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An RCT of Intensive Parent-Child Interaction Therapy: Examining Interactions between Children with Autism and their Caregivers

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An RCT of Intensive Parent-Child Interaction Therapy: Examining Interactions between

Children with Autism and their Caregivers

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor

of Philosophy in Counseling, Clinical, and School Psychology

by

Maria Jimenez Muñoz

Committee in charge:

Professor Ty Vernon, Chair

Professor Miya Barnett

Professor Jon Goodwin

September 2024

The dissertation of Maria Jimenez Muñoz is approved.

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Miya Barnett, PhD

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Jon Goodwin, PhD

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Ty W. Vernon, PhD, Committee Chair

June 2024

ACKNOWLEDGEMENTS

I would like to express my deepest gratitude to the participants in this study. Their willingness to share their experiences and insights provided the foundation for this research. I am also fortunate to have collaborated with Dr. Klein on this project. Her expertise, encouragement, and willingness to tackle this ambitious undertaking were invaluable. My sincere appreciation also goes to my research assistants, Allison and Ilias, for their dedication and hard work throughout the research process. I am further indebted to my dissertation committee, Dr. Vernon, Dr. Barnett, and Dr. Goodwin, for their invaluable mentorship and support. Their insightful feedback and guidance significantly shaped this dissertation. Finally, I would like to express my heartfelt gratitude to my family and friends. Their unwavering encouragement and support throughout this entire journey have been a constant source of strength.

Curriculum Vitae
María Jiménez Muñoz, Ph.D. Candidate
University of California, Santa Barbara
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EDUCATION

Doctoral Candidate in Counseling, Clinical and School Psychology, *2019 - Present*
University of California, Santa Barbara, CA
　　　　Emphasis: Clinical Psychology
　　　　Dissertation: Emotion Regulation Coaching for parents of Autistic children.

Master of Arts in Psychology, June 2021
University of California, Santa Barbara, CA
　　　　Graduate Advisor: Ty W. Vernon, PhD, BCBA-D
　　　　　Master Thesis: Breaking Down Barriers: Intensive Online PCIT for Parents
of Autistic Children.

Master of Science in Psychology (Applied Behavior Analysis Program), *December 2017*
University of Miami, Coral Gables, FL
　　　　Graduate Advisor: Annibal Gutierrez, PhD, BCBA-D

Bachelor of Science with Departmental Honors in Psychology, *May 2016*
University of Miami, Coral Gables, FL
　　Major: Psychology
　　Minors: Biology and Spanish

CERTIFICATIONS

Parent Child Interaction Therapy Certified Therapist
PCIT International (October 2023 – Present)

Board Certified Behavior Analyst (BCBA #1-18-31492)
Behavior Analysis Certification Board (September 2018 – Present)

LANGUAGES

Spanish (Native)
English (Full Professional Proficiency)
Qualified Bilingual Staff Certification
Children's Hospital of Colorado (September 2023 – Present)

INTERVENTION MANUALS
Jimenez-Munoz, M., Klein, C., (2021). PCIT-EF for ASD; An emotion regulation
adaptation of PCIT-ED for young children with ASD.

SUPERVISOR EXPERIENCE

Extern Supervisor
Pediatric Mental Health Institute| Amanda Trovato, Psy.D.
Children's hospital of Colorado, Aurora, CO
June 2023 - Present
- Provide individual supervision to doctoral student clinician.
- Supervise and assist in the delivery of evidenced-based practices for children and teens with a range of presenting concerns, including Attention-deficit/hyperactivity disorder (ADHD), anxiety disorders, Autism Spectrum Disorder (ASD), and major depressive disorders.

Supervisor, Parent Child Interaction Therapy (PCIT)
Early Intervention PCIT Clinic | Miya Barnett, Ph.D.
  University of California, Santa Barbara, Santa Barbara, CA
  January 2022 - Present
- Assisted senior clinicians on case conceptualization and delivery of PCIT.
- Conducted didactic training on emotion regulation intervention module for autistic children.
- Provided consultation to clinicians during intensive PCIT cases.

Supervisor, *Behavioral Support Program for Autistic Adults*
Koegel Autism Center | Ty Vernon, Ph.D. & Anna Krasno, Ph.D.
  University of California, Santa Barbara, Santa Barbara, CA
  May 2021 - Present
- Led group supervision meetings for undergraduate student clinicians
- Assisted in the professional development undergraduate junior and senior clinicians
- Conducted didactic training on behaviorally based interventions for autistic adults.

ABA Student Supervisor
Intensive Behavioral Intervention Service (IBIS) clinic | Anibal
Gutierrez, Ph.D., BCBA-D
University of Miami, Miami, FL
  August 2017– December 2017
- Assisted in the training of junior clinicians.
- Developed individualized behavioral programs for specific clients.
- Supervised new clinic staff by providing in-vivo feedback during therapy sessions.

CLINICAL EXPERIENCE

Psychology Intern and Healthy Steps Specialist, Primary Care
Child Health Clinic | Jessica Kenny, PhD.
Children's Hospital of Colorado, Aurora, CO

June 2023 – Present
Population: Children (0 – 12) and Adolescents (ages 13 - 18)
Presenting Issues: Anticipatory guidance, parenting, anxiety disorders, Major Depressive Disorder (MDD), Oppositional Defiant Disorder (ODD), Post Traumatic Stress Disorder (PTSD), adjustment disorders, stress.
- Provide integrated behavioral health services in primary care setting.
- Consult with physicians, nurses, and social workers regarding patient's mental health needs.
- Provide evidence-based developmental interventions to patients within the framework of HealhtySteps.

Psychology Intern and Healthy Steps Specialist, Primary Care
Young Mother's Clinic | Amelia Ehmer, PhD.
Children's Hospital of Colorado, Aurora, CO
June 2023 – Present
Population: Children (ages 0 -12) and Young Mothers (ages 14-25)
Presenting Issues: Post-partum depression, post-partum anxiety, parenting, Oppositional Defiant Disorder (ODD), Post traumatic Stress Disorder (PTSD), adjustment disorders, anticipatory guidance, stress.
- Provide case management, resource connection and individual therapy to young mothers.
- Provide evidence-based developmental interventions and anticipatory guidance to families within the framework of HealhtySteps.
- Consult with physicians, nurses, and social workers regarding young mothers' and their children's mental health needs.

Psychology Intern, Outpatient Individual Psychotherapy
Pediatric Mental Health Institute | Amanda Trovato, Psy.D.
Children's Hospital of Colorado, Aurora, CO
June 2023 – Present
Population: Children and Adolescents (ages 6 - 18)
Presenting Issues: Attention-deficit/hyperactivity disorder (ADHD), anxiety disorders, Autism Spectrum Disorder (ASD), Post Traumatic Stress Disorder (PTSD).
- Provide short-term outpatient psychotherapy in English and Spanish using positive psychology, behavioral and cognitive behavioral therapy models.
- Present case conceptualization during multicultural, Spanish consultation group.

Psychology Intern, Anxiety-Cognitive Behavioral Teen Group
Pediatric Mental Health Institute | Zuzanna Wojcieszak, Ph.D.
Children's Hospital of Colorado, Aurora, CO
June 2023 – Present
Population: Adolescents (ages 13 - 14)
Presenting Issues: Anxiety, Obsessive-compulsive disorder (OCD)
- Co-lead parent groups for caregivers with children with anxiety and obsessive-compulsive disorders using a cognitive behavioral model.

- Co-lead ten groups for adolescents with anxiety and obsessive-compulsive disorders using a cognitive behavioral model.

Advanced Practicum Clinician, Autism Parent Support Group
Koegel Autism Center | Anna Krasno, PhD.
University of California Santa Barbara, Santa Barbara, CA
April 2022 – December 2022
Population: Adults (ages 30 - 55)
*Presenting Issue***s:** Autism Spectrum Disorder (ASD), stress, parenting.
- Co-led parent support groups for families with autistic children using positive psychology, behavioral and mindfulness-based models.
- Provided psychoeducation about Autism and different models of disability (i.e., medical vs social models).
- Facilitated opportunities for social connection between members of the group.

Advanced Practicum Clinician
CALM Trauma-Focused Community Clinic | Melissa Cordero, Psy.D.
University of California Santa Barbara, Santa Barbara, CA
September 2021 – Present
Population: Children (ages 2-12 years) and Adolescents (ages 13 - 17)
*Presenting Issue***s:** Post Traumatic Stress Disorder (PTSD), adjustment disorders, major depressive disorder, anxiety
- Provide short-term outpatient psychotherapy in English and Spanish using Parent Child Interaction Therapy, Dialectical Behavior Therapy, Family Systems and Trauma-focused Cognitive Behavioral models
- Conduct clinic intakes following Medi-Cal procedures and present case conceptualizations to clinic supervisors.

Advanced Practicum Clinician
Hosford Psychological Services Clinic, | Jon Goodwin, Ph.D.
University of California Santa Barbara, Santa Barbara, CA
September 2020 – June 2021
Population: Adults (ages 20-35)
*Presenting Issue***s**: Anxiety, major depressive disorders, adjustment disorders, major depressive disorder, anxiety
- Provided long-term outpatient tele-psychotherapy using Psychodynamic, Client Centered and Cognitive Behavioral models through a secured video conferencing system.
- Conducted clinic intakes and presented case conceptualizations to clinic supervisors for case assignment.

Parent Child Interaction Therapy (PCIT) Therapist
Early Intervention PCIT Clinic | Miya Barnett, Ph.D.
University of California Santa Barbara, Santa Barbara, CA

September 2019 – June 2023
Population: Children (ages 2-7) and families
*Presenting Issue*s: Oppositional Defiant Disorder (ODD), Attention-deficit/hyperactivity disorder (ADHD), Autism Spectrum Disorder (ASD).

- Coach caregivers on their use of positive reinforcement and selective attention and provided in-vivo coaching on the use of positive parenting skills (i.e., PRIDE Skills).
- Track client progress using qualitative and quantitative data collection.
- Assist in the professional development of junior clinicians.

