omer, Papouchis, and Schorr Sapir (2017) found that mothers who completed a parent training program with and without a mindfulness component geared toward parenting children with ADHD showed improvements in adult ER regardless of condition while fathers had better ER outcomes in the

mindfulness condition. In addition, some parent training programs (Sanders & Mazzucchelli, 2013) are theoretically oriented toward training caregivers in self-regulation, but little evidence has been collected directly assessing these claims.

Similar to mindfulness-based parent training programs, mastery of PCIT principles encourages caregivers to focus their full attention on caregiver-child interactions, practice self-regulation, become more attuned to caregiver and child emotions, and practice compassion and acceptance (Duncan, Coatsworth, & Greenbag, 2009). During CDI, caregivers must attend to positive child behaviors and avoiding responding, emotionally or otherwise, to negative child behaviors. During PDI, caregivers must restrict their negative emotional responses (e.g., by using a firm but neutral tone of voice) and focus on responding to non-compliance in a formulaic, scripted approach. Through detail-oriented coaching, caregivers become acutely aware and in control of the connections among their emotions and behaviors during caregiver-child interactions. Through PCIT skills practice, caregivers nurture the habit of remaining calm in the face of personal and interpersonal distress, which we theorize contributes to overall improvement in ER. Theoretically, these habits are reinforced by improved child compliance and increased positivity in the caregiver-child relationship.

Improved caregiver ER through parenting training is a positive outcome in its own right, but focus on adult ER during parent training programs has also translated to better outcomes for children in treatment. David, David, and Dobrean (2014) found larger effect sizes for improvement in parent reports of child ADHD symptoms, parent reports of child conduct problems, and parent and teacher reports of child oppositional defiant problems when using an emotion-regulation enhanced cognitive-behavior therapy-based group parenting program as compared with a standard cognitive behavior therapy-based group parenting program. Sanders, Markie-Dadds, Tully, and Bor (2000) found greater child behavior problem improvements for families who participated in an enhanced parenting intervention (Enhanced Triple P) which included mood and stress management training as compared to those who participated in a standard parenting intervention (Standard Triple P).

As in these studies, improvement in adult ER through PCIT may benefit not only caregivers but children and caregiver-child relationships as well. Caregivers with better ER skills can more easily model and teach these skills to their children. Caregivers with better ER can minimize hostility, frustration, and inappropriate emotional expression during high intensity interactions. These benefits should extend to relationships with other family members as well, indirectly benefiting the identified child/children. Finally, strong ER skills may be a protective factor against parenting and family stress (Bai & Han, 2016).

Child ER Changes and PCIT

Consistent with hypotheses, participating children showed significant decreases in ER Lability/Negativity from baseline to mid-treatment (CDI mastery) and from mid-treatment to graduation (PDI mastery), according to caregiver report. Effect sizes for pre- to post-treatment changes in ER Lability/Negativity were very large. The ER Lability/Negativity Subscale of the ERC includes items such as, "exhibits wide mood swings" and "displays negative emotions when attempting to engage others in play." It makes sense that this component of child ER would improve across both treatment phases. In CDI, caregivers increase positive interactions with the child, ignore and redirect problem behaviors, and model constructive social skills. During PDI, caregivers model the ability to remain calm during emotionally volatile situations, show decreased reactivity to provocation, and provide predictable structure for children surrounding behavioral expectations.

In mixed findings, children in the non-incentives group showed significant improvements in adaptive ER (the ER Regulation Subscale) from pre- to post-treatment and between mid- (CDI mastery) and post-treatment, but not from pre- to mid-treatment. Contrary to hypotheses, children in the incentives group did not exhibit significant changes in adaptive ER, although pre- to post-treatment mean score differences approached significance ($p = .083$). The ER Regulation Subscale of the ERC consists of items like, "Is a cheerful child" and "Is empathic towards others; shows concern when others are upset or distressed." We propose three possible explanations for

differences between the incentives and non-incentives groups on these outcomes: First, our analyses may have uncovered a spurious interaction between adaptive ER and incentive group status. As described above, including incentives status was intended to control for confounds in connection with another study. It may be that we lacked sufficient power to detect meaningful differences in these otherwise arbitrary, small, uneven groupings. Second, it is possible that receiving incentives for participation drove families in the incentives group to engage less in treatment because they were more focused on the extrinsic motivation to receive prizes than the pursuit of the more intrinsic rewards that are associated with teaching children skills for regulating their emotions. Third, cognitive dissonance may have played a role. Those caregivers who did not receive incentives may have been more likely to recognize treatment effects than those who received incentives. Caregivers in the non-incentives group might have experienced dissonance over insufficient effort justification and subsequently altered their perceptions of treatment efficacy to justify the time and energy expended in therapy (Festinger & Carlsmith, 1959).

Regarding improvements in adaptive ER noted during PDI but not CDI for the non-incentives group, PDI may represent a powerful catalyst to adaptive ER development in children. Because young children rely heavily on reinforcement from the social environment to improve emotional competence (Saarni, 2011), radical changes in the types of behaviors being reinforced during PDI may encourage swift development of adaptive ER strategies. Children who receive copious amounts of positive reinforcement for prosocial behavior in conjunction with restriction of privilege (i.e., time-out from caregiver attention) for inappropriate behavior (e.g., screaming, defiance) may be more likely to develop greater adaptive ER abilities than those receiving positive reinforcement alone. Alternatively, adaptive ER itself may develop more slowly than improvements in ER lability/negativity. Perhaps improvements in caregiver-child interactions and relationships developed during CDI take a few weeks or more to truly impact children's abilities to demonstrate positive ER. Finally, adaptive ER in children may take longer to develop or take longer for caregivers to recognize as compared with ER lability/negativity in children. In contrast

to ER lability/negativity which has likely been connected to the source of ongoing child and family problems and is likely more salient to caregivers (e.g., "responds angrily to limit-setting by adults"), adaptive ER may be a more subtle construct in which caregivers notice changes more slowly (e.g., "responds positively to neutral or friendly overtures by peers"). Because this study did not include follow-up measures, it is unknown whether changes in adaptive child ER become more apparent over time.

This is one of the first studies of standard PCIT to demonstrate improvements in child ER, and the evident reductions in child ER lability and negativity across PCIT are consistent with related research. Graziano et al. (2012) showed that improvements in RSA, a physiological proxy of ER, in a sample of children born prematurely were moderated by increases in mothers' positive parenting skills learned during PCIT. Overall, increases in the use of DPICS positive skills were related to improvements in RSA from pre- to post-treatment ($p < .03$, Cohen's $d = .68$; Graziano et al., 2012). Two adaptations of PCIT, PCIT-Emotional Development (PCIT-ED) and PCIT with Parent Emotion Coaching (PCIT-ECo) have also demonstrated changes in child emotion regulation across treatment with medium effect sizes. In one study, depressed preschoolers treated with PCIT-ED showed significant improvements in ER Regulation and ER Lability/Negativity while those in a psychoeducation control group did not (Luby et al., 2012). Using PCIT-ECo, decreases in ER lability and negativity were noted in a study of nine preschoolers with ADHD (Chronis-Tuscano et al., 2016). In comparison, effect sizes noted in the present study were similar to or larger than those calculated in studies of PCIT adaptations targeting emotion regulation.

The relation between participation in PCIT and improvements in children' ER lability and negativity has important implications for outcomes later in life. Children with better ER skills are more likely to demonstrate better social functioning (Eisenberg et al., 2000; Lopes et al., 2005), academic performance (Gumora & Arsenio, 2002; Hill & Craft, 2003), affect, mood, and life satisfaction (Haga, Kraft, & Corby, 2009). Children with better ER abilities are also less likely to experience behavior problems (Cole et al., 1994; Gilliom et al., 2002; Trentacosta & Shaw, 2009),

personal distress (Eisenberg, 2000), disordered eating, self-harm, and substance misuse (Buckholdt et al., 2015).

Baseline ER Predicting Attrition

This is the first study to examine ER as a predictor of attrition in PCIT and one of few studies using ER to predict attrition in any treatment modality (Erwin, Heimberg, Schneier, & Liebowitz, 2003). Contrary to hypotheses, baseline levels of caregiver and child ER did not predict whether families would graduate from PCIT or terminate early, nor did they predict when families would leave treatment (during CDI, during PDI, or after graduation). However, it is interesting to note that all means for baseline child ER were organized in the expected directions. Although not significantly so, children in families who eventually graduated from PCIT had less ER lability and negativity and more adaptive ER at baseline on average than those from families who eventually terminated early. Further, mean ER scores for the three groups of children from families who dropped out during CDI, dropped out during PDI, and graduated from PCIT were organized so that those with more ER lability and negativity and less adaptive ER at baseline dropped out sooner. It is possible that with our small sample, we did not have enough power to detect significant differences in these means if the effect size was small. Future research should examine these research questions with sufficient power to better understand whether these means represent legitimate differences.

These results should also be viewed through a cultural lens as the majority of caregivers and children in this study identified as Hispanic or Latino. ER and child behavior problems may have subtle qualitative differences within the Latino culture. For example, Latinos typically value warm interactions, extended family involvement, and respect for elders more than non-Hispanic whites (Miranda, Azocar, Organista, Muñoz, & Lieberman, 1996). These values could impact expectations for acceptable child behavior, therapist-client interactions, ER, and emotional expression. For instance, Lugo-Candelas, Harvey, and Breaux (2015) found that in a study of preschoolers with behavior problems, Latina American mothers were more likely to minimize or ignore negative child affect than European American mothers. The complex interactions among

emotional display rules, emotional experience, appraisal, and regulation strategies which have been shown to differ across cultures (De Leersnyder, Boiger, & Mesquita, 2013) should be taken into consideration when interpreting the results of this study.

