INDIVIDUAL CHARACTERISTICS THAT DIFFERENTIATE CHANGE IN PARENT EMOTION REGULATION SKILLS FOLLOWING PARENT-CHILD INTERACTION THERAPY

by

SARAH ROMACK

A THESIS

Presented to the Department of Psychology
and the Robert D. Clark Honors College
in partial fulfillment of the requirements for the degree of
Bachelor of Science

May 2022

An Abstract of the Thesis of

Sarah Romack for the degree of Bachelor of Science
in the Department of Psychology to be taken June 2022

Title: Individual Characteristics that Differentiate Change in Parent Emotion Regulation Skills Following Parent-Child Interaction Therapy

Approved: *Elizabeth Skowron, Ph.D.*
Primary Thesis Advisor

Child maltreatment (CM) is a substantial public health issue that often results in emotional and psychological impacts on victims and can stem from emotion regulation deficits in caregivers. Although Parent-Child Interaction Therapy (PCIT) is effective at reducing child-maltreating behavior and improving positive parenting strategies, little research has been conducted on whether or not it strengthens parents' emotion regulation skills in the process. This study utilized a behavioral measure of parent emotion regulation (the Emotional Go/No-Go task) to identify subgroups of 88 child welfare-involved parents receiving PCIT whose emotion regulation skills changed the most across treatment. An exploratory analysis was then conducted to identify pre-treatment predictors of change in parent emotion regulation scores. I investigated measures of parent stress, readiness for change, mental health (specifically depression and anxiety measures), and child behavior problem scores. Parents' mental health and motivation to change were found to significantly predict high changes in parents' reaction time to angry and fearful emotions.

Analyzing the predictors that differentiate at-risk parents' response to PCIT treatment, particularly in terms of their emotion regulation skills is vital in the current efforts to provide effective interventions and understand better how to match individual parents to effective treatments that will prevent CM.

Acknowledgements

I would like to thank Professor Elizabeth Skowron, Ph.D., and the members of the Coaching Alternative Parenting Strategies (CAPS) project for providing me with the opportunity to be involved in meaningful research and for their unending support throughout this entire process. I would also like to thank Carrie Scholtes, M.Ed., for introducing me to this field of research and helping me deeply understand the process of conducting research. I am incredibly grateful for learning from kind and hard-working professors who have encouraged me to step outside of my comfort zone and learn through independent projects like this. I am honored to have two of these professors, Professor Trond Jacobsen, Ph.D., and Professor Kate Mills, Ph.D., on my thesis committee. Finally, I would like to thank my friends and family for supporting and encouraging me through this project.

Table of Contents

List of Figures

List of Tables

Introduction

Child maltreatment (CM) is a substantial public health issue that creates long-term emotional and psychological impacts on victims, their families, and the community at large. In addition to victims' immediate physical and mental trauma, exposure to CM increases the risk for future violent behavior, substance abuse, delayed brain development, and higher levels of stress (Child Welfare Information Gateway, 2019; Donisch & Briggs, 2022). Not only is CM very common, affecting millions of children each year, but it is also a cyclical issue that has extensive, multi-generational impacts (World Health Organization, 2020). Because abused children are more likely to abuse others as adults, it is vital to address the parent characteristics underlying CM to break the cycle of violence and reduce the number of children affected each year.

Out of the many self-regulation skills that parents utilize when interacting with their children, good emotion recognition and regulation are imperative for mediating problems and establishing positive social caregiving connections with their children (Rutherford et al., 2015). Emotion regulation in parenthood can be defined as "a parent's capacity to influence the experience and expression of their emotions in caregiving contexts" (Rutherford et al., 2015). Deficits in emotion recognition and regulation often occur in child-maltreating parents and frequently result in the transmission of poor emotion regulation skills and risk of committing future CM to their children (Ip et al., 2021; Rodriguez et al., 2021; Rutherford et al., 2015).

Parent-Child Interaction Therapy (PCIT) is an effective family treatment for reducing harsh, aversive parenting that is characteristic of child maltreating parents (Chaffin et al., 2004; Euser et al., 2015; Kennedy, Kim, Tripodi, Brown, & Gowdy,

2016). Additionally, PCIT has been shown to decrease rates of CM recidivism and improve the quality of parent-child relationships across ethnically diverse families (Chaffin et al., 2004; Leung, Tsang, Sin et al., 2015; Matos et al., 2009). Recent theorizing has attributed these successes to PCIT's unique live coaching technique (Skowron & Funderburk, 2022), in which therapists work with parents remotely and give immediate feedback, support, and social regulation guidance through an earpiece while the parents interact with their child. This method is intended to naturally strengthen parents' self-regulation skills while interacting with their child and increase their positive social awareness about themselves and their child (Skowron & Funderburk, 2022). In this way, PCIT stands above other treatments as a way to target child maltreating parents' lack of positive parenting skills, a deficit that makes CM especially difficult to prevent and treat (Skoranski, Skowron, Nekkanti, Scholtes, Lyons, & DeGarmo, 2021; Wilson et al., 2008).

Although enhancing emotion regulation is likely important in the process of strengthening parents' positive parenting skills and lowering their risk for perpetrating child maltreatment, there is very little understanding on the differing ways in which PCIT impacts emotion regulation skills and for whom it works best. Skowron et al. (2021) and Zimmer-Gembeck et al. (2019) have recently documented evidence that PCIT can improve parents' self-reported emotion regulation skills. However, few other studies have contributed to the current literature on what factors influence emotion regulation skills in PCIT. The focus of my research was to utilize a behavioral measure of parent emotion regulation, called the Emotional Go/No-Go task, to identify subgroups of child welfare-involved parents receiving PCIT whose emotion

regulation scores changed the most and the least across treatment. I then utilized an exploratory analysis to test the effects of several pre-treatment predictors on high positive and negative change in parent emotion regulation scores from pre-treatment to post-treatment. Although there are many factors that influence parents' response to PCIT, the most salient to emotion regulation in the existing literature center around parent mental health, stress, and motivation to change.

Current Areas of Investigation

Deficits in emotion regulation are central to many forms of psychopathology, and changes in emotion regulation strategies can serve as both protective and risk factors for parents (Rutherford et al., 2015). Further, the onset of clinical disorders, specifically mood disorders like depression and anxiety, parallel child-bearing ages that may increase the transmission of parental emotion dysregulation to children (Rutherford et al., (2015). Thus, it is very important to understand how emotion regulation skills and psychopathology may impact a parent's response to treatment to better target and improve parent and child well-being.

The current literature on mood disorders and emotion regulation suggests that attentional deficits and mood-congruent biases exist in individuals with higher rates of depression and anxiety. A meta-analysis conducted by Dalili et al. (2015) found that emotion recognition impairment reported in the depression literature exists across all basic emotions except sadness, suggesting that certain emotion processing pathways may be heightened or impaired with certain mood disorders. This finding is consistent in unmedicated depressed patients as well, who demonstrate impairments in their ability to shift their focus of attention and have a greater ability to react to sad stimuli than

happy stimuli (Erickson et al., 2005; Murphy et al., 1999). Biases for negative emotional stimuli found with higher rates of depression have been found in individuals with anxiety as well. Kungl et al. (2020) found that higher levels of anxiety in caregivers were associated with delayed behavioral responses to children's fearful expressions and EEG amplitudes that suggest that neutral or ambiguous stimuli were perceived as more aversive. This delayed affective responsiveness nearly mirrors previous findings on emotion dysregulation associated with depression (Dalili et al., 2015; Erickson et al., 2005; Murphy et al., 1999). These findings suggest great deficits in executive functioning and the ability to react effectively to emotional stimuli, skills that are imperative for healthy caregiver interactions and the transmission of positive emotion regulation strategies.

Although often grouped together with mood disorders and general mental health, stress should be considered separately as a factor that impacts emotion regulation and parenting skills. High levels of chronic stress during childhood are strongly associated with mental health problems and deficits in emotion regulation strategies in adulthood (Steele et al., 2016). Furthermore, perceived stress in the parenting role can enhance stress that contributes to emotion dysregulation and poor executive functioning in the parenting role (Steele et al., 2016). These deficits are further implicated with negative parenting behavior that supports the cyclical nature of CM.