Clinician and Parent Educator in Autism Early Behavioral Intervention
Koegel Autism Center | Anna Krasno, Ph.D., Ty Vernon, Ph.D.
University of California Santa Barbara, Santa Barbara, CA
September 2019 – June 2023
Population: Children (ages 2-12) and families
*Presenting Issue*s: Autism Spectrum Disorder (ASD)

- Provide parent education and in-vivo coaching of empirically validated behavioral intervention, Pivotal Response Treatment (PRT) during collateral and family therapy sessions.
- Implement self-management, priming, and social facilitation strategies in individual therapy sessions.
- Assist in the professional development and training of junior clinicians and Board Certified Behavioral Analyst (BCBAs)

Clinician, Behavioral Support Program for Autistic Adults
Koegel Autism Center | Anna Krasno, Ph.D.
University of California Santa Barbara, Santa Barbara, CA
September 2019 – June 2023
Population: Adults (ages 18-65)
*Presenting Issue*s: Autism Spectrum Disorder (ASD)

- Provide interventions to autistic adults targeting social, communication, emotion regulation and independent living skills.
- Coordinate treatment goals and interventions with undergraduate peer mentors, case managers, and other healthcare providers.

PCIT Therapist
Miller School of Medicine, Pediatrics Department | Jason Jent, Ph.D.
University of Miami, Miami, FL
September 2018 – July 2019
Population: Children (ages 7-12) and families.
*Presenting Issue*s: Oppositional Defiant Disorder (ODD), Attention-deficit/hyperactivity disorder (ADHD), Autism Spectrum Disorder (ASD)

- Conducted clinical interviews and administered expressive and receptive language assessments.
- Coached parents on their use of positive parenting skills (i.e., PRIDE skills) and

tracked client progress using qualitative and quantitative data collection.
● Provided in person and teletherapy sessions in English and Spanish for culturally diverse children and families.

ABA Technician
Independent Contractor
Miami, FL
April 2018 – August 2018
Population: Children (ages 7-12) and families.
Presenting Issues: Autism Spectrum Disorder (ASD)
● Conducted behavioral interviews with caregivers and naturalistic observations prior to intervention.
● Provided Applied Behavior Analysis services to children and families.
● Created and implemented replacement behavior goals and acquisition programs.
● Collected data and maintained records of client's progress.

ABA Senior Technician Trainee
Intensive Behavioral Intervention Service (IBIS) clinic | Anibal
Gutierrez, Ph.D., BCBA-D
University *of Miami, Miami, FL*
August 2016 – December 2017
● Provided early intervention therapy based on behavior analytic principles.
● Monitored patient progress by collecting data on children's behaviors.
● Assisted with functional assessment design and data collection for an adult client.
● Provided behavioral feeding services following a protocol based on Applied Behavior Analysis.

ASSESSMENT EXPERIENCE

Psychology Intern, Transdiagnostic Assessment Clinic
Pediatric Mental Health Institute | Sara Kennedy, Ph.D. & Jake Holzman, Ph.D.
Children's Hospital of Colorado, Aurora, CO
June 2023 – Present
Population: Children (ages 5-12 years), Adolescents (13 – 18 years)
Presenting Issues: ADHD, major depressive disorder, anxiety disorders, behavior problems
● Complete multi-session evaluations and conduct clinical interviews focused on understanding transdiagnostic mechanisms.
● Administer, score, and interpret standardized questionnaires for children and caregivers.
● Conduct case presentations in biweekly case conferences.

Senior Assessment Clinician
Koegel Autism Center | Ty Vernon, Ph.D. & Anna Krasno, Ph.D.

University of California, Santa Barbara, Santa Barbara, CA
September 2019 – June 2023
Population: Children (ages 2-12 years), Adolescents, & Adults (18-65 years)
Presenting Issues: Autism spectrum disorders, major depressive disorder, anxiety disorders, personality disorders, behavior problems

- Administer standardized parent interviews, cognitive, developmental, personality, and autism diagnostic assessment protocols.
- Score and aggregate testing results into comprehensive psychological reports.
- Provide written reports and oral feedback sessions to individuals and families.

PUBLICATIONS

Jimenez-Muñoz, M.,Ferguson, E. F., Feerst, H., & Vernon, T. W. (2021). Predictors of satisfaction with Autism treatment services during COVID-19. *Journal of Autism and Developmental Disorders,* 1-12.

Ko, J. A., Schuck, R. K., **Jimenez-Muñoz, M**., Penner-Baiden, K. M., & Vernon, T. W. (2021). Brief report: Sex/gender differences in adolescents with Autism: Socialization profiles and response to social skills intervention. *Journal of Autism and Developmental Disorders*, 1-7.

Schuck, R. K., Tagavi, D. M., Baiden, K. M., Dwyer, P., Williams, Z. J., ...**Jimenez-Muñoz, M.**, & Vernon, T. W. (2021). Neurodiversity and Autism intervention: Reconciling perspectives through a naturalistic developmental behavioral intervention framework. *Journal of Autism and Developmental Disorders*, 1-21.

Vernon, T.W., Ferguson, E.F., **Jimenez-Muñoz, M.**, Arias, A., & Russell, K.M. (in press). Pivotal Response Treatment at the University of California Santa Barbara. Effective Programs for Treating ASD: Applied Behavior Analysis Models. Routledge.

Jimenez-Muñoz, M., & Vernon, T. W. (under review). Parent Child Interaction Therapy for children with Autism: An intensive online telehealth model.

POSTERS AND PRESENTATIONS

Jimenez-Munoz, M., Klein, C., Vernon., T.W. & Barnett, M., (2022) *Breaking Down Barriers: Intensive Online PCIT for Parents of Autistic Children.* Poster Presented at the INSAR 2022 Convention, Austin, TX.

Ferguson, E., Arias A., Licona, S., **Jimenez-Munoz, M.,** S., Russel., K., Adams, P., Nees, A., Vernon, T.W., (2022) *Pivotal for Early Autism Intervention: Preliminary Outcomes of an App-Based Parent Education Problem.* Presented at the INSAR 2022 Convention, Austin, TX.

Jimenez-Munoz, M., & Vernon., T.W., (2021) *Feasibility of Intensive Online PCIT for*

Parents of Autistic Children. Presented at the UCSB Annual Research Conference, Santa Barbara, CA.

Jimenez-Munoz, M., Ferguson, E., Feerst, H., Vernon, T.W., (2021) *Predictors of Service Priorities during COVID-19 and Beyond.* Poster Presented at the INSAR 2020 Convention Virtual Conference.

Ferguson, E., **Jimenez-Munoz, M.,** Feerst, H., Vernon, T.W., (2021) *Psychological Wellbeing and Service Satisfaction during COVID-19 and Beyond.* Poster Presented at the INSAR 2020 Convention Virtual Conference.

Jimenez-Munoz, M., Vernon., T. (2020) *Gender Differences in Friendships, Social Behaviors, and Intervention Response in Autistic Teens.* Poster Presented at the INSAR 2020 Convention Virtual Conference.

Jimenez-Munoz, M., Burrows, C.A.,Pooch, A., Parlade, M.V., Jent, J. (2019) *Change Trajectories during Parent Child Interaction Therapy Sequences for Children with Autism Spectrum Disorder and their Families*. Poster Presented at PCIT International Biennial Convention, Chicago, IL.

Jimenez-Munoz, M., C.A.,Pooch, A., Burrows, Parlade, M.V., Jent, J. (2019) *Change Trajectories in Treatment during Parent-Child Interaction Therapy Sequences for Children with Autism Spectrum Disorder*. Poster Presented at Annual Pediatric Research Symposium at the University of Miami Miller School of Medicine, Miami, FL.

Cohen L., Álvarez-Tabio, C., Dyer, D., Correa, D., González, A., **Jimenez-Muñoz, M,** Dezayas L., Álvarez, A., Gutiérrez, A. (2018, September). *Evaluation of a Parent Training Program for Promoting Joint Attention Behaviors in Children with Autism.* Poster Presented at the Florida Association for Behavior Analysis (FABA) Conference, Bonita Springs, FL.

Marchante-Hoffman, A.N., **Jimenez-Muñoz, M**., Cuadra, A., Pulgarón, E., Gwynn, L., & La Greca, A.M. (2017). *Giving Voice to Foreign-Born Latino Youth: Trauma and Health in the Primary Care Setting.* Presented at the Developing and Researching Advanced Models of Integrated Primary Care (DREAM) Conference, Wilmington, DE.

Marchante, A.N., **Jimenez-Muñoz, M**., Cuadra, A., Pulgarón, E., Gwynn, L., & La Greca, A.M. (2017). *Understanding Trauma and Health for Foreign-Born Latino Youth in the Primary Care Setting.* Poster Presented at the Society of Pediatric Psychology Annual Conference, Portland, OR.

Muñoz-Jimenez, M., Bouza, J., Bulotsky-Shearer, R., & Fernandez, V. (2016). *Protective Effects of Bilingualism on Head Start Children: Examining the Relationship between Bilingualism and Approaches to Learning.* Poster presented at the ACF National Research Conference on Early Childhood, Washington, DC.

Jimenez-Muñoz, M., Bouza, J., Bulotsky-Shearer, R & Fernandez, V. (2016). *Bilingualism as a Protective Factor for Approaches to Learning in a Preschool Sample.* Poster presented at the Research Creativity Innovation Forum (RCIF) at the University of Miami, Miami, FL.

Jimenez-Muñoz, M., Bouza, J., Bulotsky-Shearer, R, & Bichay, K. (2015). *Bilingualism and Behavioral Problems.* Poster presented at the Psychology Research Initiatives Mentorship Experience (PRIME) at the University of Miami, Miami, FL.

<div align="center">

RESEARCH EXPERIENCE

</div>

Psychology Intern
Child Health Clinic | Jessica Kenny, Ph.D., Ayelet Talmi, Ph.D.
Children's Hospital of Colorado, Aurora, CO
January 2022 – July 2022
- Conduct medical record reviews to construct database that includes longitudinal health data for children with developmental concerns.
- Conduct qualitative and quantitative analysis to understand impact of demographic factors in early detection of developmental disabilities in primary care settings.