Pre-treatment Variables Predicting Attrition

A variety of exploratory models were tested to predict attrition. In all models, contrary to previous research (Kazdin et al., 1993; Werba et al., 2006), parenting stress did not predict significant differences in attrition independently. In the first set of models, attrition was defined dichotomously as graduation from PCIT in accordance with PCIT International, Inc. standards (CDI and PDI mastery, ECBI score ≤ 114, etc.; Eyberg & Funderburk, 2011) versus earlier termination. These models significantly predicted whether families were likely to graduate or drop out early from PCIT with 77.2% accuracy (68.2% for graduation and 82.9% for early termination) using the following set of pre-treatment predictors: parentings stress, incentive status, caregiver and child ER, child behavior problems, caregiver-child interaction scores, caregiver talk during caregiver-child interaction, and demographic variables (caregiver age, annual income, child gender, & child age). Only caregiver age uniquely contributed to the model such that older caregivers were more likely to complete PCIT. This finding is in line with results from a previous meta-analysis of attrition in child outpatient mental health treatment by De Haan, Boon, De Jong, Hoeve, and Vermeiren (2013) that identified younger maternal age as a significant predictor of attrition. The overall attrition rate in our sample (63.6% of families left treatment before graduation) is comparable to attrition rates reported by other researchers in parent-training at community mental health centers (75%; Lavigne et al., 2010, Lyon & Budd, 2010) and community-based PCIT (69%; Lanier et al., 2011; as cited in Chen & Fortson, 2015, p. 29).

In the second set of models, attrition was defined dichotomously as completion of the CDI mastery criteria (Eyberg & Funderburk, 2011) versus earlier termination. These models used the same set of predictors as above and significantly predicted CDI mastery versus earlier drop out with 75.4% accuracy (83.9% for no CDI mastery and 65.4% for CDI mastery). As before, care-

giver age uniquely predicted attrition so that older caregivers were more likely to reach CDI mastery. It is possible that type of caregiver relationship to child may interact with caregiver age in families participating in PCIT. However, in our small sample, non-biological parents made up only a minor percentage of caregivers, limiting our ability to investigate these connections. Incidentally, while investigating whether grandparents were more likely to graduate from PCIT as compared with biological, step-, foster, and adoptive parents, it was discovered a very low percentage of grandparents participating in this study graduated from PCIT.

It is curious that parenting stress did not account for a significant proportion of the variance in attrition. Anecdotally, there were many families in this sample who had extenuating circumstances which limited their abilities to continue with treatment (e.g., moved away, changed work schedules, had surgery, were removed from the study). Although unmeasured in the current study, these explanations, in addition to the other factors shown to predict attrition in previous research, such as number of children in the home (De Haan et al., 2013, Liebsack, 2016), may have complicated our findings on parenting stress and attrition. In addition, because of our small sample size (n = 57) included in attrition analyses, we may not have had enough statistical power to detect a potentially small effect of parenting stress on attrition. Issues of multicolinearity may also render these estimates unstable and more difficult to interpret correctly. Despite our findings, parenting stress is an important variable in therapy and should continue to be explored in a variety of treatment settings and with diverse community samples.

The specific patterns of attrition in this study may also have been influenced by more complex socioeconomic factors. The majority of individuals in our sample lived in poverty, identified as Hispanic or Latino, and/or did not speak English as a first language. Previous research and our results demonstrate that individuals from socioeconomically disadvantaged households and those with lower incomes are more likely to drop out of treatment prematurely (Dumas & Wahler, 1983; Kazdin & Mazurick, 1994). Those with Hispanic or Latino cultural identities are less likely to access mental health services in general (Vega & Lopez, 2001) and could demonstrate unique patterns of attrition compared with those of non-Hispanic or non-Latino majority

samples. As this cultural minority is one of the fastest growing and largest in the United States (Krogstad & Lopez, 2015), it is imperitive that we understand how cultural factors interact with treatment outcomes like attrition (Vega & Lopez, 2001). Although the clinicians in our study offered PCIT in Spanish and other language translations, language and cultural barriers may have contributed to issues with treatment retention. More research is needed to determine whether there are differences in rates of attrition for non-English speakers or those who do not speak English as their first language compared with primarily English-speakers in the United States.

Limitations and Future Directions

This study had a number of methodological limitations which are important to consider when interpreting the results. There was no control group in this study (e.g., waitlist, no treatment, alternative treatment), and all families who participated in this study were referred to PCIT. Therefore, it is possible that these improvements in caregiver and child ER would have occurred over time without treatment due to a variety of factors (e.g., history or maturation effects). Strategies used to regulate emotions are thought to develop rapidly in young children; however, related constructs like effortful control, temperamental regulation, and reactivity have demonstrated inter-individual stability across early childhood (Eisenberg, Spinrad, & Eggum, 2010; Kochanska, Murray, & Harlan, 2000; Murphy, Eisenberg, Fabes, Shepard, & Guthrie, 1999). This means that children's abilities in these areas may change over time, but typically the placement of these scores in comparison to the normal distribution of scores among their peers varies little. Although possible, it is unlikely that the significant changes in ER evident across the short duration of our study would have occurred without intervention. In addition, our findings of improvement in caregiver and child ER may have been influenced by factors associated with study participation such as selection bias, regression to the mean, or repeated testing.

The results of this study rely solely on caregiver report for the measurement of ER. Caregivers may have been motivated to see improvements in themselves and their children which could have influenced their reporting on ER measures whether these changes actually occurred or

not. The caregiver report used to measure child ER, the ERC, includes some advanced vocabulary (e.g., "exuberance," "modulate") which may have confounded our abilities to measure this construct despite definitions available to participants upon request. Given the limited funding, time, and resources available for this study, however, we concluded that established caregiver-report instruments were the best available measures of ER. In the future, it would be worthwhile to test these changes in ER using different measures, including observational measures of ER such as frustration tasks or other behavioral challenge tasks.

In addition, clinician-report alone was included for DPICS observational measures of parent positive and negative talk. Although all clinicians were initially trained in DPICS coding and reached a reliability standard of $\geq 80\%$, ongoing coding reliability was not assessed in this study. However, clinician-reports with few coding reliability checks are typical of community-based PCIT practice, contributing to the generalizability of these results to other community-based PCIT agencies.

Finally, using the expectation-maximization procedure to impute missing data rendered our sample less accurate as compared to a complete data set of 66 families. The expectation-maximization algorithm takes an iterative approach to estimating statistical parameters based on local data which is preferable to mean substitution (Dempster, Laird, & Rubin, 1977), but we are unsure about how closely these imputed values would align with true mid- and post-treatment measures from all families, had we been able to collect them. Community-based clinical outcome research in general is often limited in this regard.

Future research in this area should compare changes in ER associated with standard PCIT to those associated with emotion-related adaptations of PCIT (e.g., PCIT-ED, PCIT-ECo) to determine the incremental value of the adaptations. Based on this information, individualized treatment recommendations may be made for children or families with differing levels of ER-related needs. In addition, investigations into caregiver and child ER changes associated with other behavioral parent training programs are needed and could be compared with those observed with

PCIT. As stated previously, future research should also include larger samples sizes and more objective measures of ER. Long-term follow-ups regarding potential lasting changes in caregiver and child ER would also be useful. Lastly, more research is needed to the examine the stability of ER, temperamental emotionality, and reactivity among children with externalizing behavior problems.

Conclusion

In summary, this study provides new evidence that both phases of PCIT are associated with significant improvements in caregiver and child ER. Baseline levels of ER were not significant in predicting attrition, but group means were organized such that families who eventually dropped out of treatment prematurely presented with subjectively greater ER problems at intake. Finally, older caregivers were more likely to complete PCIT, and other baseline and demographic variables contributed to models predicting attrition. These findings further detail and support the potential for PCIT to have broad, lasting positive outcomes for children and their caregivers.

References

Abidin, R. R. (1990). *Parenting Stress Index / Short Form*. Lutz, FL: Psychological Assessment Resources, Inc.

Abidin, R. R. (1995). *Parenting Stress Index (PSI) manual* (3rd ed.). Charlottesville, VA: Pediatric Psychology Press.

Abidin, R. R. (2012). *Parenting Stress Index*. Odessa, FL: Psychological Assessment Resources.

Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4 –18 and 1991 profile* (p. 288). Burlington, VT: Department of Psychiatry, University of Vermont.

Achenbach, T. M., & Rescorla, L. A. (2000). *Manual for ASEBA preschool forms & profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.

Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for ASEBA school-age forms & profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.

Ainsworth, M. D. S. (1963). The development of infant-mother interaction among the Ganda. In B. M. Foss (Ed.), *Determinants of infant behavior* (pp. 67-104). New York: Wiley.

Aldao, A. (2013). The future of emotion regulation research: Capturing context. *Perspectives on Psychological Science, 8*(2), 155-172.

Aldao, A. (2016). Introduction to the special issue: Emotion regulation as a transdiagnostic process. *Cognitive Therapy and Research, 40*(3), 257-261. doi:10.1007/s10608-016-9764-2

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*(2), 217-237. doi:10.1016/j.cpr.2009.11.004

Allen, B., Timmer, S. G., & Urquiza, A. J. (2014). Parent–Child Interaction Therapy as an attachment-based intervention: Theoretical rationale and pilot data with adopted children. *Children and Youth Services Review, 47*(Part 3), 334-341. doi:10.1016/j.childyouth.2014.10.009

Appleton, A. A., Loucks, E. B., Buka, S. L., & Kubzansky, L. D. (2014). Divergent associations of antecedent- and response-focused emotion regulation strategies with midlife cardiovascular disease risk. *Annals of Behavioral Medicine, 48*(2), 246-255.

Are, F., & Shaffer, A. (2016). Family emotion expressiveness mediates the relations between maternal emotion regulation and child emotion regulation. *Child Psychiatry and Human Development, 47*(5), 708-715. doi:10.1007/s10578-015-0605-4

Bagner, D. M. (2013). Father's role in parent training for children with developmental delay. *Journal of Family Psychology, 27*(4), 650–657. http://dx.doi.org/10.1037/ a0033465.