In addition to their strong ties to emotion dysregulation, a history of mental illness and stress often underlies risk for CM behavior. Specifically, child-maltreating parents commonly report higher levels of depression, negative affect, anxiety,

aggression, and antisocial behavior than non-maltreating parents (Children's Bureau, 2022; Lavi et al., 2019). Further, higher proportions of reports to social services and foster placements occur for children with parents struggling with emotion dysregulation and psychopathology, since behavior associated with these disorders can compromise the safety and stability of children (Kohl, Jonson-Reid, & Drake, 2011). Greater investigation of the interaction between parent mental health and emotion regulation can advance our understanding of how to target negative parenting behaviors and limit these unfortunate consequences and improve parent and child wellbeing.

While not very prevalent in the emotion regulation literature, parent motivation and readiness to change also are important factors to consider when investigating measures of treatment, especially with families involved in the child welfare system who may be referred to these programs against their wishes. Higher levels of motivation before treatment have been shown to lead to greater treatment retention and lower rates of recidivism (Chaffin et al., 2009). Similarly, Skoranski et al. (2021) studied PCIT engagement and dropout rates among child welfare-involved families, examining associations with caregiver self-regulation skills and caregiver attributions (including caregiver perceptions of child behavior and readiness to change in treatment). They found that greater parental threat-related attentional bias (seeing anger in a neutral face) and hostile attributions about one's child were associated with higher levels of PCIT dropout while greater readiness for change was associated with higher odds of PCIT completion. While these studies have demonstrated relationships between PCIT effectiveness and measures of parent motivation (vis-à-vis parent attributions and

readiness to change), few studies have been conducted on how these factors relate to emotion regulation skills demonstrated throughout PCIT.

The current study builds off these gaps in the existing literature on emotion regulation and PCIT by investigating parents' psychopathology, stress, motivation, and readiness-to-change that are associated with the intervention's effects on parents' emotion regulation outcomes. Although the importance of emotion regulation skills in parenting – and interpersonal relationships as a whole – is widely recognized, few investigations outside of Skowron et al. (2021) and Zimmer-Gembeck et al. (2019) have begun to analyze whether and how parent emotion regulation changes in family treatments such as PCIT. Thus, analyzing the factors that differentiate at-risk parents' response to PCIT treatment, particularly in terms of their emotion regulation skills, is vital in the current efforts to provide effective interventions and better understand how to match individual parents to effective treatments that will reduce CM.

Methods

Participants

The present study utilized data gathered through the CAPS project, a four-year NIH-funded investigation that analyzed the biological and behavioral mechanisms of change in PCIT among a sample of child welfare-involved families. Participants were recruited directly through the Department of Human Services (DHS) by their child welfare or self-sufficiency caseworkers. Eligible families met the following criteria: (a) the parent was 18+ years old, (b) the parent was the participating child's biological parent or custodial caregiver, (c) the child was 3–7 years old, (d) the participating parent and all caregivers in the home had no prior documented history of perpetrating child sexual abuse, and (e) the parent provided written informed consent for both themselves and their child to participate. In the CAPS project, 204 child welfare-involved parent-child dyads were eligible to participate, 120 of which were randomly selected to receive PCIT. Of these 120 parent-child dyads, 88 attended at least one PCIT session. The present study analyzed $N = 88$ parents who received intervention. Participating parents identified their race/ethnicity as: European American/White ($n = 62$), Hispanic American/Latina ($n = 3$), Pacific Islander ($n = 3$), Native American/Alaskan Aleut ($n = 1$), and Bi/Multi-ethnic ($n = 17$). The parents who engaged with PCIT were primarily biological mothers, though approximately 10% were biological fathers ($n = 9$). (For more information on the larger clinical trial, including recruitment information, the services-as-usual control group, and participant demographic information please see Nekkanti et al., 2020 and Skowron et al., 2021).

Procedure

The parents randomly assigned to the PCIT intervention participated in three assessments with their child (pre-treatment, mid-treatment, and post-treatment). Pre-treatment assessments were conducted at intake. Mid-treatment assessments were conducted after the completion of the first PCIT phase of treatment (Child-Directed Interaction, CDI), before beginning the second PCIT phase of treatment (Parent-Directed Interaction, PDI). Post-treatment assessments were conducted immediately after the last PCIT session or approximately 9–12 months after study entry for those who did not engage in PCIT or discontinued PCIT prematurely.

The current study focused on parent data collected during the pre-treatment and post-treatment assessments. The pre-treatment assessments were completed in two visits. In the first, parents were asked to complete an Emotional Go/No-Go task in addition to other measures not pertinent to the current study. The parent-child dyads were asked to return to the lab within a week of their initial visit, where the parents completed a series of questionnaires designed to assess measures of socio-demographic characteristics, environmental risk, and child behavior. This procedure was repeated during the post-treatment assessment, although only the Emotional Go/No-Go scores from the post-treatment were utilized in the present study. (For more information on the procedure for each wave of assessments please see the study protocol in Nekkanti et al., 2020).

Measures

Analyzing the factors that differentiate at-risk parents' response to PCIT treatment in terms of their emotion regulation skills, the present study builds off of the

current literature on parent mental health, stress, and motivation as they relate to emotion regulation skills in PCIT. To do this, the parent Emotional Go/No-Go scores during pre-treatment and post-treatment assessments were utilized to measure changes in emotion regulation skills. Parent survey measures, namely the Adverse Childhood Experiences Scale, Brief Symptom Inventory, Parenting Stress Index, Readiness for Parenting Change, and the Eyberg Child Behavior Inventory, were used to measure parent characteristics at treatment entry.

Dependent Variables

Emotional Go/No-Go. Parent emotion regulation skills were operationalized using the Emotional Go/No-Go paradigm established by Tottenham et al. (2011). This emotion regulation task included a stimulus set of grayscale images of 10 adults posing five different expressions (happy, fearful, angry, sad, and neutral). The parents were instructed to quickly press a button when a specific facial expression (the "go" stimuli) was displayed. These "go" trials occurred 50% of the time. The parents were instructed to withhold from responding to "no-go" stimuli (any of the other facial expressions). In each block of trials, an emotional expression (happy, fearful, angry, sad) was always paired with a neutral expression. Depending on the block, an emotional expression would serve as either the "go" stimulus (in which neutral was the "no-go") or as the "no-go" stimulus (in which neutral was the "go"). Thus, there were eight blocks of trials with randomized "go/no-go" pairs (happy–neutral, neutral–happy, fear–neutral, neutral–fear, angry–neutral, neutral– angry, sad–neutral, and neutral–sad) with 30 randomized trials for each block for a total of 240 trials that were administered to the parents.

Two variables of interest in the examination of emotion recognition and emotion recognition include false alarm rate (with emotion as the "no-go") and reaction time (with emotion as "go"). False alarm rate can be defined as the percent of trials the parent reacted to the emotional "no-go" when they were instructed to withhold from responding. Because this demonstrates the ability to regulate impulsive responses and cognitive control in the presence of emotional stimuli, this variable was used as our measure of *emotion regulation.* This variable is relevant when considering child welfare-involved parents, whose behavior has been associated with limited inhibition control, one of the building blocks of good emotion regulation skills (Rutherford et al., 2015). Parent reaction time to emotions when they are the "go" stimulus was calculated as the average response time on all "go" trials in which the parent responded correctly. Because this variable demonstrates the parent's ability to discriminate between emotions, it will be utilized as a measure of *emotion recognition.*

Considering the emphasis of reducing poor parenting behaviors through the lens of emotion regulation skills, the current study focused on the emotion blocks pertinent to threat-related attributions in parents, namely the "angry" and "fearful" emotions. Thus, this study investigated two blocks of false alarm rates with fearful and angry stimuli on "no-go" trials and two blocks of parent reaction time scores with fearful and angry stimuli on the "go" trials.