Student Assistant Researcher
PADRES Lab | Miya Barnett, Ph.D.
University of California, Santa Barbara, Santa Barbara, CA
January 2022 – July 2022
- Conducted qualitative interviews with participating families and "promotoras" (i.e., community health workers) to evaluate implementation effectiveness of a parent engagement intervention

Graduate Student Researcher
Koegel Autism Center | Ty Vernon, Ph.D.
University of California, Santa Barbara, Santa Barbara, CA
September 2019 – Present

Dissertation Project: Emotion Regulation Coaching for parents of Autistic Children
- Adapted a modified version of PCIT for children with autism and emotional dysregulation.
- Developed a data collection system using an electronic data capture software.
- Coordinated pilot randomized control trial with families receiving either traditional

intensive (daily) telehealth-delivered PCIT or intensive telehealth-delivered Emotion Dysregulation module.

Thesis Project: Feasibility of Intensive Telehealth PCIT for the ASD Community

- Developed a time-limited telehealth protocol for PCIT delivery.
- Collected and managed participant data.
- Developed behavioral codes for data collection.

Clinicianless Training in Autism Treatment: An Online Parent Education Program
- Assisted in the development of a smartphone application to help train parents to provide Pivotal Response Treatment to their autistic children.
- Developed a data collection system using an electronic data capture software.
- Assisted in the development of behavioral codes.
- Coordinated participant recruitment and intake process.

Parent-Child Bio-Behavioral Synchrony in Autism
- Provided parent training to parents of toddlers with autism spectrum disorder in Pivotal Response Treatment (PRT) in home, community, and clinic settings.
- Coordinated treatment goals, interventions, and progress to other clinicians on the team.
- Developed data collection system.

Research Analyst
University of Miami PCIT Program | Jason Jent, Ph.D.
University of Miami Miller School of Medicine, Miami, FL
August 2018 - July 2019
- Provided supervision to the PCIT research assistant team.
- Conducted inter-rater reliability checks for coding systems in English and Spanish.
- Engaged in treatment triaging for seven different PCIT clinics associated with the University of Miami.
- Managed REDCap system for capturing the data of approximately 300 families receiving PCIT services annually.
- Performed Spanish translation and back-translation of study measures, protocols, and handouts.
- Entered, cleaned, and analyzed data using SPSS statistical program.

TEACHING EXPERIENCES

University of California, Santa Barbara
- Teaching Assistant (Fall 2020, Fall 2021). Counseling Clinical and School Psychology 190: Introduction to Autism
- Teaching Assistant (Winter 2021). Counseling Clinical and School Psychology 112: Positive Psychology Across the Lifespan
- Teaching Assistant (Winter 2023). Counseling Clinical and School Psychology 101:

Introduction to Helping Skills: Theory, Research and Practice

GUEST LECTURES AND COMMUNITY PRESENTATIONS

Guest Lecturer. (2022, July). Autism Spectrum Disorder and Disability Models. Presented at University of California, Santa Barbara, ED111: Introduction to Child and Adolescent Development.

Community Presentation. (2021, April). Community training programs: ¡Hablemos! Cómo crear oportunidades para fomentar el lenguaje y socialización de los más pequeños. Presented at Santa Barbara Community Library. Santa Barbara, CA.

Community Presentation. (2021, May). Community training programs: Terapia de Interacción Entre Padres e Hijos (PCIT). Presented at Santa Barbara Community Library. Santa Barbara, CA.

Community Presentation. (2020, February). Community training programs: Un Espectro Cultural: Discusión Sobre el Autismo en la Comunidad Latina. Presented at Santa Barbara Community Library. Santa Barbara, CA.

Community Presentation. (2019, December). Community training programs: Promoting Flexibility one Day at a Time. Presented at Santa Barbara Community Library. Santa Barbara, CA.

HONORS AND AWARDS

Ray E. Hosford Memorial Research Fellowship, 2,000 $ **-** University of California, Santa Barbara: Fall 2023
Ray E. Hosford Award for Excellence in Clinical Dedication - University of California, Santa Barbara: Spring 2023
Departmental Fellowship, 11,000 $ - University of California, Santa Barbara: Fall 2022
Best Poster Award, "Change Trajectories During Parent-Child Interaction Therapy Sequences for Children with Autism Spectrum Disorder and their Families" – PCIT International Biennial Convention: August 2019
Best Poster Award, "Evaluation of a Parent Training Program for Promoting Joint Attention Behaviors in Children with Autism," – Florida Association of Behavior Analysis Conference: September 2018
Departmental Honors in Psychology – University of Miami: Spring 2016
Gamma Sigma Alpha Honor Society – University of Miami: Spring 2016
President's Honor Roll – University of Miami: Fall 2014, Fall 2016, Spring 2016 **Provost's Honor Roll** – University of Miami: Spring 2015
National Society of Collegiate Scholars – University of Miami: Fall 2012

ABSTRACT

An RCT of Intensive Parent-Child Interaction Therapy: Examining Interactions between

Children with Autism and their Caregivers

by

Maria Jimenez Munoz

The high prevalence of challenging behavior is a primary concern among many

children with autism. These behaviors, which encompass aggression, self-injury, prolonged

tantrums, inflexibility, and defiance, are typically associated with increased family isolation,

parental stress, and interference with education or interventional programming. Therefore,

families with children on the autism spectrum are in desperate need of accessible, high-

quality evidence-based treatments that simultaneously target disruptive behaviors and are

congruent with busy family life. This study aimed to gain a better understanding of parent

and child progress during their enrollment in an intensive, telehealth-delivered version of

Parent Child Interactive Therapy (PCIT) and an emotion-focused modification of the

standard PCIT curriculum for young children with autism. Trial results suggest that both

approaches can effectively equip parents with positive parenting strategies, but only families

who received traditional Parent Directed Intervention (PDI) coaching were observed to

experience significant improvements in child externalizing behaviors and parental self-

efficacy. Further analyses also revealed comparable improvements in parent responsiveness

to their child's positive behaviors, and core child autism symptoms in both groups. These

findings suggest that the Child Directed Intervention (CDI) phase included in both conditions may be effective in increasing parent recognition of child positive behaviors and utilization of "do skills", and improving core autism symptoms, even when delivered in a brief, intensive telehealth format.

Chapter 1: An RCT of Intensive Parent-Child Interaction Therapy: Examining Interactions between Children with Autism and their Caregivers

Autism is estimated to occur in 1 in 36 births in the United States (Centers for Disease Control and Prevention, 2022), with similar international prevalence rates. Autism Spectrum Disorder (ASD) is a neurodevelopmental condition characterized by social communication deficits, restricted interests, and repetitive behaviors (American Psychiatric Association [APA], 2022). The onset of these symptoms occurs in early childhood, with formal diagnosis commonly given to children no younger than three. Although diagnoses are not commonly given before this age, research has shown that most parents recognize signs and symptoms of autism in their children during the first or second year of life (De Giacomo & Fombonne, 1998; Goin-Kochel et al., 2006; Landa & Garrett-Mayer, 2006; Wetherby et al., 2004; Zwaigenbaum et al., 2007).

Early Childhood and Autism

During early childhood, children on the autism spectrum exhibit deficits in socio-emotional reciprocity and non-verbal communication and typically struggle to form, maintain, and understand social relationships (Volkmar et al., 2005). Preschool-age children with autism are more likely than their neurotypical counterparts to engage in individual play activities rather than cooperative games. Additionally, they are more likely to require adult support to interact with peers and participate in social activities (Holmes et al., 2005).

Another core characteristic of autism is the presence of restrictive or repetitive patterns of behavior, which is often displayed in early childhood in the form of stereotyped and repetitive language or motor movements; strict inflexible, adherence to routines; and ritualized patterns of verbal or non-verbal behavior (APA, 2022). Furthermore, children with

autism often showcase fixed interests of high intensity or focus that might interfere with every-day functioning. Sensory aversions or interests have also been noted to emerge during the early childhood period (Posar & Visconti, 2018).

Vulnerabilities in social communication, behavioral and cognitive inflexibility, and sensory sensitivities can cause substantial impairments in autistic youth that directly contribute to behavioral and emotional challenges, which in turn limit therapeutic options that target the original core domains. When children are unable to effectively communicate their needs and wants, behavioral challenges (e.g., aggression, self-injury) often emerge as a way to avoid demands or obtain desired items and activities (Williams et al., 2018). Unfortunately, these behaviors interfere with the delivery of interventions that would actually target the development of adaptive communication strategies (Tsai et al., 2020). Likewise, when routines and rigid patterns of behavior are interrupted, distress and frustration can lead to behavioral outbursts that interfere with programs aimed at promoting more adaptive self-regulatory strategies (Kaat & Lecavalier, 2013).

Emotion Regulation & Disruptive Behaviors

Emotional and behavioral challenges are often categorized under the umbrella terms of challenging behavior, disruptive behavior problems, or simply problem behaviors. Children with autism are three times more likely to exhibit challenging behaviors than their typically developing peers (Shawler & Sullivan, 2017). Underlying these observable behaviors, they appear to have poorer emotion regulation abilities (defined as the automatic or intentional modification of a person's emotional state that promotes adaptive or goal-directed behavior (Thompson.,1994)), as they tend to utilize less complex and less effective emotion regulation strategies (like avoidance or aggression) during times of distress (Cai et

al., 2018; Mazefsky et al., 2013). Because of delayed development in the area of emotion regulation, children with autism appear to rely more on others to help them regulate their emotions (Nuske et al., 2017). Given that emotion regulation skills are a key protective factors against the onset of internalizing and externalizing disorders, it is not surprising to find that anxiety disorders and Oppositional Defiant Disorder (ODD) are some of the most commonly found comorbid conditions of autism in early childhood (Kaat & Lecavalier, 2013).

The challenging behaviors commonly observed in children with autism can often be children's most impairing symptoms, hindering or outright preventing efforts to boost academic and social development. Noncompliance, oppositional behavior, and aggression are among the most prevalent challenging behavior problems reported by parents of children with autism (Baker & Feinfield, 2003). These challenging behaviors often interfere with education and therapeutic programing, preventing children from receiving the appropriate level of support that they need to target other core vulnerabilities associated with autism. Therefore, challenging behaviors may translate to suboptimal long-term outcomes for this population.