Bagner, D. M., Graziano, P. A., Jaccard, J., Sheinkopf, S. J., Vohr, B. R., & Lester, B. M. (2012). An initial investigation of baseline respiratory sinus arrhythmia as a moderator of treatment outcome for young children born premature with externalizing behavior problems. *Behavior Therapy, 43*(3), 652-665. doi:10.1016/j.beth.2011.12.002

Bai, L., & Han, Z. R. (2016). Emotion dysregulation mediates relations between Chinese parents' histories of childhood emotional abuse and parenting stress: A dyadic data analysis. *Parenting: Science and Practice, 16*(3), 187-205. doi:10.1080/15295192.2016.1158602

Bandura, A. (1976). *Social Learning Theory*. Englewood Cliffs, NJ: Prentice-Hall.

Barroso, N. E., Hungerford, G. M., Garcia, D., Graziano, P. A., & Bagner, D. M. (2016). Psychometric properties of the Parenting Stress Index-Short Form (PSI-SF) in a high-risk sample of mothers and their infants. *Psychological Assessment, 28*(10), 1331-1335. doi:10.1037/pas0000257

Baumrind, D. (1966). Effects of authoritative parental control on child behaviors. *Child Development, 37*, 887-907.

Berkovits, L., Eisenhower, A., & Blacher, J. (2017). Emotion regulation in young children with autism spectrum disorders. *Journal of Autism And Developmental Disorders, 47*(1), 68-79. doi:10.1007/s10803-016-2922-2

Bloch, L., Moran, E. K., & Kring, A. M. (2010). On the need for conceptual and definitional clarity in emotion regulation research on psychopathology. In A. M. Kring & D. M. Sloan

(Eds.), *Emotion regulation and psychopathology: A transdiagnostic approach to etiology and treatment* (pp. 88-104). New York, NY: Guilford Press.

Bode, A. A., George, M. W., Weist, M. D., Stephan, S. H., Lever, N., & Youngstrom, E. A. (2016). The impact of parent empowerment in children's mental health services on parenting stress. *Journal of Child and Family Studies*, 25(10), 3044-3055. doi:10.1007/s10826-016-0462-1

Bögels, S., Hoogstad, B., van Dun, L., de Schutter, S., & Restifo, K. (2008). Mindfulness training for adolescents with externalizing disorders and their parents. *Behavioural and Cognitive Psychotherapy, 36*(2), 193-209. doi:10.1017/S1352465808004190

Boggs, S. R., Eyberg, S. M., & Reynolds, L. (1990). Concurrent validity of the Eyberg Child Behavior Inventory. *Journal of Clinical Child Psychology, 19*, 75-78. doi:10.1207/s15374424jccp1901_9

Borrego, J. J., Klinkebiel, C., & Gibson, A. (2014). Parent-child interaction therapy: An overview. In B. Allen, & M. Kronenberg (Eds.), Treating traumatized children: A casebook of evidence-based therapies (pp. 165-182). New York, NY: Guilford Press.

Bowlby, J. (1958), The nature of the child's tie to his mother. *International Journal of PsychoAnalysis, 39*, 1-23.

Buckholdt, K. E., Parra, G. R., Anestis, M. D., Lavender, J. M., Jobe-Shields, L. E., Tull, M. T., & Gratz, K. L. (2015). Emotion regulation difficulties and maladaptive behaviors: Examination of deliberate self-harm, disordered eating, and substance misuse in two samples. *Cognitive Therapy and Research, 39*(2), 140-152. doi:10.1007/s10608-014-9655-3

Butcher, P. R., Wind, T., & Bouma, A. (2008). Parenting stress in mothers and fathers of a child with a hemiparesis: Sources of stress, intervening factors and long-term expressions of stress. *Child: Care, Health and Development, 34*(4), 530-541. doi:10.1111/j.1365-2214.2008.00842.x

Campbell, S. B., Shaw, D. S., & Gilliom, M. (2000). Early externalizing behavior problems: Toddlers and preschoolers at risk for later maladjustment. *Development and Psychopathology, 12*(3), 467-488. doi:10.1017/S0954579400003114

Capous, D. E., Wallace, N. M., McNeil, D. J., & Cargo, T. A. (2016). Parent-child interaction therapy across diverse cultural groups. In K. Alvarez (Ed.), *Parent-child interactions and relationships: Perceptions, practices and developmental outcomes* (1-44). New York, NY: Nova Science Publishers.

Carrère, S., & Bowie, B. H. (2012). Like parent, like child: Parent and child emotion dysregulation. *Archives of Psychiatric Nursing, 26*(3), e23-e30. doi:10.1016/j.apnu.2011.12.008

Casey, B. J., Getz, S., & Galvan, A. (2008). The adolescent brain. *Developmental Review, 28*(1), 62-77.

Caspi, A., Henry, B., McGee, R. O., Moffitt, T. E., & Silva, P. A. (1995). Temperamental origins of child and adolescent behavior problems: From age three to fifteen. *Child Development, 66*(1), 55-68. doi:10.2307/1131190

Chaffin, M., Funderburk, B., Bard, D., Valle, L. A., & Gurwitch, R. (2011). A combined motivation and parent–child interaction therapy package reduces child welfare recidivism in a randomized dismantling field trial. *Journal of Consulting and Clinical Psychology, 79*(1), 84-95. doi:10.1037/a0021227

Chen, Y., & Fortson, B. L. (2015). Predictors of treatment attrition and treatment length in Parent-Child Interaction Therapy in Taiwanese families. *Children and Youth Services Review*, 59, 28-37. doi:10.1016/j.childyouth.2015.10.009

Chronis-Tuscano, A., Lewis-Morrarty, E., Woods, K. E., O'Brien, K. A., Mazursky-Horowitz, H., & Thomas, S. R. (2016). Parent–child interaction therapy with emotion coaching for preschoolers with attention-deficit/hyperactivity disorder. *Cognitive and Behavioral Practice, 23*(1), 62-78. doi:10.1016/j.cbpra.2014.11.001

Cohen, J. (1969). *Statistical Power Analysis for the Behavioral Sciences*. NY: Academic Press.

Cole, P. M., Michel, M. K., & Teti, L. O. (1994). The development of emotion regulation and dysregulation: A clinical perspective. *Monographs of the Society For Research in Child Development, 59*(2-3), 73-100. doi:10.2307/1166139

Cole, P. M., Teti, L. O., & Zahn-Waxler, C. (2003). Mutual emotion regulation and the stability of conduct problems between preschool and early school age. *Development and Psychopathology, 15*(1), 1-18. doi:10.1017/S0954579403000014

Colvin, A., Eyberg, S.M., & Adams, C. (1999). *Restandardization of the Eyberg Child Behavior Inventory*. (Unpublished manuscript). Child Study Laboratory, University of Florida, Gainesville, FL.

Comer, J. S., Puliafico, A. C., Aschenbrand, S. G., McKnight, K., Robin, J. A., Goldfine, M. E., & Albano, A. M. (2012). A pilot feasibility evaluation of the CALM program for anxiety disorders in early childhood. *Journal of Anxiety Disorders, 26*(1), 40-49. doi:10.1016/j.janxdis.2011.08.011

Crnic, K., Gaze, C., & Hoffman, C. (2005). Cumulative parenting stress across the preschool period: Relations to maternal parenting and child behaviour at age 5. *Infant and Child Development, 14*, 117–132.

Crnic, K., & Low, C. (2002). Everyday stresses and parenting. In M. H. Bornstein (Ed.), *Handbook of parenting: Practical issues in parenting, Vol. 5,* (2nd ed., pp. 2243–2267). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Danişman, Ş., İman, E. D., Demircan, Z. A., & Yaya, D. (2016). Examining the psychometric properties of the Emotional Regulation Checklist in 4- and 5-year-old preschoolers. *Electronic Journal of Research in Educational Psychology, 14*(3), 534-556.

David, O. A., Capris, D., & Jarda, A. (2017). Online coaching of emotion-regulation strategies for parents: Efficacy of the online rational positive parenting program and attention bias modification procedures. *Frontiers in Psychology*, *8*.

David, O. A., David, D., & Dobrean, A. (2014). Efficacy of the Rational Positive Parenting Program for child externalizing behavior: Can an emotion-regulation enhanced cognitive-behavioral parent program be more effective than a standard one?. *Journal of Evidence-Based Psychotherapies, 14*(2), 159-178.

Deater-Deckard, K. (1998). Parenting stress and child adjustment: Some old hypotheses and new questions. *Clinical Psychology: Science and Practice, 5*(3), 314–332.

Deater-Deckard, K., Li, M., & Bell, M. A. (2016). Multifaceted emotion regulation, stress and affect in mothers of young children. *Cognition and Emotion, 30*(3), 444-457. doi:10.1080/02699931.2015.1013087

De Haan, A. M., Boon, A. E., de Jong, J. T. V. M., Hoeve, M., & Vermeiren, R. R. J. M. (2013). A meta-analytic review on treatment dropout in child and adolescent outpatient mental health care. *Clinical Psychology Review, 33*, 698-711.

De Leersnyder, J., Boiger, M., & Mesquita, B. (2013). Cultural regulation of emotion: individual, relational, and structural sources. *Frontiers in Psychology, 4*, 55. http://doi.org/10.3389/fpsyg.2013.00055

Dempster, A. P., Laird, N. M., & Rubin, D. B. (1977). Maximum likelihood from incomplete data via the EM algorithm. *Journal of the Royal Statistical Society, Series B. 39* (1): 1–38.

Denham, S. A., Mitchell-Copeland, J., Strandberg, K., Auerbach, S., & Blair, K. (1997). Parental contributions to preschoolers' emotional competence: Direct and indirect effects. *Motivation & Emotion, 21*, 65-86. doi: 10.1023/A:1024426431247.