To investigate parent characteristics that predicted change in parent emotion regulation, parents who completed PCIT were separated into "extreme change" groups based on their Emotional Go/No-Go scores at post-treatment. To identify these groups, parents' pre-treatment false alarm rates to angry and fearful distractors (no-go) and

reaction times to angry and fearful faces on correct go trials (go) were subtracted from their post-treatment scores. These created four difference scores that reflected how much their false alarms to anger (1) or fear (2) rate increased or decreased over treatment and whether they sped up or slowed down in reaction time when correctly identifying anger (3) or fear (4). Parents were separated into two groups: a high positive change group and a high negative change group. To do this while maintaining a reasonable sample size, parents with high positive/negative difference scores of 0.5 standard deviations above the mean and higher were identified as the "extreme positive" group. Parents with difference scores 0.5 standard deviations below the mean and lower were identified as the "extreme negative" group. These extreme positive/negative difference scores for false alarms to anger, false alarms to fear, reaction times to anger, and reaction times to fear were utilized to determine whether parent mental health, stress, and motivation characteristics served as predictors of change in emotion recognition and regulation skills.

Independent Variables

The questionnaires administered during the pre-treatment assessment were completed in interview format with a trained research assistant. For the Likert-type questions (i.e. scale of 1-5), parents were given a small booklet of scales that they could point to when responding. The research assistants recorded these responses into Qualtrics, where they were automatically scored.

Parent Mental Health: Parent depression and anxiety levels were measured using the Brief Symptom Inventory (BSI) (Derogatis & Spencer, 1982). Although this questionnaire covers nine symptom dimensions, only the depression and anxiety scales

(12 of the 53 items) were given to the parents. The BSI measured current or past (within the past seven days) symptomatology, intensity of symptoms, and number of reported symptoms for anxiety and depression. The raw score for each parent was converted to T scores, calculated based on the non-patient adult values provided in the BSI manual. Thus, all 88 parents were scored on levels of depression (M=56.52, SD=9.25) and anxiety (M=56.94, SD=10.72) before attending PCIT sessions.

Parent Stress: ACE and PSI. Parent stress at treatment entry was measured using the Adverse Childhood Experiences (ACE) and the Parenting Stress Index (PSI) questionnaires (Felitti et al., 1998; Johnson, 2015). The ACE questionnaire has ten questions that measure seven categories of adverse experiences that occurred during the parents' childhood. These categories include psychological, physical, or sexual abuse; violence against mother; or living with household members who were substance abusers, mentally ill or suicidal, or ever imprisoned. Parents were prompted to reply "yes" or "no" and were scored by the sum of all "yes" responses (M=5.34, SD=2.924).

The PSI questionnaire measures parenting stress levels considering the parents' relationship with one of their children (between 1 month and 12 years old). The purpose of this survey is to define parent stress levels and understand where they originate. This is a 120-item measure that uses a Likert-type scale format. For this project, only questions 13 through 36 were used for two scores: Parent-Child Dysfunctional Interactions (M=23.22, SD=6.52) and Difficult Child (M=31.26, SD=7.83). These subscale scores were added up separately to differentiate the parent stress type that may serve as a predictor of emotion regulation skills.

Motivation: REDI. Parent motivation was measured using the Readiness for Parenting Change (REDI) questionnaire (Mullins, 2004). The REDI survey consists of five subsections, including readiness to change, attitude toward harsh discipline, attitude toward program, self-efficacy, and problem recognition. For the purposes of this investigation, I focused on problem recognition (M=2.42, SD=0.88) and the sum of total subsections (M=3.85, SD=0.38) scores. The questions administered to the parents were scored on a Likert-type scale and parent scores were determined based on the sum of responses.

Child Behavior Problems: ECBI. The Eyberg Child Behavior Inventory (ECBI; Robinson, Eyberg, & Ross, 1980) was designed to be a comprehensive measure of conduct disorders in children. The questionnaire provides a list of 36 typical problem behaviors that parents are able to respond to in two dimensions: problem identification (does their child exhibit this behavior, "yes" or "no") and the frequency of its occurrence (scored from 1-never, to 7-always). The scores for this measure consisted of the sum of parent responses regarding their child's behavior. The present study focused exclusively on the ECBI total intensity score (M=119.12, SD=34.94), the sum of intensity rankings for each of the 36 problem behaviors.

Results

The present study investigated measures of mental health, stress, and motivation to change in parents who attended PCIT to identify variables that predict differences in parents' response to treatment. To study this response, I focused on the parent changes in emotion regulation skills based on their Emotional Go/No-Go scores at post-treatment. All analyses were conducted using independent t-tests within SPSS Statistics (Version 27) predictive analytics software.

Change in Parent Emotion Regulation following PCIT

Parent response to PCIT was assessed through four dimensions of the Emotional Go/No-Go scores: reaction times to angry faces, reaction times to fearful faces, false alarm rates when angry faces were "no-go," and false alarm rates when fear faces were "no-go." Change scores for these four variables were calculated by subtracting their score at pre-treatment from their score at post-treatment. Parents with high positive change in these dimensions were placed in the "increasing" group and parents with high negative change were placed in the "decreasing" group (group size, means, and standard deviations of these dimensions are displayed in Table 1).

Among the 88 parents, 19 parents had increasing reaction times to angry faces (M = 41.62, SD = 13) while 21 parents had decreasing reaction times to angry faces (M = -39.32, SD = 18.31). 19 parents had increasing reaction times to fearful faces (M = 50.73, SD = 28.7) while 16 parents had decreasing reaction times to fearful faces (M = -32.7, SD = 13.94). 20 parents had increasing false alarm rates to anger (M = 0.11, SD = 0.06) while 13 parents had decreasing false alarm rates to anger (M = -0.12, SD = 0.06).

12 parents had increasing false alarm rates to fear (M = 0.13, SD = 0.09) while 12 parents had decreasing false alarm rates to fear (M = -0.21, SD = 0.15).

Change in reaction time to angry faces	N	Mean	Standard Deviation		Change in reaction time to fearful faces	N	Mean	Standard Deviation
Increasing (slowing down)	19	41.62	13		Increasing (slowing down)	19	50.73	28.7
Decreasing (speeding up)	21	-39.32	18.31		Decreasing (speeding up)	16	-32.7	13.94
Total	**40**				**Total**	**35**		
Change in false alarm rate when angry faces are "no-go"	**N**	**Mean**	**Standard Deviation**		**Change in false alarm rate when fearful faces are "no-go"**	**N**	**Mean**	**Standard Deviation**
Increasing	20	0.11	0.06		Increasing	12	0.13	0.09
Decreasing	13	-0.12	0.06		Decreasing	12	-0.21	0.15
Total	**33**				**Total**	**24**		

Table 1. Outcome Variables: Change in Patterns of Parent Emotion Processing Skills

Descriptive statistics for high positive change (increasing) and high negative change (decreasing) parents on the Emotional Go/No-Go False Alarms to Anger and Fear, and Reaction Times to Anger and Fear in PCIT

Predictors of Parent Emotion Regulation Changes Following PCIT

The eight different subgroups of the emotion regulation dimensions listed above were tested against the measures of parent characteristics to identify and differentiate predictors of change. A complete list of the descriptive statistics of the extreme change groups' scores in each of the exploratory variables and their significance as predictors for change in parent emotion regulation can be found in Table 2.

Parent Mental Health: Depression and Anxiety. The mental health of parents, measured through their BSI scores, had a notable predictive quality on some measures of emotion regulation but not others. The influence of depression and anxiety BSI scores on parents' *emotion regulation* skills were analyzed by comparing their changes in their Emotional Go/No-Go False Alarm Rates where fear and angry emotions were

"no-go". For the trial in which fear was "no-go", the anxiety scores at entry were not significantly different, $t(22) = -.365$, $p = .719$, in the 12 parents whose false alarm rate decreased ($M = 55.17$, $SD = 11.34$) compared to the 12 parents whose false alarm rate increased ($M = 56.92$, $SD = 12.15$). Similarly, the depression scores at entry were not significantly different, $t(22) = -.603$, $p = .553$, between the 12 parents whose false alarm rate decreased ($M = 56.5$, $SD = 11.95$) and the 12 parents whose false alarm rate increased ($M = 59.08$, $SD = 8.82$).