These behaviors also amplify caregiving burden (Hastings et al. 2005) and directly contribute to parental stress and strain (Hsiao, 2016; Vasilopoulou & Nisbet 2016). In turn, stressed, overwhelmed parents tend to use less adaptive parenting practices and rely heavily on punishment-- further exacerbating their child's challenging behaviors. This pattern places children who exhibit challenging behaviors at a higher risk of maltreatment and/or abuse (Chan & Lam, 2016). Furthermore, parents of children with autism might be less socially reinforced by their children given their inherent vulnerabilities in emotional expression

(APA, 2022), and hence less likely to use positive parenting skills. The bi-directional relationship between parent stress and child challenging behavior has been explored in the transactional model proposed by Hastings (2002), in which child problem behavior increases parenting stress, which in turn disrupts parenting behavior that then feeds back to increase child problem behavior. A similar model of maladaptive processes has been uncovered in family routines in the case of children with autism (Lucyshyn et al. 2004, 2015).

Sequential analysis has emerged as a valuable statistical tool for examining the dynamic and reciprocal nature of parent-child interactions. This method allows researchers to analyze the sequential order of behaviors, revealing how a child's behavior (e.g., sharing toys) influences a parent's subsequent behavior (e.g., using praise), and vice versa (William's et al., 2012). This approach captures the back-and-forth nature of these interactions, providing rich information about the bidirectional relationship between parent and child. Studies employing sequential analysis have demonstrated how positive parent behaviors learned through interventions can increase children's positive emotional displays (Sallquist et al., 2010) or social engagement (Vernon, 2014).

Recent research suggests that the relationship between parent stress and child disruptive behaviors is mediated by parental discipline strategies, with the use of punitive strategies resulting in an increased risk for the development and maintenance of disruptive behavior problems (Shawler & Sullivan, 2017). For example, as parents' stress levels increase, they are less likely to engage in consistent and predictable limit-setting and more likely to use reactive and punishing strategies instead. When children lack exposure to adaptive emotion regulation models and grow up in unpredictable environments filled with punitive consequences, they struggle or fail to learn effective regulation techniques and

consequently engage in increasing levels of challenging behavior, which are known to fuel parents' stress. These findings support the growing emphasis in conducting parent-mediated interventions that target the parent-child relationship, stop the negative cycle, and modify parental discipline strategies to decrease child disruptive behavior problems (e.g., Aman et al., 2009; Bearss et al., 2013; Durand et al., 2013; Ratliff-Black & Therrien, 2021).

Parent Child Interaction Therapy

An intervention that relies heavily on improving the bidirectional relationship between parent and child is Parent Child Interaction Therapy (PCIT). PCIT is an evidence-based parent-mediated intervention that has been found to be highly effective among typically developing preschoolers presenting with a range of behavioral concerns, especially defiance and noncompliance (Eyberg, Boggs, & Algina, 1995; Greco et al., 2001). This intervention, which is rooted in behavioral and attachment theory principles, aims to promote a secure attachment style within the parent-child dyad while teaching parents developmentally appropriate discipline strategies. Treatment goals for PCIT include (a) enhancing the quality of the parent–child relationship, (b) reducing child behavior problems while increasing prosocial behaviors, (c) improving parenting skills, and (d) decreasing parenting stress. The standardized protocol for PCIT allows parents and clinicians to target individualized areas as behavioral priorities.

Goals in PCIT are targeted throughout the two different phases of the intervention: the Child Directed Interaction phase (CDI) and the Parent Directed Interaction phase (PDI). The first phase, CDI, is informed by attachment theory and is designed to teach parents to build a warm and responsive relationship with their children. This is achieved through the use of positive parenting strategies, named PRIDE skills that promote selective attention and

social praise. "P" stands for *Praise*, which encourages parents to applaud their child's positive behaviors in a specific way (e.g., great job using gentle hands). "R" represents *Reflection*, which consists of restating or paraphrasing their child's statements to show that they are listening to them. "I" stands for *Imitation*, or mirroring child's interest and actions during play. "D" is for "Describe", where the caregiver narrates the child's ongoing play. Lastly, "E" stands for Enjoyment, which encourages caregivers to emphasize their genuine pleasure and enthusiasm during play time.

While using PRIDE skills, parents learn to shift their attention to their child's strengths, which in turn boosts their children's self-esteem and promotes a secure attachment style. While the frequency of *praise, reflections,* and *descriptions* is coded in every session and often used an outcome measure in PCIT studies, *Imitation* and *Enjoyment* are not behaviorally coded during treatment. While a recent study by McCabe and colleagues (2021) created a system to measure imitation in PCIT, no research to date has focused on the behavioral expression of *Enjoyment* in parents or caregivers undergoing PCIT.

The PDI phase is introduced after parents have demonstrated their dexterity in using positive parenting techniques with their children. This second phase, which draws from social-learning theory and behavioral principles, aims to teach parents developmentally appropriate discipline strategies to manage defiance and challenging behaviors. Through the use of effective direct commands and follow-through steps, parents provide a predictable set of consequences that translate into higher child compliance and lower levels of challenging behaviors.

PCIT includes two psychoeducational sessions at the beginning of each phase that are used to teach parents the set of skills they will be using throughout treatment. However,

unlike many other parenting interventions, PCIT emphasizes in-vivo coaching that allows clinicians to provide immediate feedback to parents while they are attempting to use their newly learned parenting skills. During coaching sessions, therapists utilize frequent positive and responsive techniques in order to shape parents' behaviors. Through this parallel process, therapists model the use of positive attention and responsive feedback to parents while gently correcting their use of positive parenting skills. In fact, research has shown that higher rates of responsive coaching are associated with quicker mastery of positive parenting skills, whereas directive and critical coaching techniques are not (Barnett et al., 2017).

By using parents as the main agents of change, PCIT leads to long-lasting benefits in both the parent and child. Several studies have shown that parent-reported challenging behaviors significantly decrease after a full course of PCIT (Valero-Aguayo et al., 2021). These improvements appear to be maintained months after treatment completion (Stokes et al., 2018). The efficacy and effectiveness of PCIT in reducing disruptive behaviors for typically developing children has been well documented in the literature (Valero-Aguayo et al., 2021). In a recent meta-analysis looking at the size effects of PCIT, Ward et al. (2016) reported a large effect size for pre- to post- improvement in child disruptive behavior as well as a large effect for outcomes of treatment versus control groups. Another meta-analysis conducted by Thomas et al. (2017) reported robust effects for PCIT on externalizing symptoms and parent-related stress for children with disruptive behavior disorders as well as those with additional comorbid conditions. Furthermore, equipping parents with tools to manage their child's challenging behaviors empowers them and increases their parental self-efficacy (Mohajeri et al., 2013; Russell & Ingersoll, 2021), reducing their likelihood to rely on punitive strategies.

Though outcomes for PCIT have shown large effects for changes in parent skill level and parent behaviors, the hypothesized mechanism of change (e.g., parent frequency of skill use in response to child's positive behaviors, child's response to parent's skill use) has not been investigated using moment-to-moment analyses of parent-child interactions.

PCIT Specifically for Children with Autism

PCIT is theoretically consistent with other behaviorally-based approaches that have a large evidence base supporting the successful treatment of autism; however, it is unique in that it incorporates a socially-based initial phase, which may have some additional benefits for children with autism. Historically, core symptom areas of autism have rarely been used as primary outcome measures in PCIT studies, since most studies focus on reductions in disruptive behavior (Vetter, 2018). While PCIT is not yet considered one of the first line intervention approaches for challenging behaviors in autism, there is a growing body of literature supporting the efficacy of PCIT with this population (Parlade et al., 2020; Allen et al., 2023). For example, in a study of children with autism, Scudder et al., (2019) found significant differences in a PCIT treatment group compared to a waitlist control in reduced child disruptive behavior severity and increased parent skills for families. Furthermore, the study showed pre-post PCIT improvements on measures of child disruptive behavior intensity, child compliance rates, autism severity, parenting skill and parental stress.

A similar pattern of findings was reported by Parlade et al., 2020 in a study that examined whether PCIT for children with autism would work similarly to PCIT for children without autism. Findings showed a dramatic increase in positive parenting statements with a similar decrease in negative statements in parents of both groups. Furthermore, child

disruptive and externalizing behavior (e.g., tantrums, noncompliance, hyperactivity, and aggression) also improved over the course of treatment for children in both groups.

Additional support for the use of PCIT with autistic children was reported by Zlomke & Jetter (2020) in a PCIT study that compared effect sizes of therapeutic gains between children with and without autism and found similar improvements in the intensity of disruptive behavior when either group received the full course of PCIT. Furthermore, both groups of parents reported similar degrees of improvement in child disruptive behavior across all phases of PCIT. Interestingly, Zlomle & Jetter (2020) found that families of children with autism did not require a significantly higher dose of PCIT sessions than families of children without autism. This contradicts previous findings that support the need for higher PCIT doses in autistic populations (Masse et al., 2016; Parlade et al., 2020).

Recent work by our lab examined the preliminary efficacy and feasibility of an intensive ten-hour PCIT program delivered remotely to parents of autistic children in the context of a non-concurrent multiple baseline experimental research design across three parent-child dyads (Jimenez-Munoz et al, In Prep). Primary findings revealed improved parenting skills and evidence of child disruptive behavior improvements across participants. In addition, each caregiver endorsed high levels of satisfaction with the intervention package. These results suggest that time limited intensive PCIT, delivered through a telehealth medium, is a promising intervention approach to target disruptive behavior in children with autism while simultaneously maximizing treatment accessibility and retention.

Emotion Regulation and PCIT

Although there is a breadth of evidence to support the use of PCIT with autistic children and their families, debate continues to exist about the use of time-out procedures

(defined as escape extinction and punishments in behavioral literature) with this population (Andzik, 2022; Austin, 2019). Teaching emotion regulation might be an alternative approach for caregivers and interventionist who aim to avoid the use of extinction and punishment in the form of time-out.