Diamond, A. (2002). Normal development of prefrontal cortex from birth to young adulthood: Cognitive functions, anatomy, and biochemistry. In D.T. Stuss & R.T. Knight (Eds.), *Principles of frontal lobe function* (pp. 466-503). New York, NY: Oxford University Press.

Dumas, J. E., & Wahler, R. G. (1983). Predictors of treatment outcomes in parent training: Mother insularity and socioeconomic disadvantage. *Behavioral Assessment, 5*, 301-313.

Duncan, L. G., Coatsworth, J. D., & Greenberg, M. T. (2009). A model of mindful parenting: Implications for parent–child relationships and prevention research. *Clinical Child and Family Psychology Review, 12*(3), 255-270. doi:10.1007/s10567-009-0046-3

Duncombe, M. E., Havighurst, S. S., Holland, K. A., & Frankling, E. J. (2012). The contribution of parenting practices and parent emotion factors in children at risk for disruptive behavior disorders. *Child Psychiatry and Human Development, 43*(5), 715-733. doi:10.1007/s10578-012-0290-5

Duncombe, M. E., Havighurst, S. S., Kehoe, C. E., Holland, K. A., Frankling, E. J., & Stargatt, R. (2016). Comparing an emotion- and a behavior-focused parenting program as part of a multisystemic intervention for child conduct problems. *Journal of Clinical Child and Adolescent Psychology, 45*(3), 320-334. doi:10.1080/15374416.2014.963855

Eisenberg, N. (2000). Emotion, regulation, and moral development. *Annual Review of Psychology*, *51*, 665-697. doi:10.1146/annurev.psych.51.1.665

Eisenberg, N., Cumberland, A., & Spinrad, T. L. (1998). Parental socialization of emotion. *Psychology Inquiry, 9*, 241–273. doi.org/10.1207/s15327965pli0904_1

Eisenberg, N., Fabes, R. A., Guthrie, I. K., & Reiser, M. (2000). Dispositional emotionality and regulation: Their role in predicting quality of social functioning. *Journal of Personality and Social Psychology, 78*(1), 136-157. doi:10.1037/0022-3514.78.1.136

Eisenberg, N., Spinrad, T. L., & Eggum, N. D. (2010). Emotion-related self-regulation and its relation to children's maladjustment. *Annual Review of Clinical Psychology*, 6495-6525. doi:10.1146/annurev.clinpsy.121208.131208.

Eisenstadt, T. H., Eyberg, S., McNeil, C., Newcomb, K., & Funderburk, B. (1993). Parent–child interaction therapy with behavior problem children: Relative effectiveness of two stages and overall treatment outcome. *Journal of Clinical Child Psychology, 22*(1), 42–51.

Eisenstadt, T. H., McElreath, L. S., Eyberg, S. M., & McNeil, C. B. (1994). Interparent agreement on the Eyberg Child Behavior Inventory. *Child & Family Behavior Therapy, 16,* 21-28.

Emde, R. N., Biringen, Z., Clyman, R. B., & Oppenheim, D. (1991). The moral self of infancy:

Affective core and procedural knowledge. *Developmental Review, 11*, 251–270.

Erwin, B. A., Heimberg, R. G., Schneier, F. R., & Liebowitz, M. R. (2003). Anger experience and expression in social anxiety disorder: Pretreatment profile and predictors of attrition and response to cognitive-behavioral treatment. *Behavior Therapy, 34*(3), 331-350. doi:10.1016/S0005-7894(03)80004-7

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

Eyberg, S. M., Nelson, M. M., Duke, M., & Boggs, S. R. (2005). *Manual for the parent-child interaction coding system* (3rd ed.). Gainesville, FL: PCIT International.

Eyberg, S. M., Nelson, M. M., Ginn, N. C., Bhuiyan, N., & Boggs, S. R. (2013). *Dyadic parent-child interaction coding system: Comprehensive manual for research and training* (4th ed.). Gainesville, FL: PCIT International.

Eyberg, S. M., & Funderburk, B. W. (2011). *Parent–child interaction therapy protocol*. Gainesville, FL: PCIT International.

Eyberg, S. M., Funderburk, B. W., Hembree-Kigin, T. L., McNeil, C. B., Querido, J. G., & Hood, K. K. (2001). Parent-child interaction therapy with behavior problem children: One and two year maintenance of treatment effects in the family. *Child & Family Behavior Therapy, 23*, 1–20.

Eyberg, S.M., & Pincus, D. (1999). *Eyberg Child Behavior Inventory and Sutter-Eyberg Student Behavior Inventory-Revised: Professional Manual.* Odessa, FL: Psychological Assessment Resources.

Eyberg, S. M., & Robinson, E. A. (1983). Conduct problem behavior: Standardization of a behavioral rating scale with adolescents. *Journal of Clinical Child Psychology, 12,* 347-354.

Fabrizio, C. S., Lam, T. H., Hirschmann, M. R., Pang, I., Yu, N. X., Wang, X., & Stewart, S. M. (2015). Parental emotional management benefits family relationships: A randomized controlled trial in Hong Kong, China. *Behaviour Research and Therapy, 7*, 1115-124. doi:10.1016/j.brat.2015.05.011

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods, 41*, 1149-1160.

Feldman, R. (2012). Physiological measures of emotion from a developmental perspective: State of the science: Parent–infant synchrony: A biobehavioral model of mutual influences in the formation of affiliative bonds. *Monographs of the Society for Research in Child Development, 77*(2), 42-51. doi:10.1111/j.1540-5834.2011.00660.x

Fernandez, M. A., & Eyberg, S. M. (2009). Predicting treatment and follow-up attrition in Parent-Child Interaction Therapy. *Journal of Abnormal Child Psychology, 37*, 431–441. http://dx.doi.org/10.1007/s10802-008-9281-1.

Festinger, L. and Carlsmith, J. (1959). Cognitive consequences of forced compliance. *The Journal of Abnormal and Social Psychology, 58*(2), 203-210.

Friedlander, S., Weiss, D. S., & Traylor, J. (1986). Assessing the influence of maternal depression on the validity of the Child Behavior Checklist. *Journal of Abnormal Child Psychology, 14*(1), 123-133.

Funderburk, B.W., Eyberg, S.M., Rich, B.A., & Behar, L. (2003). Further psychometric evaluation of the Eyberg and Behar rating scales for parents and teachers of preschoolers. *Early Education & Development, 14,* 67-81.

Gershy, N., Meehan, K. B., Omer, H., Papouchis, N., & Schorr Sapir, I. (2017). Randomized clinical trial of mindfulness skills augmentation in parent training. *Child & Youth Care Forum*. doi:10.1007/s10566-017-9411-4

Gilliom, M., Shaw, D. S., Beck, J. E., Schonberg, M. A., & Lukon, J. L. (2002). Anger regulation in disadvantaged preschool boys: Strategies, antecedents, and the development of self-control. *Developmental Psychology, 38*(2), 222-235. doi:10.1037/0012-1649.38.2.222

Gilpin, A. T., Brown, M. M., & Pierucci, J. M. (2015). Relations between fantasy orientation and emotion regulation in preschool. *Early Education and Development, 26*(7), 920-932. doi:10.1080/10409289.2015.1000716

Giromini, L., Ales, F., Campora, G., Zennaro, A., & Pignolo, C. (2017). Developing age and gender adjusted normative reference values for the difficulties in emotion regulation scale (DERS). *Journal of Psychopathology and Behavioral Assessment*, doi:10.1007/s10862-017-9611-0

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioral Assessment*, *26*, 41-54. doi: 10.1023/B:JOBA.0000007455.08539.94

Gratz, K. L., & Tull, M. T. (2010). Emotion regulation as a mechanism of change in acceptance- and mindfulness-based treatments. In R. A. Baer (Ed.), *Assessing mindfulness and acceptance: Illuminating the process of change.* Oakland, CA: New Harbinger Publications.

Graziano, P. A., Bagner, D. M., Sheinkopf, S. J., Vohr, B. R., & Lester, B. M. (2012). Evidence-based intervention for young children born premature: Preliminary evidence for associated changes in physiological regulation. *Infant Behavior & Development, 35*(3), 417-428. doi:10.1016/j.infbeh.2012.04.001

Graziano, P. A., McNamara, J. P., Geffken, G. R., & Reid, A. (2011). Severity of children's ADHD symptoms and parenting stress: A multiple mediation model of self-regulation. *Journal of Abnormal Child Psychology, 39*(7), 1073-1083. doi:10.1007/s10802-011-9528-0

Gross, J. J. (1998a). The emerging field of emotion regulation: An integrative review. *Review of General Psychology, 2*(3), 271-99.

Gross, J. J. (1998b). Antecedent- and response-focused emotion regulation: Divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology*, *74*, 224–237.

Gross, J.J. (2001). Emotion regulation in adulthood: Timing is everything. *Current Directions in Psychological Science, 10*(6), 214-219. doi:10.1111/1467-8721.00152

Gumora, G., & Arsenio, W.F. (2002). Emotionality, emotion regulation, and school performance in middle school children. *Journal of School Psychology, 40*, 395–413.

Haga, S. M., Kraft, P., & Corby, E. (2009). Emotion regulation: Antecedents and well-being outcomes of cognitive reappraisal and expressive suppression in cross-cultural samples. *Journal of Happiness Studies, 10*(3), 271-291. doi:10.1007/s10902-007-9080-3

Hanf, C. (1969). A two-stage program for modifying maternal controlling during mother-child (M-C) interaction. Paper presented at the meeting of the Western Psychological Association, Vancouver, British Columbia.

Hansson, E., Daukantaité, D., & Johnsson, P. (2017). Disordered eating and emotion dysregulation among adolescents and their parents. *BMC Psychology, 5*.