For the trial in which angry was "no-go", there was no significant effect for anxiety, $t(31) = -.996$, $p = .327$, despite the 20 parents whose false alarm rate increased ($M = 58.05$, $SD = 10.43$) attaining higher scores than the 13 parents whose false alarm rate decreased ($M = 54.31$, $SD = 10.73$). Similarly, the depression scores at entry were not significantly different, $t(31) = -.494$, $p = .625$, between the 13 parents whose false alarm rate decreased ($M = 56.23$, $SD = 10.24$) and the 20 parents whose false alarm rate increased ($M = 57.8$, $SD = 7.96$).

The influence of depression and anxiety on parents' *emotion recognition* skills were analyzed by comparing the changes in their reaction times to fearful and angry stimuli when those emotions were "go". For the trial in which fear was "go", the anxiety scores at entry were not significantly different, $t(33) = -.968$, $p = .340$, in the 19 parents whose reaction time to fear decreased ($M = 55.58$, $SD = 10.75$) compared to the 16 parents who's reaction time increased ($M = 59.0$, $SD = 10.0$). Similarly, the depression scores at entry were not significantly different, $t(33) = -.795$, $p = .432$, between the 19 parents whose reaction time to fear decreased ($M = 55.53$, $SD = 9.79$) and the 16 parents who's reaction time increased ($M = 58.0$, $SD = 8.35$).

For the trial in which angry faces were "go", the 21 parents who's reaction time decreased across treatment (M = 53.05, SD = 10.04) compared to the 19 parents who's reaction time increased across treatment (M = 60.37, SD = 11.72) demonstrated significantly lower levels of anxiety at the beginning of treatment, $t(38) = -2.13$, $p = .04$. This outcome was seen as well with depression scores at entry. The 21 parents who's reaction time to angry faces decreased across treatment (M = 52.33, SD = 7.93) compared to the 19 parents who's reaction time increased across treatment (M = 60.89, SD = 10.57) demonstrated significantly lower levels of depression at the beginning of treatment, $t(38) = -2.92$, $p = .006$.

Parent Stress

The stress levels of parents, measured through their ACE and PSI scores, did not have a significant influence on parent changes in *emotion regulation* skills. For the trial in which fear was "no-go", the ACE scores at entry were not significantly different, $t(22) = -.213$, $p = .834$, in the 12 parents whose false alarm rate decreased (M = 5.17, SD = 3.33) compared to the 12 parents whose false alarm rate increased (M = 5.42, SD = 2.35). Similarly, the PSI scores for Parent-Child Dysfunctional Interactions were not significantly different, $t(22) = 1.652$, $p = .113$, between the 12 parents whose false alarm rate decreased (M = 27.1, SD = 7.01) and the 12 parents whose false alarm rate increased (M = 22.50, SD = 6.57). These findings were mirrored in the PSI scores for Difficult Child ratings, where there were no significant differences, $t(22) = 0.685$, $p = .501$, between the 12 parents whose false alarm rate decreased (M = 32.67, SD = 7.63) and the 12 parents whose false alarm rate increased (M = 30.75, SD = 5.99).

For the trial in which angry was “no-go”, the ACE scores at entry were not significantly different, $t(31) = 0.896$, $p = .377$, in the 13 parents whose false alarm rate decreased ($M = 6.31$, $SD = 3.09$) compared to the 20 parents whose false alarm rate increased ($M = 5.35$, $SD = 2.94$). Similarly, the PSI scores for Parent-Child Dysfunctional Interactions were not significantly different, $t(31) = 0.228$, $p = .821$, between the 13 parents whose false alarm rate decreased ($M = 25.69$, $SD = 7.02$) and the 20 parents whose false alarm rate increased ($M = 25.10$, $SD = 7.47$). These findings were mirrored in the PSI scores for Difficult Child ratings, where there were no significant differences, $t(31) = 0.755$, $p = .456$, between the 13 parents whose false alarm rate decreased ($M = 34.08$, $SD = 7.26$) and the 20 parents whose false alarm rate increased ($M = 32.30$, $SD = 6.15$).

Parent ACE and PSI scores at treatment entry did not have a significant influence on parent changes in *emotion recognition* skills as well. For the trial in which fear was “go”, the ACE scores at entry were not significantly different, $t(33) = -1.57$, $p = .127$, in the 19 parents whose reaction time decreased ($M = 4.79$, $SD = 2.78$) compared to the 16 parents who’s reaction time increased ($M = 6.31$, $SD = 2.96$). Similarly, the PSI scores for Parent-Child Dysfunctional Interactions were not significantly different, $t(33) = 0.205$, $p = .839$, between the 19 parents whose reaction time decreased ($M = 24.95$, $SD = 7.31$) and the 16 parents who’s reaction time increased ($M = 24.44$, $SD = 7.35$). These findings were mirrored in the PSI scores for Difficult Child ratings, where there were no significant differences, $t(33) = 0.143$, $p = .887$, between the 19 parents whose reaction time decreased ($M = 32.74$, $SD = 7.44$) and the 16 parents who’s reaction time increased ($M = 32.38$, $SD = 7.46$).

For the trial in which angry was "go", the ACE scores at entry were not significantly different, $t(38) = -0.142$, $p = .887$, in the 21 parents whose reaction time decreased ($M = 5.19$, $SD = 2.62$) compared to the 19 parents who's reaction time increased ($M = 5.32$, $SD = 2.95$). Similarly, the PSI scores for Parent-Child Dysfunctional Interactions were not significantly different, $t(38) = -0.852$, $p = .399$, between the 21 parents whose reaction time decreased ($M = 22.43$, $SD = 6.76$) and the 19 parents who's reaction time increased ($M = 24.42$, $SD = 8.02$). These findings were mirrored in the PSI scores for Difficult Child ratings, where there were no significant differences, $t(38) = -1.502$, $p = .141$, between the 21 parents whose reaction time decreased ($M = 29.57$, $SD = 7.85$) and the 19 parents who's reaction time increased ($M = 33.16$, $SD = 7.19$).

Parent Motivation to Change

Readiness to change. Parent motivation did not have a significant influence on parent changes in *emotion regulation* skills. For the trial in which fear was "no-go", the REDI Problem Recognition scores at entry were not significantly different, $t(22) = 1.023$, $p = .317$, in the 12 parents whose false alarm rate decreased ($M = 2.53$, $SD = 0.88$) compared to the 12 parents whose false alarm rate increased ($M = 2.17$, $SD = 0.85$). Similarly, the REDI Total scores at entry were not significantly different, $t(22) = 1.078$, $p = .293$, between the 12 parents whose false alarm rate decreased ($M = 3.94$, $SD = 0.42$) and the 12 parents whose false alarm rate increased ($M = 3.77$, $SD = 0.33$).

For the trial in which angry was "no-go," the REDI Problem Recognition scores at entry were not significantly different, $t(31) = 0.383$, $p = .705$, in the 13 parents whose false alarm rate decreased ($M = 2.67$, $SD = 0.84$) compared to the 20 parents whose

false alarm rate increased (M = 2.53, SD = 1.06). Similarly, the REDI Total scores at entry were not significantly different, $t(31) = 0.517$, $p = .994$, between the 13 parents whose false alarm rate decreased (M = 3.92, SD = 0.45) and the 20 parents whose false alarm rate increased (M = 3.92, SD = 0.37).

Parent REDI measures had no predictive quality on *emotion recognition*. For the trials in which fear was "go", the REDI Problem Recognition scores at entry were not significantly different, $t(33) = -1.222$, $p = .231$, in the 19 parents whose reaction time decreased (M = 2.35, SD = 0.91) compared to the 16 parents who's reaction time increased (M = 2.73, SD = 0.92). Similarly, the REDI Total scores at entry were not significantly different, $t(33) = -0.978$, $p = .335$, between the 19 parents whose reaction time decreased (M = 3.88, SD = 0.35) and the 16 parents who's reaction time increased (M = 3.80, SD = 0.31).

For the trials in which angry was "go", the 21 parents whose reaction time decreased across treatment (M = 2.08, SD = 0.88) compared to the 19 parents whose reaction time increased across treatment (M = 2.79, SD = 0.87) demonstrated significantly lower REDI Problem Recognition scores at the beginning of treatment, $t(38) = -2.56$, $p = .015$. However, the REDI Total scores at entry were not significantly different, $t(38) = -1.304$, $p = .200$, between the 21 parents whose reaction time decreased (M = 3.82, SD = 0.27) and the 19 parents who's reaction time increased (M = 3.96, SD = 0.40).