Emotion-focused modules have previously been incorporated in some modifications of PCIT to specifically teach caregivers parenting skills that support their child's emotion regulation development (Chronis-Tuscano et al., 2016; Luby et al., 2018). The addition of this emotion-focused content has been found to uniquely contribute to treatment by altering children's neural responses to reward and improving parental response to child emotional expression (Luby et al., 2020). No empirical research up to date has examined the perceived efficacy of timeout versus emotion regulation approaches in caregivers who care for an autistic child. Furthermore, the differential impact of timeout and emotion-focused parent coaching on autistic children's rate of externalizing behaviors continues to be unknown.

This initial investigation led to a pilot RCT comparing two intensive versions of PCIT, in which the control group received coaching in CDI and PDI, and the experimental group received coaching in CDI and an emotion-focused module (EF) informed by Luby and colleagues' (2020) emotion development (ED) module. Preliminary results showed that the implementation of intensive PCIT-EF, where PDI is substituted by an EF module, is both feasible and acceptable (Klein et al., 2023, In Prep). Results also reflected significant improvements in parent-reported child behavior for families completing PCIT-PDI (intensive PCIT where parents are coached in PDI), but no improvements in child behavior for those families that received PCIT-EF (Klein et al., 2023, In Prep). We must still assess whether PCIT-PDI and PCIT-EF promote positive parenting skills in comparable ways. Furthermore,

given the unique social and emotional challenges faced by children with autism, it is important to incorporate outcome measures that reflect potential gains in these areas (e.g., prosocial behaviors, affective states). Autism symptoms have not typically been assessed in PCIT studies, potentially overlooking the intervention's impact of these core areas of difficulty for this population (Vetter, 2018).

To further understand the mechanisms by which PCIT works for children with autism, a more fine-grained analysis is needed. Examining moment-by-moment interactions between children and caregivers can reveal whether specific parent behaviors learned during treatment directly influence changes in child behavior and vice versa (Vernon, 2014).

Current Study

The current study seeks to gain a better understanding of parent and child treatment progress in a telehealth-delivered intensive PCIT and a modified emotion-focused (EF) version of the intensive PCIT curriculum for young children with autism. The current investigation includes the following aims:

1. To examine differences in parent observed and self-perceived efficacy over time and across treatment groups during child-led play.

    a. Parent observed behaviors included verbal statements that are targeted to increase ("PRIDE Skills") and decrease in treatment ("Don't Behaviors")

    b. Perceived efficacy was measured through changes in a parent-reported self-efficacy questionnaire.

2. To examine changes in observed child affect, prosocial behaviors, and externalizing behaviors from pre-test to post-test within each group.

3. To use sequential analysis to explore changes in how often parents use PRIDE skills in response to their child's prosocial behavior, positive affect, and verbalizations, and how often parents' use of PRIDE skills and positive affect are followed by child positive and disruptive behavior.

We hypothesized that parent's use of positive parenting skills would be comparable in both conditions and that both treatments would lead to similar levels of perceived parent self-efficacy. Based on preliminary results from our feasibility and acceptability study, we expected greater improvements in observed child behavior problems in the PCIT-PDI group. In line with the results from other investigations that focused on the incorporation of emotion-based modules (luby et al., 2020), we expected that parents in the PCIT-EF group would show a greater increase in their rate of responsiveness to their child's changes in affect.

Chapter 2: Methods

Participants

Twenty-one parent-child dyads were recruited for the following study. Inclusion criteria was: (a) child between the ages of 2 -7, (b) participating caregiver was the primary caregiver and/or legal guardian of the child, (c) child had an existing formal autism diagnosis made by a licensed professional, (d) child emotional dysregulation or behavior problem was reported to be the caregiver's main concern, (e) caregiver and child had access to a computer, smartphone, webcam, high-speed internet, and wired or wireless headphones and (f) caregiver consented to sessions being recorded. Exclusion criteria included: a) children younger than 2 or older than 7, b) non-primary caregivers, c) no official autism diagnosis, d) caregiver's whose primary concern was not related to child's disruptive behavior and/or

emotion dysregulation, (e) caregivers who did not possess access to a computer, smartphone,

webcam, internet or headphones (f) caregivers who did not consent to sessions being

recorded (g) children who solely communicate non-verbally or use less than 5-word

sentences to communicate. Participant families were compensated $40 for their time for the

pre- and follow-up assessments ($10 for intake only, $20 for intake and mid-intervention,

$30 for intake, mid, and post-intervention, and $40 for all four, including follow-up). A

CONSORT Diagram is included in Figure 1.

Figure 1
CONSORT Diagram
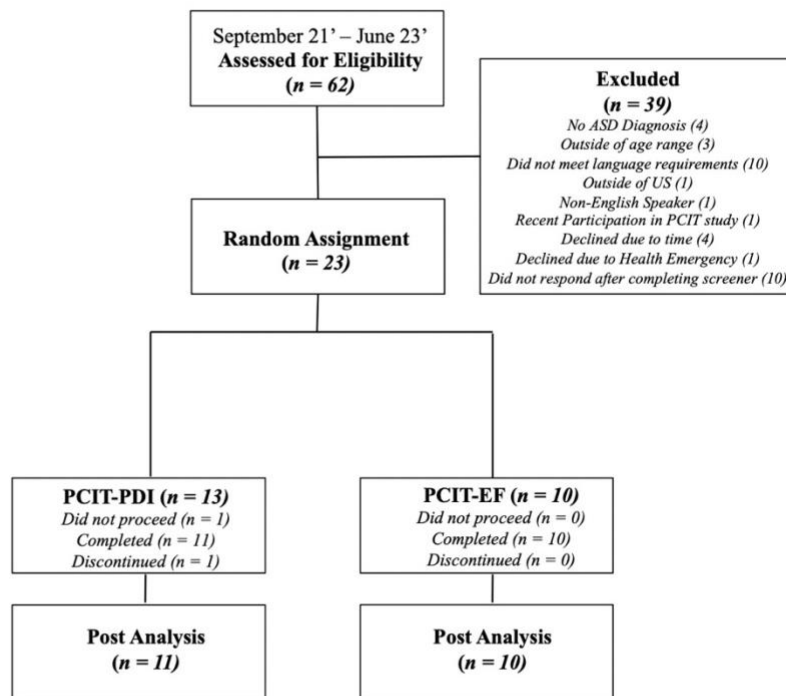
Most of the children who participated in the current study were male (71.4%) and the average age was 4.5 years old. The majority of children were White (85%), with a smaller percentage identified as more than once race (14.13%). Ethnicity data showed that 9.5% of the participating children were identified by their parents as Hispanic/Latinx. Caregivers were primarily female (90.5%) and most of them reported living in California (47.6%). For detailed information on participant characteristics such as autism symptom severity and caregiver highest level of education please refer to Table 1.

Table 1
Child and Caregiver Demographics

Domain/Item	Number/ Frequency	Percentage	Mean (SD)
Child's Age			4.5 (1.6)
Child's Gender (n=21)			
Male	15	71.4	
Female	6	28.6	
Child's Race (n=21)			
White	18	85.7	
More than one race	3	14.3	
Child's Ethnicity (n = 21)			
Hispanic/Latinx	2	9.5	
Not Hispanic/Latinx	19	90.5	
Child's Social Responsiveness Scale Score (n=21)			154.5 (22.5)
Caregiver's Age (n=21)			40 (7.1)
Caregiver's Gender (n=21)			
Male	2	9.5	
Female	19	90.5	
Caregiver's Highest Education (n=21)			
High School	1	4.8	
Some College	3	14.3	
Associate degree	1	4.8	
Bachelor's Degree	8	38.1	
Master's Degree	6	28.6	
Doctoral/ Professional Degree	2	9.5	

State of residence (n=21)		
California	10	47.6
Colorado	1	4.8
Florida	1	4.8
Ilinois	1	4.8
Indiana	1	4.8
Kansas	1	4.8
Kentucky	1	4.8
New York	2	9.5
Pennsylvania	1	4.8
Rhode Island	1	4.8
Tennessee	1	4.8

Research Design

The current study was a pilot randomized control trial with 21 families randomized

into one of two treatment conditions (CDI followed by PDI or CDI followed by Emotion-

Focused Module). All families received a daily, time-limited, telehealth-delivered version of

PCIT.

Procedure

Recruitment

Recruitment efforts took through email announcements, social media posts, classified

advertisement websites and referrals from other professional agencies. Recruitment also

involved contacting families who had previously expressed interest in behavioral online

programs to clinicians at the Koegel Autism Center. Interested families completed a brief

eligibility check by providing information about their child's age, date of autism diagnosis,

and access to computer video, headphones, and internet. If this online screener was passed,

parents were emailed to schedule an informed consent meeting and provided a link to

complete a set of intake questionnaires. Participants were informed of their right to withdraw

from the study and request that their information be deleted at any time.

Randomization

An online randomization system was used for randomizing participants to treatment conditions. Stratified randomization was used to produce comparable groups with regard to child age and gender.

Intake Data Collection

After completing the informed consent process, participants completed an online pre-treatment assessment to collect baseline measures and participant characterization data. The pre-treatment assessment battery included a demographic questionnaire and measures on parent efficacy (Early Intervention Parenting Self-Efficacy Scale; EIPSES) and autism symptomatology (The Social Responsiveness Scale; SRS-2). Questionnaires were administered through a secure online research platform (RedCap). The intake session consisted of a clinical interview and a structured behavioral observation (Dyadic Parent Child Interaction Coding System; DPICS) (Eyberg et al., 2013).

Intervention

Participants received one of two possible time-limited intensive internet-based PCIT curricula delivered by clinical psychology doctoral students. Clinicians had previous training and experience providing PCIT under the supervision of licensed psychologists and a Board-Certified Behavior Analyst. Families used a webcam to broadcast their home-based interactions to clinicians, who in turn provided remote coaching to parents through a Bluetooth or wired earpiece. Sessions were recorded through HIPAA-compliant "Zoom for Telehealth" record functionality and uploaded to an encrypted online folder.