Hill, N. E., & Craft, S. A. (2003). Parent-school involvement and school performance: Mediated pathways among socioeconomically comparable African American and Euro-American families. *Journal of Educational Psychology, 95*(1), 74-83. doi:10.1037/0022-0663.95.1.74

Hofmann, S. G., Sawyer, A. T., Fang, A., & Asnaani, A. (2012). Emotion dysregulation model of mood and anxiety disorders. *Depression and Anxiety, 29*(5), 409-416. doi:10.1002/da.21888

Holzhauer, C. G., & Gamble, S. A. (2017). Depressive symptoms mediate the relationship between changes in emotion regulation during treatment and abstinence among women with alcohol use disorders. *Psychology of Addictive Behaviors, 31*(3), 284-294. doi:10.1037/adb0000274

Houck, C. D., Barker, D. H., Hadley, W., Brown, L. K., Lansing, A., Almy, B., & Hancock, E. (2016). The 1-year impact of an emotion regulation intervention on early adolescent health risk behaviors. *Health Psychology, 35*(9), 1036-1045. doi:10.1037/hea0000360

Ivanova, M. Y., Achenbach, T. M., Dumenci, L., Rescorla, L. A., Almqvist, F.,Weintraub, S., . . . Verhulst, F. C. (2007). Testing the 8-syndrome structure of the Child Behavior Checklist in 30 societies. *Journal of Clinical Child and Adolescent Psychology, 36*(3), 405-417.

Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review, 30*(7), 865-878.

Kazdin, A. E. (2003). Psychotherapy for children and adolescents. *Annual Review of Psychology, 54*(1), 253-276.

Kazdin, A. E., & Mazurick, J. L. (1994). Dropping out of child psychotherapy: Distinguishing early and late dropouts over the course of treatment. *Journal of Consulting and Clinical Psychology, 62*, 1069-1074.

Kazdin, A. E., Mazurick, J. L., & Bass, D. (1993). Risk for attrition in treatment of antisocial children and families. *Journal of Clinical Child Psychology, 22*, 2-16.

Keiley, M. K., Zaremba-Morgan, A., Datubo-Brown, C., Pyle, R., & Cox, M. (2015). Multiple-family group intervention for incarcerated male adolescents who sexually offend and their families: Change in maladaptive emotion regulation predicts adaptive change in adolescent behaviors. *Journal of Marital and Family Therapy, 41*(3), 324-339. doi:10.1111/jmft.12078

Kochanska, G., Murray, K. T., & Harlan, E. T. (2000). Effortful control in early childhood: Continuity and change, antecedents, and implications for social development. *Developmental Psychology, 36*(2), 220-232. doi:10.1037/0012-1649.36.2.220

Kopp, C. (1989). Regulation of distress and negative emotions: A developmental view. *Developmental Psychology, 25*, 343–354. doi: 10.1037/0012-1649.25.3.343

Krahé, B., Bondü, R., Höse, A., & Esser, G. (2015). Child aggression as a source and a consequence of parenting stress: A three-wave longitudinal study. *Journal of Research on Adolescence, 25*(2), 328-339. doi:10.1111/jora.12115

Krogstad, J. M., & Lopez, M. H. (2015). Hispanic population reaches record 55 million, but growth has cooled. *Fact Tank: News in the Numbers, Pew Research Center*. Retrieved from http://www.pewresearch.org/fact-tank/2015/06/25/u-s-hispanic-population-growth-surge-cools/

Lanier, P., Kohl, P. L., Benz, J., Swinger, D., Moussette, P., & Drake, B. (2011). Parent-Child Interaction Therapy in a community setting: Examining outcomes, attrition, and treatment setting. *Research on Social Work Practice, 21*(6), 689–698. http://dx.doi.org/10.1177/1049731511406551

Lavigne, J. V., LeBailly, S. A., Gouze, K. R., Binns, H. J., Keller, J., & Pate, L. (2010). Predictors and correlates of completing behavioral parent training for the treatment of oppositional defiant disorder in pediatric primary care. *Behavior Therapy, 41*(2), 198-211. doi:10.1016/j.beth.2009.02.006

Lenze, S. N., Pautsch, J., & Luby, J. (2011). Parent-child interaction therapy emotion development: A novel treatment for depression in preschool children. *Depression and Anxiety, 28*(2), 153-159. doi:10.1002/da.20770

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

Leung, C., Tsang, S., Sin, T. S., & Choi, S. (2015). The efficacy of Parent–Child Interaction Therapy with Chinese families: Randomized controlled trial. *Research on Social Work Practice, 25*(1), 117-128. doi:10.1177/1049731513519827

Liebsack, B. K. (2016). *Attrition in Parent-Child Interaction Therapy* (Masters thesis). Retrieved from ProQuest. (Order No. 10241893).

Lopes, P., P. Salovey, M. Beers, & S. Cote. (2005). Emotion Regulation Abilities and the Quality of Social Interaction. *Emotion, 5*(1), 113-118.

Luby, J., Lenze, S., & Tillman, R. (2012). A novel early intervention for preschool depression: Findings from a pilot randomized controlled trial. *Journal of Child Psychology And Psychiatry, 53*(3), 313-322. doi:10.1111/j.1469-7610.2011.02483.x

Luby, J. L., Stalets, M. M., Blankenship, S., Pautsch, J., & McGrath, M. (2008). Treatment of preschool bipolar disorder: A novel parent-child interaction therapy and review of data on psychopharmacology. In B. Geller & M. P. DelBello (Eds.), *Treatment of bipolar disorder in children and adolescents* (pp. 270-286). New York, NY: Guilford Press.

Lugo-Candelas, C. I., Harvey, E. A., & Breaux, R. P. (2015). Emotion Socialization Practices in Latina and European American Mothers of Preschoolers with Behavior Problems. *Journal of Family Studies, 21*(2), 144–162. http://doi.org/10.1080/13229400.2015.1020982

Lyon, A. R., & Budd, K. S. (2010). A community mental health implementation of Parent–Child Interaction Therapy (PCIT). *Journal of Child and Family Studies, 19*(5), 654-668. doi:10.1007/s10826-010-9353-z

Majnemer, A., Shevell, M., Rosenbaum, P., Law, M., & Poulin, C. (2007). Determinants of life quality in school-age children with cerebral palsy. *Journal of Pediatrics, 151*, 470–475.

Masse, J. J., McNeil, C. B., Wagner, S. M., & Chorney, D. B. (2007). Parent-child interaction therapy and high functioning autism: A conceptual overview. *Journal of Early and Intensive Behavior Intervention, 4*(4), 714-735. doi:10.1037/h0100402

Mathis, E. B., & Bierman, K. L. (2015). Dimensions of parenting associated with child prekindergarten emotion regulation and attention control in low-income families. *Social Development, 24*(3), 601-620. doi:10.1111/sode.12112

Matos, M., Torres, R., Santiago, R., Jurado, M., & Rodríguez, I. (2006). Adaptation of Parent-Child Interaction Therapy for Puerto Rican families: A preliminary study. *Family Process, 45*(2), 205-222. doi:10.1111/j.1545-5300.2006.00091.x

McNeil, C. B., & Hembree-Kigin, T. L. (2010). *Parent–Child Interaction Therapy., 2nd ed*. New York, NY, US: Springer Science + Business Media. doi:10.1007/978-0-387-88639-8

Mersky, J. P., Topitzes, J., Janczewski, C. E., & McNeil, C. B. (2015). Enhancing foster parent training with parent-child interaction therapy: Evidence from a randomized field experiment. *Journal Of The Society For Social Work And Research, 6*(4), 591-616. doi:10.1086/684123

Miranda, J., Azocar, F., Organista, K. C., Muñoz, R. F., & Lieberman, A. (1996). Recruiting and retaining low-income Latinos in psychotherapy research. *Journal Of Consulting And Clinical Psychology, 64*(5), 868-874. doi:10.1037/0022-006X.64.5.868

Morris, A. S., Silk, J. S., Steinberg, L., Myers, S. S., & Robinson, L. R. (2007). The role of the family context in the development of emotion regulation. *Social Development, 16*(2), 361-388. doi:10.1111/j.1467-9507.2007.00389.x

Nakamura, B. J., Edesutani, C., Bernstein, A., & Chorpita, B. F. (2009). A psychometric analysis of the Child Behavior Checklist DSM-oriented scales. *Journal of Psychopathology & Behavioral Assessment, 31*, 178-189.

Nixon, R. D., Sweeney, L., Erickson, D. B., & Touyz, S. W. (2004). Parent–child interaction therapy: one- and two-year follow-up of standard and abbreviated treatments for oppositional preschoolers. *Journal of Abnormal Child Psychology, 32*(3), 263–271.

Niec, L. N., Barnett, M. L., Prewett, M. S., & Shanley Chatham, J. R. (2016). Group parent–child interaction therapy: A randomized control trial for the treatment of conduct problems in young children. *Journal of Consulting and Clinical Psychology, 84*(8), 682-698. doi:10.1037/a0040218

Nock, M. K., & Kazdin, A. E. (2001). Parent expectancies for child therapy: Assessment and relation to participation in treatment. *Journal of Child and Family Studies, 10*, 155-180.

Parke, R. D. (1994). Progress, paradigms, and unresolved problems: A commentary on recent advances in our understanding of children's emotions. *Merrill-Palmer Quarterly, 40*, 157–169.

Pincus, D. B., Santucci, L. C., Ehrenreich, J. T., & Eyberg, S. M. (2008). The implementation of modified parent-child interaction therapy for youth with Separation Anxiety Disorder. *Cognitive and Behavioral Practice, 15*(2), 118-125. doi:10.1016/j.cbpra.2007.08.002

Puliafico, A. C., Comer, J. S., & Pincus, D. B. (2012). Adapting parent-child interaction therapy to treat anxiety disorders in young children. *Child and Adolescent Psychiatric Clinics of North America, 21*(3), 607-619. doi:10.1016/j.chc.2012.05.005

Quetsch, L. B. (2015). *Emotion regulation in families of children with behavior problems versus nonclinical comparisons* (Order No. 1588121). Available from Dissertations & Theses @ West Virginia University; ProQuest Dissertations & Theses Full Text. (1682048576). Retrieved from https://search.proquest.com/docview/1682048576?accountid=2837

Ramsden, S. R., & Hubbard, J. A. (2002). Family expressiveness and parental emotion coaching: Their role in children's emotion regulation and aggression. *Journal of abnormal child psychology*, *30*(6), 657-667.