Child Behavior Problems. Parent motivation measured through ECBI child behavior scores did not have a significant influence on parent changes in *emotion regulation* skills. For the trial in which fear was "no-go", the ECBI Total Intensity raw

scores presented no significant differences, $t(19) = 0.936$, $p = .361$, between the 10 parents whose false alarm rate decreased ($M = 120.8$, $SD = 47.01$) and the 11 parents whose false alarm rate increased ($M = 105.45$, $SD = 26.17$). Similarly, for the trial in which angry was "no-go," there were no significant differences, $t(29) = 1.398$, $p = .173$, between the 12 parents whose false alarm rate decreased ($M = 141.42$, $SD = 40.94$) and the 19 parents whose false alarm rate increased ($M = 122.21$, $SD = 34.83$).

Parent ECBI Total Intensity raw scores had a notable predictive quality on some measures of *emotion recognition* but not others. For the trials in which fear was "go", the 18 parents whose reaction time decreased across treatment ($M = 110.67$, $SD = 34.28$) compared to the 16 parents whose reaction time increased across treatment ($M = 140.06$, $SD = 44.31$) demonstrated significantly lower ECBI scores at the beginning of treatment, $t(32) = -2.18$, $p = .037$. For the trials in which angry was "go", there were no significant differences in the ECBI Total Intensity raw scores, where $t(36) = -1.498$, $p = .143$, between the 21 parents whose false alarm rate decreased ($M = 114.95$, $SD = 34.91$) and the 17 parents whose false alarm rate increased ($M = 133.00$, $SD = 39.33$).

Parent Characteristics	Change in false alarm rate when fearful faces are "no-go"	N	Mean	Standard Deviation	Significance (p-value)
ACE: Total Parent Score	Increasing	12	5.42	2.35	0.834
	Decreasing	12	5.17	3.33	
PSI: Parent-Child Dysfunctional Interactions	Increasing	12	22.5	6.57	0.113
	Decreasing	12	27.1	7.01	
PSI: Difficult Child	Increasing	12	30.75	5.99	0.501
	Decreasing	12	32.67	7.63	
BSI: Anxiety	Increasing	12	56.92	12.15	0.719
	Decreasing	12	55.17	11.34	
BSI: Depression	Increasing	12	59.08	8.82	0.553
	Decreasing	12	56.5	11.95	
REDI: Problem Recognition	Increasing	12	2.17	0.85	0.317
	Decreasing	12	2.53	0.88	
REDI: Total Score	Increasing	12	3.77	0.33	0.293
	Decreasing	12	3.94	0.42	
ECBI: Total Intensity	Increasing	11	105.45	26.17	0.361
	Decreasing	10	120.8	47.01	
Parent Characteristics	**Change in false alarm rate when angry faces are "no-go"**	**N**	**Mean**	**Standard Deviation**	**Significance (p-value)**
ACE: Total Parent Score	Increasing	20	5.35	2.94	0.377
	Decreasing	13	6.31	3.09	
PSI: Parent-Child Dysfunctional Interactions	Increasing	20	25.1	7.47	0.821
	Decreasing	13	25.69	7.02	
PSI: Difficult Child	Increasing	20	32.3	6.15	0.456
	Decreasing	13	34.08	7.26	
BSI: Anxiety	Increasing	20	58.05	10.43	0.327
	Decreasing	13	54.31	10.73	
BSI: Depression	Increasing	20	57.8	7.96	0.625
	Decreasing	13	56.23	10.24	
REDI: Problem Recognition	Increasing	20	2.53	1.06	0.705
	Decreasing	13	2.67	0.84	
REDI: Total Score	Increasing	20	3.92	0.37	0.994
	Decreasing	13	3.92	0.45	
ECBI: Total Intensity	Increasing	19	122.21	34.83	0.173
	Decreasing	12	141.42	40.94	

Table 2a. Differences in Parent False Alarm Change Scores by Predictor Variable

Descriptive statistics for high positive change (increasing) and high negative change (decreasing) parents in false alarm rate to fearful and angry faces for each of the exploratory variables.

Parent Characteristics	Change in reaction time to fearful faces	N	Mean	Standard Deviation	Significance (*p*-value)
ACE: Total Parent Score	Increasing	16	6.31	2.96	0.127
	Decreasing	19	4.79	2.78	
PSI: Parent-Child Dysfunctional Interactions	Increasing	16	24.44	7.35	0.839
	Decreasing	19	24.95	7.31	
PSI: Difficult Child	Increasing	16	32.38	7.46	0.887
	Decreasing	19	32.74	7.44	
BSI: Anxiety	Increasing	16	59	10	0.34
	Decreasing	19	55.58	10.75	
BSI: Depression	Increasing	16	58	8.35	0.432
	Decreasing	19	55.53	9.79	
REDI: Problem Recognition	Increasing	16	2.73	0.92	0.231
	Decreasing	19	2.35	0.91	
REDI: Total Score	Increasing	16	3.8	0.35	0.335
	Decreasing	19	3.88	0.35	
ECBI: Total Intensity	Increasing	16	140.06	44.31	0.037*
	Decreasing	18	110.67	34.28	
Parent Characteristics	**Change in reaction time to angry faces**	**N**	**Mean**	**Standard Deviation**	**Significance (*p*-value)**
ACE: Total Parent Score	Increasing	19	5.32	2.95	0.887
	Decreasing	21	5.19	2.62	
PSI: Parent-Child Dysfunctional Interactions	Increasing	19	24.42	8.02	0.399
	Decreasing	21	22.43	6.76	
PSI: Difficult Child	Increasing	19	33.16	7.19	0.141
	Decreasing	21	29.57	7.85	
BSI: Anxiety	Increasing	19	60.37	11.72	0.04*
	Decreasing	21	53.05	10.04	
BSI: Depression	Increasing	19	60.89	10.57	0.006*
	Decreasing	21	52.33	7.93	
REDI: Problem Recognition	Increasing	19	2.79	0.87	0.015*
	Decreasing	21	2.08	0.88	
REDI: Total Score	Increasing	19	3.96	0.4	0.2
	Decreasing	21	3.82	0.27	
ECBI: Total Intensity	Increasing	17	133	39.33	0.143
	Decreasing	21	114.95	34.91	

Table 2b. Differences in Parent Reaction Time Change Scores by Predictor Variable

Descriptive statistics for high positive change (increasing) and high negative change (decreasing) parents in reaction time to fearful and angry faces for each of the exploratory variables.

Note. The presence of an Asterix on the significance (*p*-value) column designates that variable to be a predictor of change in parent emotion recognition skills through PCIT.

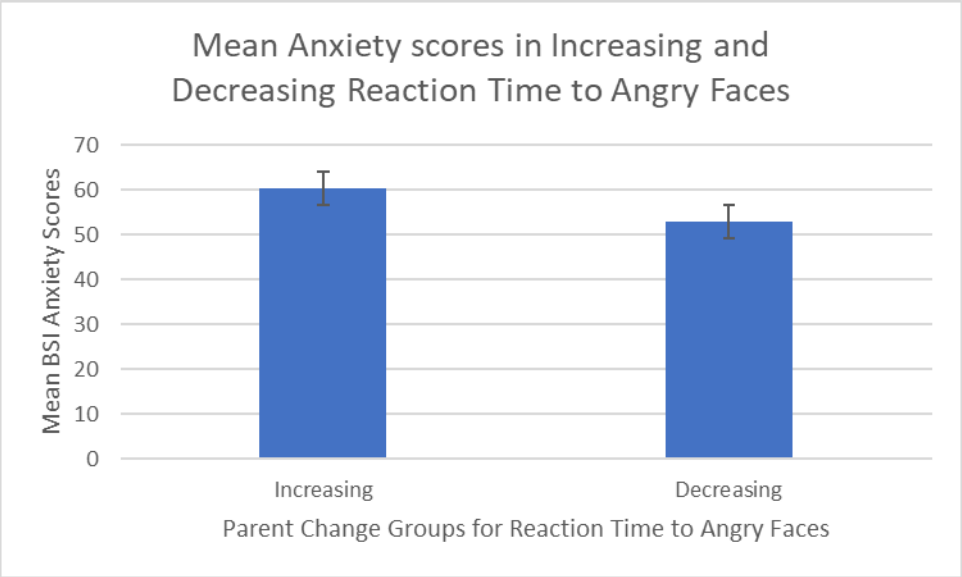

Figure 1.