Intensive PCIT Intervention Group. Two phases of PCIT, child-directed interaction (CDI) and parent-directed interaction (PDI) were conducted via 50-minute

sessions taking place 5 times per week, following PCIT session protocol (Eyberg & Funderburk, 2011). The duration of the PDI sessions were extended as needed, with sessions ending after a child had successfully completed a time out, in line with PCIT international protocol, (Eyberg & Funderburk, 2011). Families participated in five CDI sessions (one "teach" session and four coaching sessions) and five PDI sessions (one "teach" session and four coaching sessions), which added up to a total of ten sessions.

Intensive PCIT-EF Intervention Group. Experimental group participants received a modified version of intensive PCIT, in which CDI is followed by an Emotion-Focused (EF) module rather than PDI. Families participated in five CDI sessions (one "teach" session and four coaching sessions) and five EF sessions (one "teach" session and four coaching sessions), which added up to a total of ten sessions. The development of the EF module was informed by the Emotion Development Treatment Manual (Luby et al., 2018), and PCIT-ECo a modified version of PCIT-ED for children with ADHD (Chronis-Tuscano et al., 2016). This module was additionally modified for telehealth delivery by including visual stimuli to be shared through the screen-share function of Zoom. Psychoeducational material related to emotion dysregulation in autism was also included.

The EF module focused on teaching skills that caregivers can use to support their children when they are experiencing heightened emotions. The teach session encompassed sharing the psychoeducational material about emotion dysregulation in autism, as well as reviewing steps that parents can use to regulate their own emotions and promote adaptive emotion regulation in their children. These steps are referred to as the CALM steps ("C" stands for "check your thoughts and calm your-self", "A" stands for "approach your child",

"L" stands for "label your child's emotion" and "M" stands for "model effective coping skills for your child"). Clinicians also assisted parents in identifying play situations that would elicit enjoyment, frustration, or sadness in their children. Coaching sessions included guidance on presenting coping skills to children (e.g., drawing together a "tool-kit card" that represents the skill and modeling the skill) and practicing facial expressions related to specific emotions (e.g., parents were prompted to show their child what an angry face looks like on their camera view). Clinicians also coached parents in the use of CALM steps during the emotion eliciting situations that they had previously identified in the teach session.

Post Intervention Data Collection

At the end of the 10 sessions, parents completed a self-reported measure of parental self-efficacy (EIPSES; Guimond et al., 2008) and a questionnaire on core autism symptoms. A 5-minute behavioral observation was also completed and coded for a) parent's use of positive parenting skills, b) parent affect, c) observed child externalizing behaviors and d) child affect.

Coding of Parent and Child Behaviors

Coding of parent and child behaviors was conducted by graduate and undergraduate research assistants blind to the study's hypotheses and trained in the DPICS coding system (DPICS-IV) (Eyberg et al., 2013) to effectively code the use of PRIDE skills and "don't" behaviors. A comprehensive behavioral codebook was developed to systematically categorize additional parent and child behaviors that occurred during the video-recorded probes. The codebook operationalized and defined the following behaviors: child externalizing behaviors (e.g., tantrums, aggression), child prosocial behaviors (e.g., sharing, helping), child verbalizations (e.g., making a comment), child positive affect (e.g., smiling,

laughter) and parent positive affect (e.g., smiling, speaking enthusiastically). Definitions were established for each behavior category, along with specific inclusion and exclusion criteria to ensure consistency in coding. The codebook was piloted and refined through iterative review by the principal investigator and undergraduate research assistants.

A training tape was coded and discussed before coding for final data analysis started. Coders were then tested against a pre-coded tape selected at random from data previously coded by the principal investigator. Coders achieved 83-85 % agreement with this tape. Noldus software was used to complete final coding of parent and child behaviors. During video analysis, research assistants marked the exact time of occurrence of the behaviors, which recorded precise timestamps and frequencies.

Measures

Parents Use of Positive Parenting Skills

The Dyadic Parent–Child Interaction Coding System, Fourth Edition (DPICS-IV) (Eyberg et al., 2013) is a behavioral observation coding system that measures the quality of parent–child social interaction during 5-min standard situations that vary in the degree of parental control. Numerous studies have documented the reliability and validity of DPICS coding categories (Eyberg et al., 2013). For the current study, parent verbalizations were coded for frequency of positive statements ("Do Skills": labeled praises, behavior descriptions, and reflections) and negative, leading, or directive statements ("Don't Behaviors": questions, commands, and criticisms). Coding took place during the intake session and at post-treatment.

Parent Positive Affect

Parent positive affect was coded for frequency of overall occurrences. Parent positive affect is also defined as visible and/or audible indicators of enjoyment. These may include but not be limited to smiles, laughter, gentle physical touch towards child, physical affection, clapping, or using an elevated and playful vocal tone.

Observed Child Externalizing Behaviors

Externalizing behaviors were coded for both a) frequency of overall occurrences and b) overall duration as a measure of disruptive behavior and emotion dysregulation. Externalizing behaviors are defined as visible and/or audible indicators of aggression and/or inadequate responses to frustrating events. These include physical aggression (e.g., hitting, slapping, biting, scratching, or throwing objects), destruction of property (e.g., breaking toys or household objects), crying and flopping, yelling, whining, or using profane language.

Child Prosocial Behaviors

Child prosocial behaviors were coded for frequency of overall occurrences. Prosocial behaviors were defined as visible and/or audible indications of care and/or focus directed towards the parent. These included comforting, asking a question, providing an explanation, initiation of sharing or asking for help from a parent.

Child Verbalizations

Child verbalizations were coded for frequency of overall occurrences. Verbalizations were defined as any spoken words or sounds uttered by the child during the video probe. This included single words, phrases or complete sentences directed to the parent, as well as any self-talk or singing.

Child Positive Affect

Child positive affect was coded for frequency of overall occurrences. Positive affect is defined as visible and/or audible indicators of enjoyment. These may include but not be limited to smiles, hand flapping, laughter, or changes in tone of voice that indicate excitement.

Parental Self-Efficacy Scale

The Early Intervention Parenting Self-Efficacy Scale (EIPSES) assesses (a) the degree to which caregivers perceive themselves as being personally effective and capable in parenting their child; and (b) the extent to which they believe child outcomes are a function of environmental influences or constraints (Guimond, et al., 2008). The measure consists of 16 items using a 7-point Likert-type scale for responses ranging from Strongly Disagree (1) to Strongly Agree (7). Total score is computed by summing all scale items, with higher scores reflecting higher perceived self-efficacy (Guimond et al., 2008).

Social Responsiveness Scale

The Social Responsiveness Scale (SRS-2; Constantino & Gruber, 2012) is a standardized, caregiver-report measure designated to assess severity of autism symptoms. The scale has 65 items and utilizes a 4-point Likert-type scale that allows caregivers to rate the frequency of their child's behaviors on a scale ranging from "not true" to "always true". Higher scores indicate greater impairment.

Data Analysis

Inter-observer reliability

Inter-observer reliability for all behavioral codes was calculated using Kappa coefficients (Landis & Koch, 1977). 50 % of videos were randomly selected and recoded for

reliability, yielding a Kappa of 0.75, which was indicative of a substantial inter-observer agreement.

Time-Window Sequential Analysis

Behavioral coding and time-window analysis were conducted using Noldus Observer software (Noldus et al., 2000). Within each intervention condition, 5-minute video probes for each parent-child participating dyad were examined using a 5-second unit of analysis. A maximum time window of 5 seconds was used for the analysis (i.e., the onset of the parent verbalization must be followed by the onset of a child behavior or change in affect to be included in the sequential calculations). Duration of the child and parent behaviors were not considered in these analyses (Yoder & Tapp, 2004). The specific behaviors used in the time window sequential analysis include parent positive verbalizations or "do skills", parent positive affect, child prosocial behaviors, child verbalizations and child positive affect. These behaviors were chosen because 1) they are clinically valuable, 2) they are distinct actions more amenable to coding than more passive appropriate behaviors such as sitting quietly. The following sequences were examined within a time-window sequential analysis:

Child prosocial behavior → *parent "do skill"*

Child verbalization → *parent "do skill"*

Child positive affect → *parent positive affect*

Parent "do skill" → *child positive affect*

Parent positive affect → *child positive affect*

Transitional Probability

The mean percentage of antecedents followed by the specified target behavior that occurred per 5-min probe was calculated in each condition (PCIT-PDI and PCIT-EF). This transitional probability was determined by dividing the number of antecedent-to-target behavior sequences by the total number of times the antecedent behavior occurred. Mean transitional probabilities were calculated for baseline and post-treatment timepoints in both treatment conditions. Effect size calculations were conducted to calculate the magnitude of any observed mean transitional probability change between baseline and post-treatment completion probes. Effect sizes were calculated by subtracting mean baseline sequences from mean experimental sequences for each participant and dividing by the weighted standard deviation derived from the pooled variance of both conditions (following procedures outlined by Busk & Serlin 1992).

T-test

Because of the sample size of this pilot study, the study lacks the necessary statistical power to conduct mixed Group x Time analytical procedures. Instead, baseline to treatment completion changes on both treatment conditions were examined separately using paired sample t-tests. Effect sizes were calculated to understand the magnitude of change for each parent and child outcome measure on both treatment conditions, and conduct power calculation and sample size determination for a fully powered RCT. The probability of parents' using positive verbal responses and displaying positive affect in response to their child's behaviors was also examined through sequential analysis. Separate paired sample t-tests were used to examine changes in parent and child responsiveness at baseline and post treatment completion.

Chapter 3: Results

Parent Skill Use

Following the intervention, parents in the PCIT-EF group showed a statistically significant increase in their use of PRIDE skills ($t(8) = 6.54$, $p < .001$). The effect size, as measured by Cohen's d, was d = 2.9, indicating a large effect size. Similarly, parents in the traditional PCIT group also exhibited significant increase in their use of PRIDE skills ($t(10) = 6.61$, $p = <.001$). Cohen's d was d =3, which is also indicative of a large effect size. Regarding their use of "don't behaviors", parents in the PCIT-EF group showed a statistically significant decrease in their use of "don't behaviors" ($t(7) = -4.69$, $p = .001$), with a Cohen's d of d = 3.1. Parents in the traditional PCIT group also exhibited a significant decrease in their use of "don't behaviors" ($t(10) = -10.86$, $p = <.001$, d = 1.9).