Reitman, D., McMahon, R. J. (2013). Constance “Connie” Hanf (1917–2002): The Mentor and the Model. *Cognitive and Behavioral Practice, 20*(1), 106-116.

Richards, J. M., & Gross, J. J. (2000). Emotion regulation and memory: The cognitive costs of keeping one's cool. *Journal of Personality and Social Psychology, 79*(3), 410-424.

Robinson, E. A., & Eyberg, S. M. (1981). The Dyadic Parent-Child Interaction Coding System: Standardization and validation. *Journal of Consulting and Clinical Psychology, 49,* 245-250. doi: 10.1037/0022-006X.49.2.245

Rodríguez, G. M., Bagner, D. M., & Graziano, P. A. (2014). Parent training for children born premature: A pilot study examining the moderating role of emotion regulation. *Child Psychiatry and Human Development, 45*(2), 143-152. doi:10.1007/s10578-013-0385-7

Saarni, C. (2001). Emotional development in childhood. *Encyclopedia on Early Childhood Development*. Retrieved from http://www.child-encyclopedia.com/documents/Saarni-ANGxp1.pdf.

Sanders, M. R., Markie-Dadds, C., Tully, L. A., & Bor, W. (2000). The Triple P-Positive Parenting Program: A comparison of enhanced, standard, and self-directed behavioral family intervention for parents of children with early onset conduct problems. *Journal of Consulting and Clinical Psychology, 68*(4), 624-640. doi:10.1037/0022-006X.68.4.624

Scudder, A. T., McNeil, C. B., Chengappa, K., & Costello, A. H. (2014). Evaluation of an existing parenting class within a women's state correctional facility and a parenting class modeled from Parent–Child Interaction Therapy. *Children and Youth Services Review, 46*, 238-247. doi:10.1016/j.childyouth.2014.08.015

Séguin-Lemire, A., Hébert, M., Cossette, L., & Langevin, R. (2017). A longitudinal study of emotion regulation among sexually abused preschoolers. *Child Abuse & Neglect*, *63*, 307-316. doi:10.1016/j.chiabu.2016.11.027

Seligman, L. D., Ollendick, T. H., Langley, A. K., & Baldacci, H. B. (2004). The utility of measures of child and adolescent anxiety: A meta-analytic review of the revised children's manifest anxiety scale, the state-trait anxiety inventory for children, and the child behavior checklist. *Journal of Clinical Child and Adolescent Psychology, 33*, 557–565.

Shields, A., & Cicchetti, D. (1997). Emotion regulation among school-age children: The development and validation of a new criterion q-sort scale. *Developmental Psychology*, *33*, 906–916. doi: 10.1037/0012-1649.33.6.906

Shields, A., Ryan, R. M., & Cicchetti, D. (2001). Narrative representations of caregivers and emotion dysregulation as predictors of maltreated children's rejection by peers. *Developmental Psychology, 37*, 321–337.

Shortt, J. W., Eddy, J. M., Sheeber, L., & Davis, B. (2014). Project home: A pilot evaluation of an emotion-focused intervention for mothers reuniting with children after prison. *Psychological Services, 11*(1), 1-9. doi:10.1037/a0034323

Singh, N. N., Lancioni, G. E., Winton, A. S. W., Fisher, B. C., Wahler, R. G., Mcaleavery, K., et al. (2006). Mindful parenting decrease aggression, noncompliance and self-injury in children with autism. *Journal of Emotional and Behavioral Disorders, 14*(3), 169–177. doi:10.1177/10634266060140030401.

Singh, N. N., Singh, A. N., Lancioni, G. E., Singh, J., Winton, A. S. W., & Adkins, A. D. (2010). Mindfulness training for parents and their children with ADHD increases the child's compliance. *Journal of Child and Family Studies, 19*(2), 157–166. doi: 10.1007/s10826-009-9272-z.

Sivan, A. B., Ridge, A., Gross, D., Richardson, R., & Cowell, J. (2008). Analysis of two measures of child behavior problems by African American, Latino, and non-Hispanic Caucasian parents of young children: A focus group study. *Journal of Pediatric Nursing, 23*(1), 20–27.

Skinner, B. F. (1965). *Science and Human Behavior*. New York, NY: Free Press.

Sloan, E., Hall, K., Moulding, R., Bryce, S., Mildred, H., & Staiger, P. K. (2017). Emotion regulation as a transdiagnostic treatment construct across anxiety, depression, substance, eating and borderline personality disorders: A systematic review. *Clinical Psychology Review, 57*, 141-163. doi:10.1016/j.cpr.2017.09.002

Theise, R., Huang, K., Kamboukos, D., Doctoroff, G. L., Dawson-McClure, S., Palamar, J. J., & Brotman, L. M. (2014). Moderators of intervention effects on parenting practices in a randomized controlled trial in early childhood. *Journal of Clinical Child and Adolescent Psychology, 43*(3), 501-509. doi:10.1080/15374416.2013.833095

Thomas, R., & Zimmer-Gembeck, M. J. (2007). Behavioral outcomes of Parent-Child Interaction Therapy and Triple P-Positive Parenting Program: A review and meta-analysis. *Journal of Abnormal Child Psychology, 35*(3), 475-495. doi:10.1007/s10802-007-9104-9

Thomson, K., Riosa, P. B., & Weiss, J. A. (2015). Brief report of preliminary outcomes of an emotion regulation intervention for children with autism spectrum disorder. *Journal of Autism and Developmental Disorders, 45*(11), 3487-3495. doi:10.1007/s10803-015-2446-1

Trentacosta, C. J. & Shaw, D. S. (2009). Emotional self-regulation, peer rejection, and antisocial behavior: Developmental associations from early childhood to early adolescence. *Journal of Applied Developmental Psychology, 30*(3), 356-365.

Vega, W. A., & Lopez, S. R. (2001). Priority issues in Latino mental health services research. *Mental Health Services Research, 3*(4), 189-200. doi:10.1023/A:1013125030718

Wagner, S. M., & McNeil, C. B. (2008). Parent-child interaction therapy for ADHD: A conceptual overview and critical literature review. *Child & Family Behavior Therapy, 30*(3), 231-256. doi:10.1080/07317100802275546

Ward, M. A., Theule, J., & Cheung, K. (2016). Parent–child interaction therapy for child disruptive behaviour disorders: A meta-analysis. *Child & Youth Care Forum, 45*(5), 675-690. doi:10.1007/s10566-016-9350-5

Webster-Stratton, C. (1996). Early-onset conduct problems: Does gender make a difference. *Journal of Consulting and Clinical Psychology, 64*, 540-551.

Webster-Stratton, C., & Hammond, M. (1990). Predictors of treatment outcome in parent training for families with conduct problem children. *Behavior Therapy, 21*, 319-337.

Werba, B., Eyberg, S. M., Boggs, S. R., & Algina, J. (2006). Predicting the outcome of Parent–Child Interaction Therapy: Success and attrition. *Behavior Modification, 30*(5), 618–646. http://dx.doi.org/10.1177/0145445504272977.

Winter, D., Niedtfeld, I., Schmitt, R., Bohus, M., Schmahl, C., & Herpertz, S. C. (2017). Neural correlates of distraction in borderline personality disorder before and after dialectical behavior therapy. *European Archives of Psychiatry and Clinical Neuroscience, 267*(1), 51-62. doi:10.1007/s00406-016-0689-2

Table 1

Sample Characteristics

Measure	*n*	%	*M*	*SD*
Child Age			3.76	1.14
Caregiver Age			34.76	8.63
Number of Sessions			16.33	9.48
Child Gender				
Male	46	69.7%		
Female	20	30.3%		
Caregiver Gender				
Female	64	97%		
Male	2	3%		
Child Race/Ethnicity				
Hispanic/Latino	38	57.6%		
Multiple	15	22.7%		
White/European	8	12.1%		
African American	3	4.5%		
Not Reported	1	1.5%		
Caregiver Race/Ethnicity				
Hispanic/Latino	42	63.6%		
White/European	16	24.2%		
Multiple	5	7.6%		
African American	3	4.5%		
Caregiver Relationship				
Mother	55	83.3%		
Foster/Adoptive Parent	5	7.6%		
Grandparent	3	4.5%		
Step-Parent	2	3%		
Father	1	1.5%		
Income				
<$20,000/year	27	40.9%		
$20,000-40,000/year	20	30.3%		
$40,000-60,000/year	5	7.6%		
>$60,000/year	5	7.6%		
Incentive Status				
Incentives Group	41	62.1%		
Non-Incentives Group	25	37.9%		
Completion Status				
Discontinued Before Mid-Treatment (No CDI Mastery)	37	56%		
Discontinued Between Mid-Treatment and Graduation (Met CDI Mastery)	5	7.6%		
Met Graduation Criteria (CDI & PDI Mastery)	24	36.4%		