A bar chart of the differences in mean parent BSI anxiety scores between parents with extreme increases in reaction tine to angry faces and parents with extreme decreases in reaction time to angry faces.

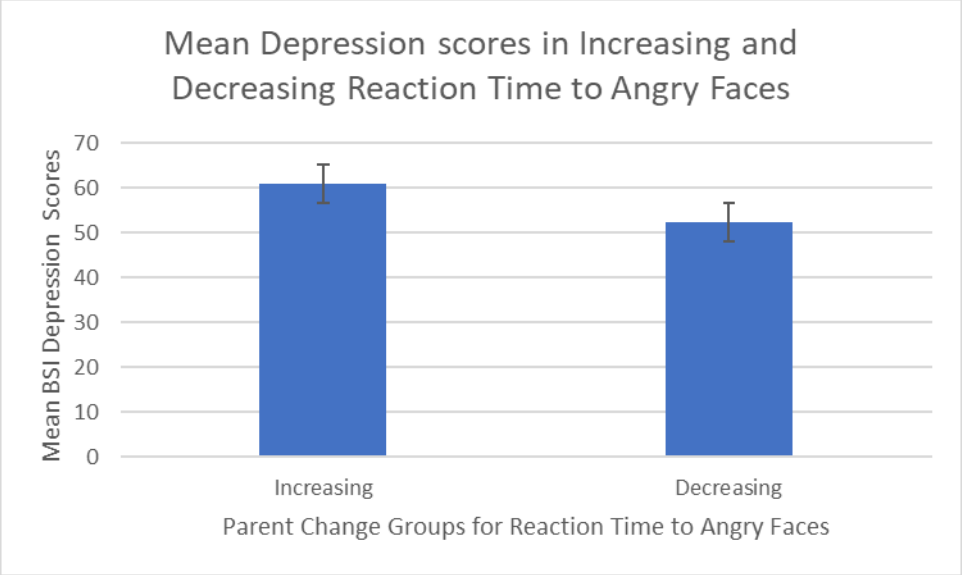

Figure 2.

A bar chart of the differences in mean parent BSI anxiety scores between parents with extreme increases in reaction tine to angry faces and parents with extreme decreases in reaction time to angry faces.

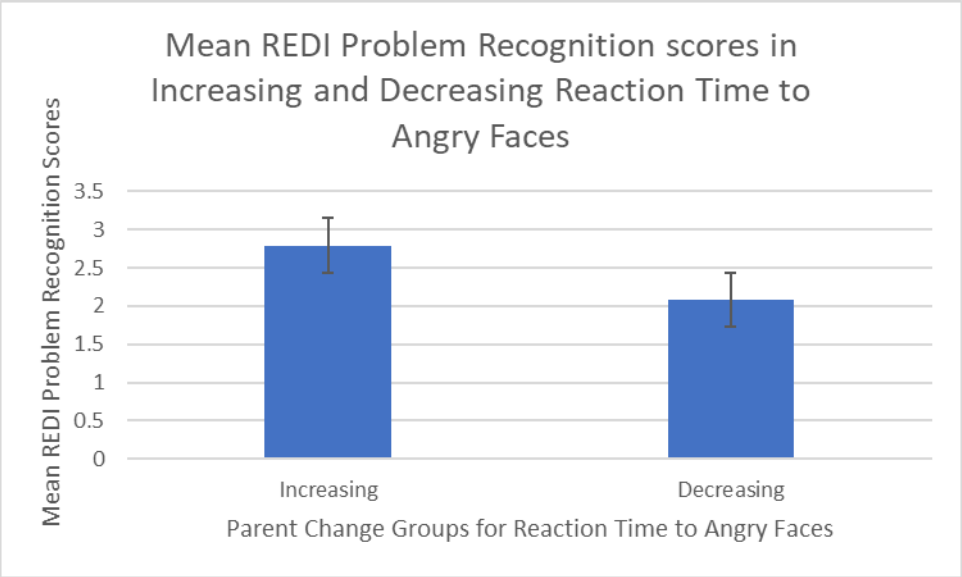

Figure 3.

A bar chart of the differences in mean parent REDI Problem Recognition scores between parents with extreme increases in reaction tine to angry faces and parents with extreme decreases in reaction time to angry faces.

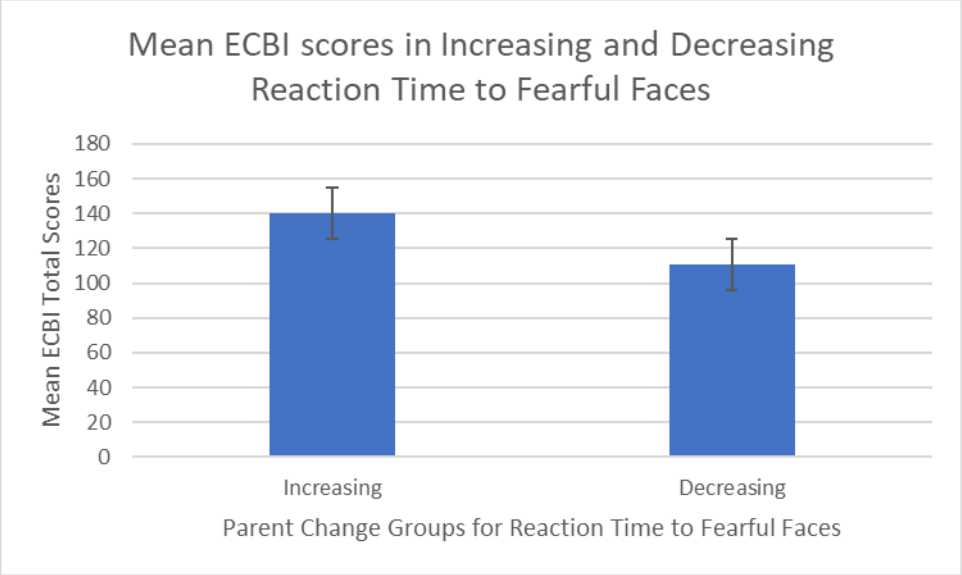

Figure 4.

A bar chart of the differences in mean parent REDI Problem Recognition scores between parents with extreme increases in reaction tine to angry faces and parents with extreme decreases in reaction time to angry faces.

Discussion

The present study sought to learn about parent characteristics that help to distinguish patterns of change in parent emotion regulation in PCIT. To study this, I built off the current literature on correlates of emotion regulation and investigated measures of parent mental health, stress, and motivation. No predictive relationships with parent characteristics were found with measures of *emotion regulation* (measured through false alarm rate) for either angry or fearful faces. However, measures of parent mental health and motivation *did* predict changes in *emotion recognition* (measured through reaction time) to angry and fearful faces.

Four main predictors of change in parent *emotion recognition* skills in PCIT were found. Parent anxiety, depression, and readiness-to-change scores predicted reaction time to angry faces and parents' perception of child behavior predicted reaction time to fearful faces. In other words, parents that entered PCIT treatment with elevated scores on depression, anxiety, or readiness-to-change slowed down at reacting correctly to angry faces in the Emotional Go/No-Go paradigm. Parents with lower scores on these depression, anxiety, and readiness-to-change measures got faster at reacting correctly to angry faces. Similarly, parents that entered PCIT treatment reporting more problem behaviors in their child slowed down at reacting correctly to fearful faces while parents with lower reports of problem behaviors in their child got faster at reacting correctly to fearful faces.

Important to this discussion is the relationship between the two emotion regulation measures. The changes in parent reaction times, and the subsequent "extreme" change groups, were unrelated to the changes in parent false alarm rates and

their “extreme” change groups. Thus, slowing down at reacting to angry or fearful faces does not mean that parents are getting more or less accurate at responding to those emotions. Furthermore, slowing down or speeding up at reacting to angry or fearful faces does not inherently mean that parents are getting “better” or “worse” in their emotion regulation skills. They are simply taking more or less time to identify and react to these emotions.