Parent Positive Affect

There was a statistically significant increase in the number of instances that parents exhibited positive affect from baseline to post-treatment for parents in the PCIT-EF group ($t(8) = 3.40$, $p = .005$). The effect size, as measured by Cohen's d was d = 1.4, which is indicative of a large effect size. On the other hand, no significant changes in parent positive affect were observed in the PDI group ($t(10) = .30$, $p = .39$, d = 0.2).

Table 2

Frequency of Parent Observed Behavior

Behaviors		Emotion-Focused Group			PDI group		
		Baseline Mean (SD)	Post Mean (SD)	Cohen's D	Baseline Mean (SD)	Post Mean (SD)	Cohen's D
DPICS							
	Do Skills	2.6 (3.7)	21.78 (8.6)	2.9	2.2 (2.3)	22.1 (9.2)	3
	Don't Behaviors	27.8 (10.3)	4.5 (3.2)	3.1	27.6 (17.9)	2.9 (2.5)	1.9
Parent Positive Affect		5.20 (4.5)	14.3 (8.1)	1.4	12.7 (9.8)	14.4 (9.4)	0.2

Figure 2
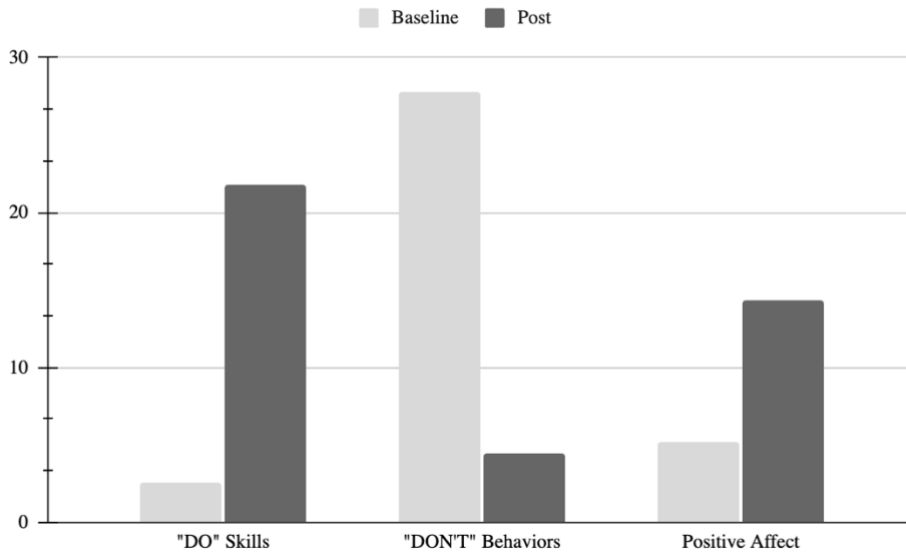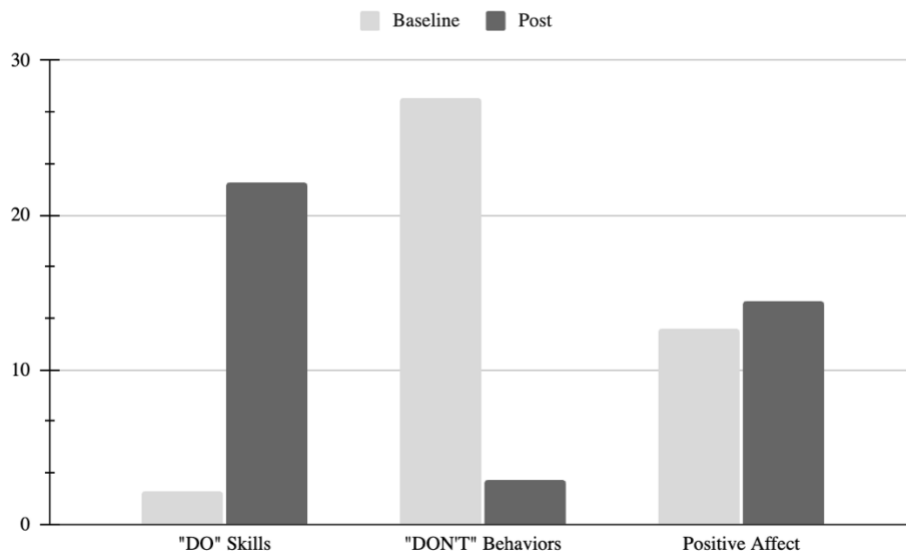*PCIT-EF Frequency of Parent Observed Behaviors*

Figure 3
PCIT-PDI Frequency of Parent Observed Behaviors

Observed Behavior Problems

Due to the low frequency of externalizing behaviors observed during video probes,

analyses using t-tests were not conducted for this outcome measure. More specifically,

externalizing behaviors were only observed for 2 participants in the PCIT-EF group and 3

participants in the PCIT-PDI group. The mean duration of externalizing behaviors for these participants was M = 2.38 (SD = 2.8) at baseline and M = 1.1 (SD = 1.7) post treatment in the PCT-EF group, with a Cohen's d of d= 0.6, which is indicative of a medium effect size. In the PCIT-PDI group, there was a mean duration of externalizing behaviors of M=6.4 (SD = 2.9) during baseline, which decreased to M = 0.2 (SD = 0.1) post treatment. The effect size, measured by Cohen's d was d = 3, which is indicative of a large size effect.

Observed Child Prosocial Behaviors

Child prosocial behaviors were recorded as well during baseline and after families completed treatment. Children whose families were randomized to the PCIT-EF showed a significant increase in the number of prosocial behaviors they engaged in from baseline to post-treatment observations (t(8) = 2.15, p = .03, d = 0.7). On the other hand, no significant differences were observed between baseline and post-treatment observations in families who received PCIT-PDI intervention (t(10) = .39, p = .77). However, Cohen's d was indicative of a medium effect size (d = 0.5), with the mean number of prosocial behaviors increasing from baseline (M= 5.6; SD = 3.7) to post treatment (M= 8.8; SD= 8). This suggests a potential benefit in prosocial skills from the PCIT-PDI intervention, even if there was not a statically significant difference from baseline to post treatment for this specific sample.

Observed Child Verbalizations

In terms of observed child verbalizations, children whose families were randomized to the PCIT-EF did not show a significant change in the number of verbalizations they engaged in from baseline to post-treatment observations (t(8) = - 1.08, p = .16, d = 0.4)). Similarly, no differences in child verbalizations were observed between baseline and post-

treatment observations in families who received PCIT-PDI intervention (t(10) = - .66, p = .26, d = 01).

Observed Child Positive Affect

Child positive affect was also recorded during baseline and after families completed treatment. Families who were randomized to the PCIT-EF group did not exhibit a significant change in child positive affect between baseline and post-treatment observations (t(8) = 1.08, p = .16, d = 0.4). Similarly, no differences were observed between baseline and post-treatment observations in families who received PCIT-PDI intervention (t(10) = .39, p = .77, d = 0.1).

Table 3
Child Observed Behaviors

Behaviors	Emotion-Focused Group			PDI group		
	Baseline Mean (SD)	Post Mean (SD)	Cohen's D	Baseline Mean (SD)	Post Mean (SD)	Cohen's D
Externalizing Behavior Problems						
Frequency	0.6 (1.6)	0.3 (0.7)	0.2	1.8 (4)	0.9 (2.7)	0.3
Duration	2.38 (2.8)	1.1 (1.5)	0.6	6.4 (2.9)	0.2 (.01)	3
Frequency of Child Prosocial Behaviors	4.3 (3.7)	7.7 (5.8)	0.7	5.6 (3.7)	8.8 (8)	0.5
Frequency of Child Verbalizations	28.5 (9.6)	23.2 (15.1)	0.4	18.45 (11)	15.6 (9.8)	0.3
Frequency of Child Positive Affect	3.4 (4.3)	5 (4.3)	0.4	6.3 (9.9)	5.6 (6.3)	0.1

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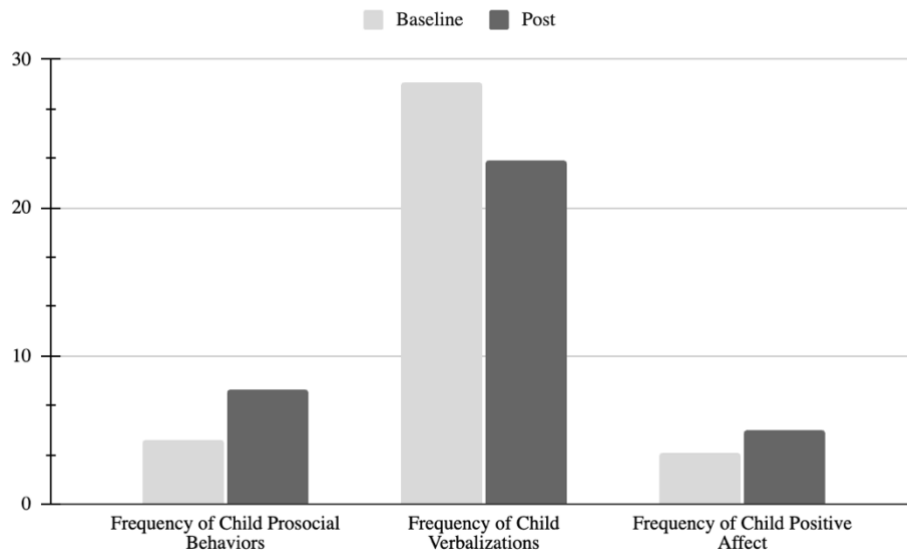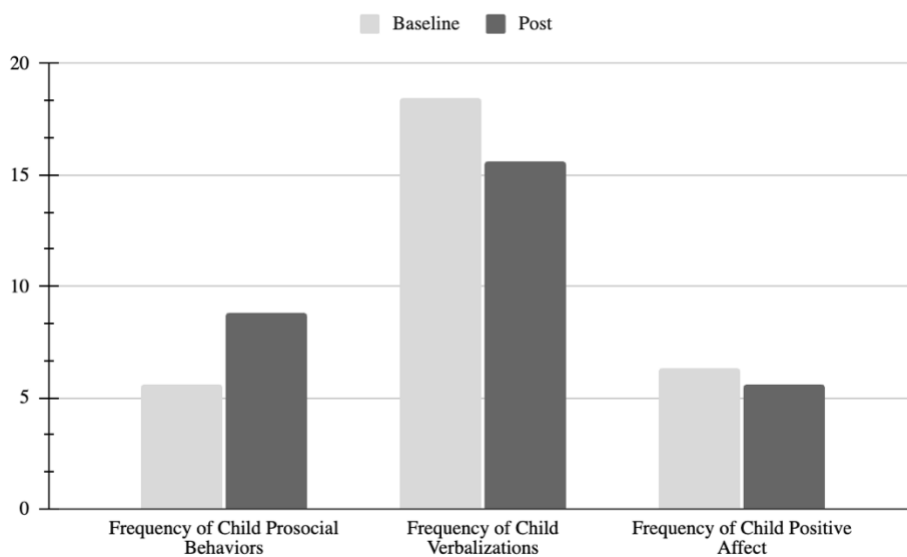**Figure 4**
PCIT-EF Child Observed Behaviors