Note. CDI = Child-Directed Interaction; PDI = Parent-Directed Interaction

Table 2

Mean DERS and ERC Score Comparisons Across Study Samples

Study	Sample	ERC Reg.	ERC L/N	DERS
		M (*SD*)		
Present study, Lieneman (2017)	*N* = 66, children ages 2-7 years, adults ages 21-60 years, California, child behavior problems / PCIT	Pre- 24.6 (3.3); Post- 26.6 (3.0); *d* = 0.65	Pre- 39.6 (6.5); Post- 27.9 (5.7); *d* = 1.93	Pre- 71.7 (19.6); Post- 57.6 (16.6); *d* = 0.78
Quetsch (2015)	*N* = 71, children ages 2-8 years, adults (parents), rural US, disruptive behavior problems and normative group	Clinical 24.06 (2.72); Comparison 27.46 (3.02)	Clinical 40.26 (7.88); Comparison 24.08 (4.52)	Clinical 77.18 (20.51); Comparison 66.12 (16.28)
Luby et al. (2012)	*N* = 54, children ages 3-7 years, Missouri, depressed / PCIT-ED	Pre- 21.6 (3.1); Post- 23.3 (3.5); **d* = 0.51	Pre- 41.5 (6.0); Post- 37.8 (7.2); **d* = 0.56	
Chronis-Tuscano et al. (2012)	*N* = 9, children ages 3-7, Maryland, ADHD / PCIT-ECo		Pre- 38.5 (8.1); Post- 34.6 (6.7) **d* = 0.52	
Séguin-Lemire, Hébert, Cossette, and Langevin, 2017	*N* = 121, children ages 3-7 years, France, 1-year post-sexual abuse	Abused 18.8 (2.8); Non-abused 20.7 (2.6)	Abused 16.6 (7.6); Non-abused 10.6 (5.0)	
Gratz and Roemer (2004)	*N* = 357, adults ages 18-55 years, Boston, college students			Women 78.0 (20.7); Men 80.7 (18.8)
Giromini, Ales, Campora, Zennaro, and Pignolo (2017)	*N* = 808, adults ages 18-64 years, Italy, university students and snowball sample			81.6 (19.8)
Hansson, Daukantaité, and Johnsson (2017)	*N* = 235, adults, Sweden, parents of adolescent students ages 13-19			58.5 (13.5)

Note. ERC Reg. = Emotion Regulation Checklist Regulation Scale (higher score = better regulation; ERC L/N = Emotion Regulation Checklist Lability/Negativity Scale (higher score = more negativity; DERS = Difficulties in Emotion Regulation Scale (higher score = more difficulties); PCIT-ED = Parent-Child Interaction Therapy - Emotional Development; *calculated using published sample data; PCIT-ECo = Parent-Child Interaction Therapy with Parent Emotion Coaching.

Table 3

Variables in This Study

Measure	Subscales/Specific Items
Demographics Form	Caregiver Age
	Annual Income
	Child Gender
	Child Age
Dyadic Parent-Child Interaction Coding System-IV (DPICS)	Positive Parenting Composite/Negative + Positive Parenting Composite Ration
Eyberg Child Behavior Inventory (ECBI)	Intensity Score (IS)
	Problem Score (PS)
Child Behavior Checklist (CBCL)	Total Problems
	Internalizing
	Externalizing
Parenting Stress Index: Short Form (PSI-SF)	Total Stress (TS)
	Parental Distress (PD)
	Parent-Child Dysfunctional Interaction (PCDI)
	Difficult Child (DC)
Difficulties in Emotion Regulation Scale (DERS)	Total Score (SUM)
	Nonacceptance of Emotional Responses (NONACCEPT)
	Difficulties in Engaging in Goal Directed Behavior (GOALS)
	Impulse Control Difficulties (IMPULSE)
	Lack of Emotional Awareness (AWARE)
	Limited Access to ER Strategies (STRATEGIES)
	Lack of Emotional Clarity (CLARITY)
Emotion Regulation Checklist (ERC)	Adaptive Regulation
	Lability/Negativity

Table 4

Change in Outcome Variables Over Treatment (Paired-Samples T-Tests)

Measure	*M* (*SD*)			
	Pre-Treament	Mid-Treatment	Post-Treatment	Cohen's *d*
DERS Total Score	71.7 (19.6) (*n* = 66)	66.1 (17.2)** (*n* = 66)	**57.6 (16.6)**** (*n* = 66)	0.78
ERC				
Lability/Negativity	39.6 (6.5)	34.1 (6.1)**	**27.9 (5.7)****	1.93
Emotion Regulation	24.6 (3.3) (*n* = 66)	25.3 (3.0)* (*n* = 66)	26.6 (3.0)** (*n* = 66)	0.65
ECBI Intensity	153.6 (33.4)	134.1 (31.9)*	**88.6 (28.3)****	2.10
ECBI Problem	21.8 (6.5) (*n* = 66)	16.6 (9.2)* (*n* = 30)	**7.3 (8.1)**** (*n* = 25)	1.97
CBCL Total Score	72.5 (27.0) (*n* = 66)	59.9 (30.7)* (*n* = 30)	**34.2 (28.5)**** (*n* = 25)	1.38
PSI-SF Total Stress	96.4 (23.2) (*n* = 66)	86.6 (19.8)* (*n* = 30)	**68.5 (19.8)**** (*n* = 25)	1.29

Notes. * $p < .05$ compared with pre-treatment score, ** $p < .001$ compared with pre-treatment score, ** $p < .001$ compared with pre- and $p < .05$ compared with mid-treatment score, ***p* < .05** compared with pre- and mid-treatment score, ****p* < .001** compared with pre- and mid- treatment score; DERS = Difficulties in Emotion Regulation Scale; ERC = Emotion Regulation Checklist; DERS and ERC (*n* = 66) using imputed data for mid- and post-treatment; no imputed data was used for ECBI = Eyberg Child Behavior Inventory; CBCL = Child Behavior Checklist; PSI-SF = Parenting Stress Index – Short Form; ECBI, CBCL, or PSI-SF.

Table 5

Summary of Hierarchical Logistic Regression Analysis for Variables Predicting Attrition (N = 57)

	Model 1[a] (Graduation VS. Early Termination)			Model 2[b] (CDI Mastery VS. Early Termination)		
Variable	*B*	*SE B*	*β*	*B*	*SE B*	*β*
PSI-SF Total Stress	0.03	0.02	1.03	0.03	0.02	1.03
Caregiver Age	0.16	0.07	1.18*	0.14	0.07	1.15*
Child Gender	-0.65	0.92	0.52	-0.37	0.91	0.69
Child Age	0.10	0.38	1.11	-0.03	0.35	0.97
DPICS Ratio Pre-	1.32	2.50	0.60	5.76	3.39	316.07
ECBI Intensity Pre-	0.00	0.02	1.00	-0.04	0.03	0.96
ECBI Problem Pre-	-0.06	0.12	0.95	-0.01	0.10	0.99
ERC Lab./Neg. Pre-	0.05	0.10	1.05	0.15	0.11	1.16
ERC Reg. Pre-	0.20	0.15	1.23	0.26	0.15	1.30
DERS Total Pre-	0.01	0.02	1.01	-0.03	0.02	0.97
CBCL Total Pre-	-0.01	0.02	0.99	0.02	0.02	1.02
Income	--	--	--	--	--	--

Note. [a] $R^2 = 0.57$, $p = .006$; [b] $R^2 = 0.52$; $p = .006$; *$p < .05$; PSI-SF = Parenting Stress Index-Short Form; DPICS = Dyadic Parent-Child Interaction Coding System; ECBI = Eyberg Child Behavior Inventory; ERC Lab./Neg.= Emotion Regulation Checklist Lability/Negativity Subscale; ERC Reg. = Emotion Regulation Checklist Adaptive Regulation Subscale; DERS = Difficulties in Emotion Regulation Scale; CBCL = Child Behavior Checklist; Early termination code = 0, graduation/CDI mastery code = 1; Gender coded as female = 1, male = 0; Income betas not reported due to multi-categorical distribution.

Table 6

Correlation Matrix Among Logistic Regression Variables Predicting Attrition

	Correlations (Pearson's *r*, r_{pb}, ϕ, Cramer's *V*)															
Variable/ Pre-Treatment Measure	Attrit. (D/G)	Incent. (Y/N)	PSI-SF TS	DERS SUM	ERC Reg.	ERC L/N	CBCL TOT.	ECBI Int.	ECBI Prob.	DPICS Ratio	DPICS Pos.	DPICS Neg.	Care. Age	Inc.	Child Gend.	Child Age
Attrition (Drop/Grad)	--															
Incentive (Yes/No)	.06	--														
PSI-SF TS	.04	.19	--													
DERS SUM	.00	.11	.30*	--												
ERC Reg.	.19	.03	-.23	-.05	--											
ERC L/N	.00	.21	.33**	.32**	-.00	--										
CBCL TOTAL	-.16	-.00	.49**	.18	-.31*	.58**	--									
ECBI Int.	-.13	.12	.46**	.16	-.16	.10	.63**	--								
ECBI Prob.	-.22	.04	.34**	.22	-.23	-.02	.38**	.71**	--							
DPICS Ratio	.08	.06	.03	-.01	-.28*	-.24	.13	.26	.02	--						
DPICS Pos.	.09	-.01	-.00	-.01	-.16	.19	.08	.10	-.00	.88	--					
DPICS Neg.	.01	-.25*	-.08	-.01	.27	-.14	-.11	-.10	-.04	-.62	-.36**	--				
Caregiver Age	.14	-.06	-.33**	-.20	.24*	.23	-.15	-.26*	-.08	.08	.17	-.02	--			
Income	.51**	.43*	.88	.84	.55	.76	.82	.87	.74	.93	.65	.89	.68	--		
Child Gender	.09	.24*	-.12	-.12	-.11	-.15	-.21	-.10	-.18	.01	.08	-.06	-.10	.12	--	
Child Age	.05	.03	-.15	.08	.16	-.02	-.21	-.11	-.06	-.28*	-.39**	-.11	.07	.07	.09	--

Note. $^*p < .05$, $^{**}p < 0.01$; Attrition dropped out code = 0, graduation code = 1; Incentive status yes code = 1, no code = 2; PSI-SF TS = Parenting Stress Index-Short Form Total Stress; DERS SUM = Difficulties in Emotion Regulation Scale Total Score; ERC Reg. = Emotion Regulation Checklist Adaptive Regulation Subscale; ERC Lab./Neg.= Emotion Regulation Checklist Lability/Negativity Subscale; CBCL TOTAL= Child Behavior Checklist Total Score; ECBI Int. = Eyberg Child Behavior Inventory Intensity Score; ECBI Prob. = Eyberg Child Behavior Inventory Problem Score; DPICS Ratio = Dyadic Parent-Child Interaction Coding System Positive Score / Positive + Negative Score; Gender coded as male = 0, female = 1.