These results support some of the previous findings in the PCIT and emotion regulation literature regarding parent mental health and motivation. In previous studies on the role of emotion regulation in depressed patients, a negativity bias was identified, where patients with higher levels of depression demonstrated greater attention to “negative” (i.e., sad, fearful, angry) stimuli and took more time to respond to positive stimuli than negative (Erickson et al., 2005; Murphy et al., 1999). Further, the meta-analysis conducted by Dalili et al. (2015) found that depressed participants were less successful in recognizing anger, disgust, fear, happiness, and surprise compared to control participants. However, these emotion regulation deficits were not seen for sadness. Although these investigations did not focus on the threat-related angry and fearful emotions explored in the present study, they nevertheless reflect variance in reaction time to emotional stimuli among participants with higher depression levels, consistent with the current findings. The predictive quality of anxiety on the reaction time to anger found in the current study is reminiscent of Kungl et al. (2020), which found delayed behavioral responses to fearful or ambiguous/neutral faces in caregivers with high levels of anxiety. While many of these previous investigations focused on different emotional stimuli than the current study, they all reflect similar findings on the

strong relationship between emotion processing and mental health, particularly mood disorders like anxiety and depression.

The current findings on parent motivation are also relevant to the literature on emotion regulation and PCIT. Although parent motivation (measured through caregiver perceptions of child behavior and readiness to change in treatment) has primarily been studied in the context of engagement and outcome of PCIT (Chaffin et al., 2009; Skoranski et al., 2021), this investigation found it to be a predictor of change in emotion regulation as well. However, previous studies found that greater hostile attributions about one's child and lower readiness to change were associated with lower levels of treatment completion (Chaffin et al., 2009; Skoranski et al., 2021), the present study found that heightened scores for both of those variables predicted parents slowing down at correctly identifying anger and fear. The variation in findings that exist between the current study and those prior beg the question of what the changes in parent emotion recognition skills mean in terms of treatment outcome.

This variation may be due to the role of PCIT intervention. The current investigation demonstrates how PCIT intervention leads parents with higher scores in predictor variables (anxiety, depression, readiness to change, and perception of problem behavior in their child) to different responses than parents with lower scores. But why are parents with these high scores for mental health and motivation measures slowing down at reacting to anger and fear? And how does the change in these scores translate to treatment outcomes? Because this was a cross-sectional study that took an exploratory approach, no outcome variables were assessed against the findings of this investigation. In other words, while PCIT begets parents slowing down at reacting to

angry and fearful faces, this study did not extend these changes in parents' emotion regulation processes to parenting behavior or other measures of parent-child wellness at the end of the PCIT treatment. However, this investigation sets the stage for more selective studies in the future that can address outcome measures in parents. Implementing a longitudinal design in future studies that allows for more outcome variables, such as recidivism rates, to be analyzed after treatment could address this limitation.

Furthermore, future studies have the opportunity to go deeper into the investigation of parent mental health and motivation measures. Namely, the limited collection of depression and anxiety indices was one limitation to the present study. The BSI is a brief survey that focuses on the week prior to questionnaire completion. It fails to measure the patient's mental health history or whether they are currently taking medication for mental health-related concerns. Having a greater understanding of parents' health history in addition to their BSI scores would provide more levels of analysis and understanding on the relationship between depression, anxiety, and emotion regulation skills in parents.

In addition to measures of mental health, measures of parent stress may be an important avenue to follow up on in future studies. No significant relationships were found between parent stress (measured through ACE and PSI scores) and changes in either *emotion regulation* or *emotion recognition* scores. This finding (or lack thereof) was surprising considering the salient role of stress in parent mental health, executive functioning, and poor parenting behaviors (Steele et al., 2016). That being said, the ACE and PSI indices measure niche aspects of stress (childhood and parenting-related

stress respectively). It should be considered that analyzing a more generalized measure of stress may better account for the stress levels that parents are experiencing at treatment entry.

The design of future studies should be discussed to address these limitations. In addition to utilizing the BSI, selective recruiting of parents who are currently diagnosed with anxiety or depression and recording their current treatment plan could provide more information on how mental health impacts emotion regulation, a parent's interaction with PCIT, and their parenting behavior. Additionally, investigating the relationship between parent mental health at PCIT entry and treatment success would help attain more information on how mental health or changes in emotion regulation skills influences a parent's interaction with treatment. Similar approaches, such as selective recruitment of high-stress individuals and the utilization of more stress indices, could be implemented to address limitations in the current measures of parent stress. Further, selective recruiting may allow for a larger sample size and greater generalizability of the findings.

Implications and Conclusion

PCIT is a highly effective treatment that reduces harsh, aversive parenting and improves the quality of parent-child relationships across diverse and at-risk families (Chaffin et al., 2004; Euser et al., 2015; Kennedy, Kim, Tripodi, Brown, & Gowdy, 2016; Leung, Tsang, Sin et al., 2014; Matos et al., 2009). Furthermore, the present study focused on parent emotion regulation processes in the context of negative emotions (i.e., both angry and fearful stimuli), relatively understudied emotions in relation to emotion regulation, PCIT, and parenting behavior. The unique scope and focus of this

investigation allowed for me to build off the current literature on the importance of emotion regulation as it pertains to PCIT and CM.

Through this investigation, I sought to explore changes in emotion regulation in parents who attended PCIT, a previously uninvestigated area of study. The findings of the current study help us better understand how parents with varying states of mental health and motivation respond differently to PCIT. If we can continue to identify factors that differentiate at-risk parents' responses to PCIT treatment through emotion regulation, we can better help the parents and children involved in the child welfare system receive the best treatment option.

By taking an exploratory analysis of parent changes in emotion regulation skills across PCIT, I have identified parent mental health and motivation as salient avenues for future research. This study paves the way for a more systematic approach that takes the investigation one step forward to address how these variables impact treatment outcome for these parents. Only with future analyses can we provide effective interventions and better understand how to match individual parents to effective treatments that address the high rates of CM and break its intergenerational cycle.

Bibliography

Chaffin, Mark, Silovsky, Jane F, Funderburk, Beverly, Valle, Linda Anne, Brestan, Elizabeth V, Balachova, Tatiana, Jackson, Shelli, Lensgraf, Jay, & Bonner, Barbara L. (2004). Parent-Child Interaction Therapy with Physically Abusive Parents. *Journal of Consulting and Clinical Psychology*, 72(3), 500–510. https://doi.org/10.1037/0022-006X.72.3.500

Chaffin, Mark, Valle, Linda Anne, Funderburk, Beverly, Gurwitch, Robin, Silovsky, Jane, Bard, David, McCoy, Carol, & Kees, Michelle. (2009). A Motivational Intervention Can Improve Retention in PCIT for Low-Motivation Child Welfare Clients. *Child Maltreatment*, 14(4), 356–368. https://doi.org/10.1177/1077559509332263

Child Welfare Information Gateway. (2019). Long-term consequences of child abuse and neglect. Washington, DC: U.S. *Department of Health and Human Services, Administration for Children and Families*, Children's Bureau. https://www.childwelfare.gov/pubpdfs/long_term_consequences.pdf

Children's Bureau. (2022). Mental Health of Parents and Caregivers. In *Child Welfare Information Gateway*. https://www.childwelfare.gov/topics/can/factors/parentcaregiver/mentalhealth/

Dalili, M. N, Penton-Voak, I. S, Harmer, C. J, & Munafò, M. R. (2015). Meta-analysis of emotion recognition deficits in major depressive disorder. *Psychological Medicine*, 45(6), 1135–1144. https://doi.org/10.1017/S0033291714002591

Derogatis, L. R, Spencer, P.M. (1982). The Brief Symptom Inventory (BSI). Baltimore, MD: *Clinical Psychometric Research*.