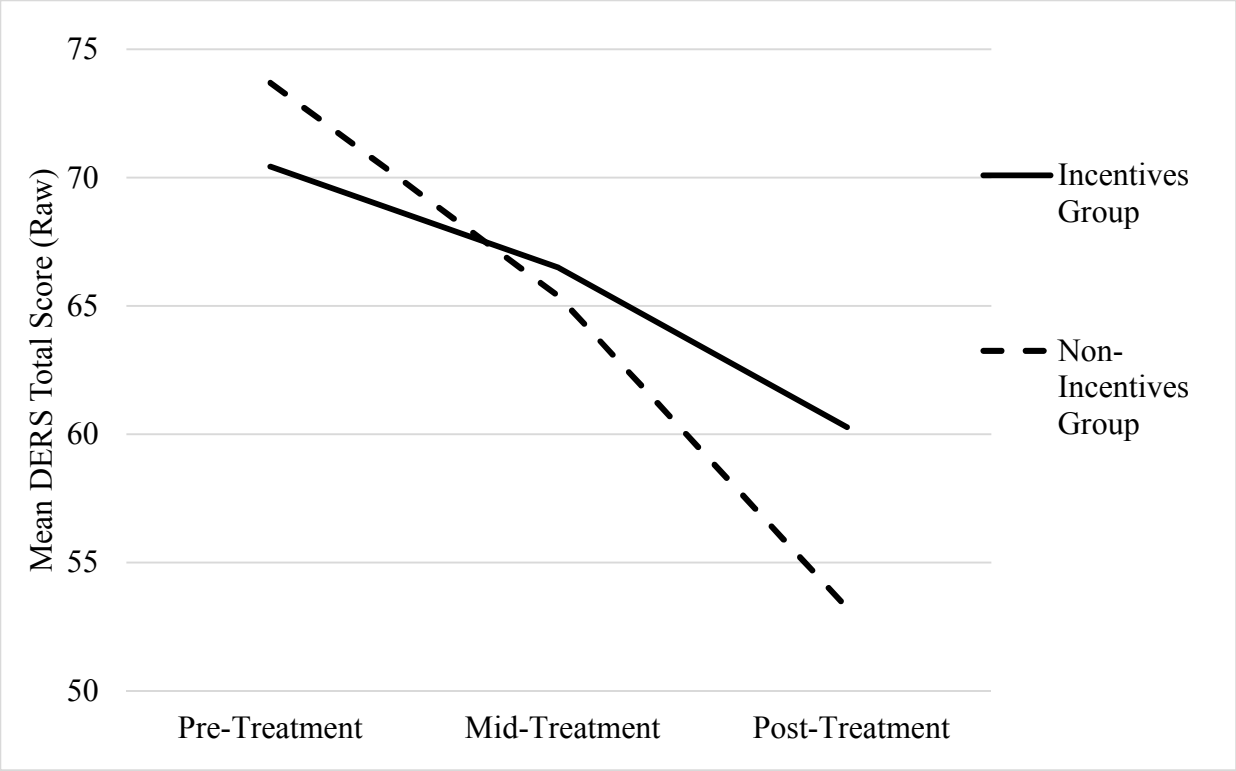

Figure 1. Changes in caregiver emotion regulation across PCIT. DERS = Difficulties in Emotion Regulation Scale. Means represent non-transformed scores.

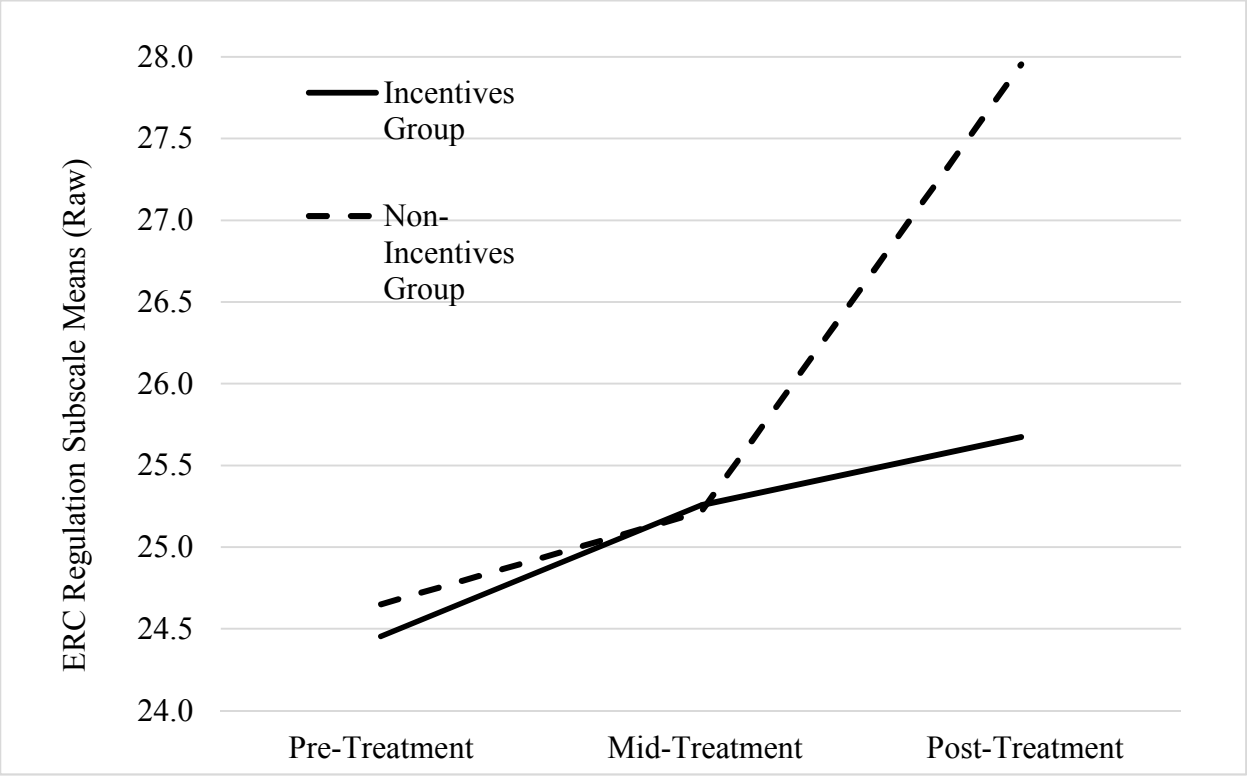

Figure 2. Changes in child adaptive emotion regulation across PCIT. ERC = Emotion Regulation Checklist.

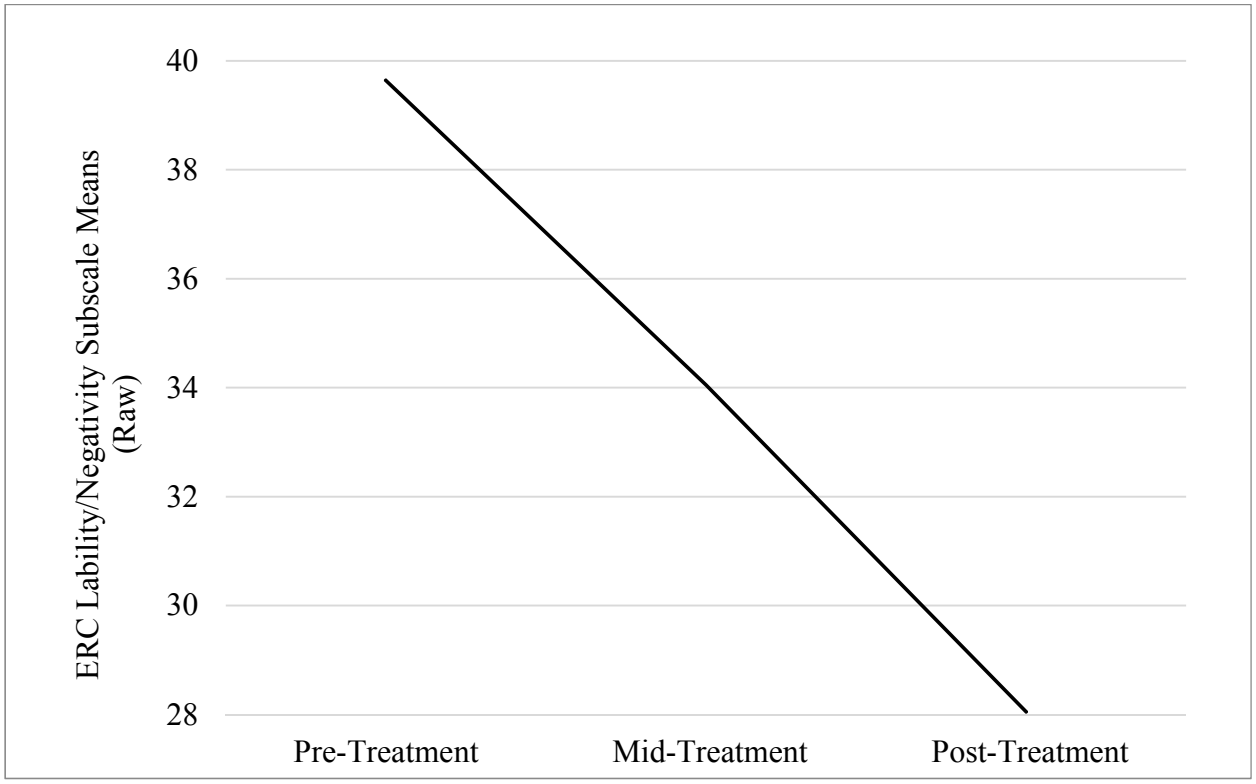

Figure 3. Changes in child emotion regulation lability/negativity across PCIT. ERC = Emotion Regulation Checklist.