Donisch K., Briggs E.C. (2022). Overview of Child Maltreatment. In: Geffner R., White J.W., Hamberger L.K., Rosenbaum A., Vaughan-Eden V., Vieth V.I. (eds) *Handbook of Interpersonal Violence and Abuse Across the Lifespan*. Springer, Cham. https://doi.org/10.1007/978-3-319-89999-2_8

Erickson, Kristine, Drevets, Wayne C, Clark, Luke, Cannon, Dara M, Bain, Earle E, Zarate, Carlos A, Charney, Dennis S, & Sahakian, Barbara J. (2005). Mood-Congruent Bias in Affective Go No-Go Performance of Unmedicated Patients with Major Depressive Disorder. *The American Journal of Psychiatry*, 162(11), 2171–2173. https://doi.org/10.1176/appi.ajp.162.11.2171

Euser, Saskia, Alink, Lenneke Ra, Stoltenborgh, Marije, Bakermans-Kranenburg, Marian J, & van IJzendoorn, Marinus H. (2015). A gloomy picture: a meta-analysis of randomized controlled trials reveals disappointing effectiveness of programs aiming at preventing child maltreatment. *BMC Public Health*, 15(1), 1068–1068. https://doi.org/10.1186/s12889-015-2387-9

Felitti, Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, 14(4), 245–258. https://doi.org/10.1016/S0749-3797(98)00017-8

Ip, McCrohan, M., Morelen, D., Fitzgerald, K., Muzik, M., & Rosenblum, K. (2021). Maternal Emotion Regulation Difficulties and the Intergenerational Transmission of Risk. *Journal of Child and Family Studies*, 30(10), 2367–2378. https://doi.org/10.1007/s10826-021-02019-w

Johnson. (2015). Test Review: Abidin, R. R. (2012) "Parenting Stress Index, Fourth Edition" ("PSI-4"). Lutz, Florida: Psychological Assessment Resources. *Journal of Psychoeducational Assessment*, 33(7), 698. https://doi.org/10.1177/0734282914556069

Kennedy, Kim, J. S., Tripodi, S. J., Brown, S. M., & Gowdy, G. (2016). Does Parent–Child Interaction Therapy Reduce Future Physical Abuse? A Meta-Analysis. *Research on Social Work Practice*, 26(2), 147–156. https://doi.org/10.1177/1049731514543024

Kohl, P., Jonson-Reid, M., & Drake, B. (2011). Maternal mental illness and the safety and stability of maltreated children. *Child Abuse & Neglect*, 35(5), 309–318. https://doi.org/10.1016/j.chiabu.2011.01.006

Lawson, Piel, M. H., & Simon, M. (2020). Child Maltreatment during the COVID-19 Pandemic: Consequences of Parental Job Loss on Psychological and Physical Abuse Towards Children. *Child Abuse & Neglect*, 110(Pt 2), 104709–104709. https://doi.org/10.1016/j.chiabu.2020.104709

Lavi, Manor-Binyamini, I., Seibert, E., Katz, L. F., Ozer, E. J., & Gross, J. J. (2019). Broken bonds: A meta-analysis of emotion reactivity and regulation in emotionally maltreating parents. *Child Abuse & Neglect*, 88, 376–388. https://doi.org/10.1016/j.chiabu.2018.11.016

Leung, Tsang, S., Sin, T. C. S., & Choi, S. (2015). The Efficacy of Parent–Child Interaction Therapy with Chinese Families. *Research on Social Work Practice*, 25(1), 117–128. https://doi.org/10.1177/1049731513519827

Matos, Bauermeister, J. J., & Bernal, G. (2009). Parent-Child Interaction Therapy for Puerto Rican Preschool Children with ADHD and Behavior Problems: A Pilot Efficacy Study. *Family Process*, 48(2), 232–252. https://doi.org/10.1111/j.1545-5300.2009.01279.x

Mullins, Suarez, M., Ondersma, S. J., & Page, M. C. (2004). The impact of motivational interviewing on substance abuse treatment retention: A randomized control trial of women involved with child welfare. *Journal of Substance Abuse Treatment*, 27(1), 51–58. https://doi.org/10.1016/j.jsat.2004.03.010

Murphy, Sahakian, B. J., Rubinsztein, J. S., Michael, A., Rogers, R. D., Robbins, T. W., & Paykel, E. S. (1999). Emotional bias and inhibitory control processes in mania and depression. *Psychological Medicine*, 29(6), 1307–1321. https://doi.org/10.1017/S0033291799001233

Nekkanti, Jeffries, R., Scholtes, C. M., Shimomaeda, L., DeBow, K., Norman Wells, J., Lyons, E.R., Giuliano, R.J., Gutierrez, F.J., Woodlee, K.X., Funderburk, B. W., & Skowron, E. A. (2020). Study Protocol: The Coaching Alternative Parenting Strategies (CAPS) Study of Parent-Child Interaction Therapy in Child Welfare Families. *Frontiers in Psychiatry*, 11, 839-839. https://doi.org/10.3389/fpsyt.2020.00839

Robinson, Eyberg, S. M., & Ross, A. W. (1980). The standardization of an inventory of child conduct problem behaviors. *Journal of Clinical Child Psychology*, 9(1), 22–28. https://doi.org/10.1080/15374418009532938

Rodriguez, Are, F., Madden, A., Shaffer, A., & Suveg, C. (2021). Intergenerational Transmission of Childhood Maltreatment Mediated by Maternal Emotion Dysregulation. *Journal of Child and Family Studies*, 30(8), 2068–2075. https://doi.org/10.1007/s10826-021-02020-3

Rutherford, Helena J.V, Wallace, Norah S, Laurent, Heidemarie K, & Mayes, Linda C. (2015). Emotion regulation in parenthood. *Developmental Review*, 36, 1–14. https://doi.org/10.1016/j.dr.2014.12.008

Skoranski, Amanda M, Skowron, Elizabeth A, Nekkanti, Akhila K, Scholtes, Carolyn M, Lyons, Emma R, & DeGarmo, David S. (2021). PCIT engagement and persistence among child welfare-involved families: Associations with harsh parenting, physiological reactivity, and social cognitive processes at intake. *Development and Psychopathology*, 1–18. https://doi.org/10.1017/S0954579421000031

Skowron, E. A., Nekkanti, A., Skoranski, A., Scholtes, C., Mills, K. L., Berkman, E., & Funderburk, B. W. (2021). Skowron et al PCIT Improves Child-Welfare Parents' Behavior, Self-Regulation, & Self-Perceptions. https://doi.org/10.31234/osf.io/8dsug

Skowron, & Funderburk, B. W. (2022). In vivo social regulation of high-risk parenting: A conceptual model of Parent-Child Interaction Therapy for child maltreatment prevention. *Children and Youth Services Review*, 136. https://doi.org/10.1016/j.childyouth.2022.106391

Steele, Bate, J., Steele, M., Dube, S. R., Danskin, K., Knafo, H., Nikitiades, A., Bonuck, K., Meissner, P., & Murphy, A. (2016). Adverse Childhood Experiences, Poverty, and Parenting Stress. *Canadian Journal of Behavioural Science*, 48(1), 32–38. https://doi.org/10.1037/cbs0000034

Tottenham, Hare, T. A., & Casey, B. J. (2011). Behavioral assessment of emotion discrimination, emotion regulation, and cognitive control in childhood, adolescence, and adulthood. *Frontiers in Psychology*, 2, 39–39. https://doi.org/10.3389/fpsyg.2011.00039

Vermeulen, S., Alink, L. R. A., & van Berkel, S. R. (2022). Child Maltreatment During School and Childcare Closure Due to the COVID-19 Pandemic. *Child Maltreatment*. https://doi.org/10.1177/10775595211064885

Wilson, Steven R, Rack, Jessica J, Shi, Xiaowei, & Norris, Alda M. (2008). Comparing physically abusive, neglectful, and non-maltreating parents during interactions with their children: A meta-analysis of observational studies. *Child Abuse & Neglect*, 32(9), 897–911. https://doi.org/10.1016/j.chiabu.2008.01.003

World Health Organization. (2020). Child Maltreatment. In *World Health Organization*. Retrieved from https://www.who.int/news-room/fact-sheets/detail/child-maltreatment

Zimmer-Gembeck, Kerin, J. L., Webb, H. J., Gardner, A. A., Campbell, S. M., Swan, K., & Timmer, S. G. (2019). Improved Perceptions of Emotion Regulation and Reflective Functioning in Parents: Two Additional Positive Outcomes of Parent-Child Interaction Therapy. *Behavior Therapy*, 50(2), 340–352. https://doi.org/10.1016/j.beth.2018.07.002