Figure 5
PCIT-PDI Child Observed Behaviors

Parent Perceived Self-Efficacy

Parent Perceived Self-Efficacy was also recorded through the EIPSES questionnaire before and after receiving the full intervention course in both groups. There was a significant increase in parents EIPSES scores from baseline to post intervention completion in the PDI

group (t(9) = 2.26, p = .025), which reflects higher perceived self-efficacy. The effect size, as measured by Cohen's d, was d = 0.7, which is indicative of a large effect size. In contrast, parents in the PCIT-EF group did not exhibit a significant change in their perceived self-efficacy from baseline to post-intervention (t(8) = .54, p = .30, d = 0.3).

Autism Symptoms

There was a significant decrease in the SRS total score from baseline to post-treatment in the PCIT-EF group (t(8) = - 2.37; p= .023, d = 0.7). Similarly, there was a significant decrease in the SRS total score from baseline to post-treatment in the PCIT-PDI group (t(11) = -2.10; p = .03, d = 0.5) This represents a significant decrease in reported Autism symptoms and a medium effect size in both conditions.

Table 4
Parent Reported Measures

Measure/Subdomains	Emotion-Focused Group			PDI group		
	Baseline	Post	Cohen's D	Baseline	Post	Cohen's D
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
EIPSES	75.7 (6.8)	79.2 (13.5)	0.3	76.8 (9.1)	87.1 (18.5)	0.7
Social Responsiveness Scale (SRS)						
Total Score	158.4 (21.5)	145.1 (19.7)	0.7	151 (23.8)	138.6 (25.6)	0.5
Awareness (AWR)	20.3 (3.8)	18.6 (2.8)		19 (3.9)	18.1 (3.7)	
Cognition (COG)	29.8 (5.1)	26.7 (4.9)		28.5 (5.9)	24.5 (5.3)	
Motivation (MOT)	23 (4.7)	19.7 (4.7)		23.5 (5.6)	21.6 (4.1)	
Communication (COM)	55.3 (8.7)	51.8 (8.7)		51.8 (7.4)	48.2 (10.2))	
Restricted Interests and Repetitive Behaviors (RRB)	30 (4)	28.4 (3.9)		27.8 (5.8)	26.3 (7)	

Transitional Probabilities

Child prosocial behavior → parent do skill

The analysis investigated the frequency of a parent using a "do skill" following child prosocial behavior. The PCIT-EF group showed a significant increase in the percentage of "do skills" used after prosocial behavior from baseline (3.84%) to post-intervention (36.17%; t(5) = 2.00, p = .05). Similarly, the PCIT-PDI group also exhibited a significant increase (baseline: 3.22%, post-intervention: 21.67%; t(8) = 4.41, p = .001).

Child verbalization → parent do skill

Finally, the analysis examined the frequency of a parent using a "do skill" following child verbalization. The PCIT-EF group demonstrated a significant increase in "do skills" used after verbalization from baseline (2.99%) to post-intervention (22.55%; t(6) = 3.90, p = .004). The PCIT-PDI group mirrored this trend with a significant increase (baseline: 4.20%, post-intervention: 27.92%; t(7) = 4.10, p = .002).

Child Positive affect → parent positive affect

We further examined the frequency of parent positive affect following child positive affect. In both the PCIT-EF (baseline: 11.89%, post-intervention: 10.33%; t(5) = .22, p = .42) and PCIT-PDI (t(6) = .55, p = .301) groups, changes from baseline to post-intervention were not statistically significant.

Parent "do skill" → child positive affect

The analysis also explored the frequency of child positive affect following a parent "do skill." In the PCIT-EF group, the mean percentage of child positive affect following a "do skill" did not significantly change from baseline (9.58%) to post-intervention (7.90%;

t(3) = -.43, p = .35). Likewise, the PCIT-PDI group showed no significant change (t(3) = - 1.17, p = .163).

Parent positive affect → child positive affect

Lag sequential analysis using Noldus software examined the frequency of child positive affect following parent positive affect. In the PCIT-EF group, the mean percentage of child positive affect following parent positive affect increased from baseline (3.82%) to post-intervention (9.82%), though this increase was not statistically significant (t(5) = 1.35, p = .12). Similarly, the PCIT-PDI group did not show a significant change (baseline: 11.9%, post-intervention: 6.23%; t(7) = -1.71, p = .065).

Table 5
Transitional Probabilities

Sequences	Emotion-Focused Group			PDI group		
	Baseline	Post	Cohen's D	Baseline	Post	Cohen's D
	Mean (SD)	Mean (SD)		Mean (SD)	Mean (SD)	
Child prosocial behavior → parent "do skill"	3.8 (6)	36.2 (35.9)	1.3	3.2 (5.7)	21.7 (13)	1.8
Child prosocial behavior → parent positive affect	6 (10.5)	5.3 (5.4)	0.1	14.6 (10.3)	15.7 (11.1)	0.1
Child verbalization→ parent "do skill"	3 (4.7)	22.6 (14.1)	1.9	4.2 (7.4)	27.9 (13.3)	2.2
Child positive affect → parent positive affect	11.9 (19.4)	10.3 (10.9)	0.1	15.5 (10.1)	20.8(20.4)	0.3
Parent "do skill"→ child positive affect	9.6 (7)	7.9 (4.8)	0.3	13.5(10.4)	7.1 (4)	0.8
Parent positive affect → child positive affect	3 .8(4.7)	9.8 (8.3)	0.9	11.9 (10.6)	6.2 (6.1)	0.7

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Chapter 4: Discussion

This study sought to gain a better understanding of parent and child treatment progress in intensive telehealth-delivered PCIT (PCIT-PDI) and a modified emotion-focused version of the intensive PCIT curriculum (PCIT-EF) for young children with autism. The findings provide valuable insights into the potential benefits of both interventions and begin to identify potential mechanisms of change in PCIT for children with autism.

Families in both PCIT-EF and PCIT-PDI groups demonstrated significant increases in parent use of "do skills" and decreases in "don't behaviors" following the intervention. This suggests that both approaches can effectively equip parents with positive parenting strategies, potentially leading to improved family dynamics (Niec, 2018). However, only the PCIT-PDI group, which included a timeout procedure, showed a significant increase in parent perceived self-efficacy. While PCIT-EF resulted in positive changes in parent skill use, it did not translate to significant improvements in parent-reported child behavior problems or parental self-efficacy. These findings suggest that including the PDI phase better equips parents to manage challenging behaviors. This aligns with decades of research supporting the use of timeout as an effective strategy for decreasing disruptive behaviors (Parlade el al., 2020; Eyberg et al., 1995). The decreases in challenging behaviors in turn may increase the parent's sense of self-efficacy.

The use of timeout procedures with autistic children has been a topic of debate (Larzelere et al., 2020), with some concerns regarding potential negative impacts on social communication and emotional distress (Slocum et al., 2023). However, results from the present study showed no changes in children's frequency of verbalizations or positive affect following the intervention that included the PDI phase. In fact, a modest increase in prosocial

behaviors was observed in this group. While the increment was not statistically significant, a medium effect size was observed. Similarly, PCIT-EF, which substituted timeout for coaching on emotion recognition and expression, did not lead to significant improvements in observed child positive affect or verbalizations. On the other hand, there was a significant increase in child prosocial behaviors, suggesting potential improvements in social interactions for autistic children when an emotion-focused module is introduced in PCIT.

Interestingly, the PCIT-EF group, but not the PCIT-PDI group, showed a significant increase in parent-observed positive affect following the intervention. This finding suggests that focusing on emotion labelling and emotional expression may have fostered parent insight into their own expression of enjoyment, which is a skill that is emphasized in the CDI phase. However, additional coaching regarding emotional expression may support parents in enhancing this skill. While *enjoy* is included as a PRIDE skill, traditional PCIT does not include it in its mastery criteria. This might result in a reduced frequency of coaching that targets the emotional expression of enjoyment in caregivers.

Results from this study also add to the growing body of research supporting the efficacy of time limited PCIT interventions (Graziano, 2020; Garcia et al., 2021). Our findings demonstrated a significant improvement in parent's use of PRIDE skills over a mere two weeks. This suggests that time-limited and intensive PCIT models may be a valuable tool for caregivers who are interested in PCIT but struggle to commit to the average 18 weeks that mastery-based programs take for children with autism (Masse et al., 2016; Parlade et al., 2020).

Child Parent Influence

Lag sequential analyses provided valuable insights into the flow of parent-child interactions and potential mechanisms of change. Both interventions resulted in a significant increase in the likelihood of parents using "do skills" following child prosocial behaviors and verbalizations. This suggests that the CDI phase that is included in both intervention groups is effective in increasing parents' recognition of child's prosocial behaviors and utilization of "do skills", even when delivered in a telehealth intensive format as opposed to a mastery-based protocol. As hypothesized, parents in both treatment groups effectively learned how to change contingencies when interacting with their children (e.g., providing attention and praised when a prosocial behavior is observed), which likely drives child behavior change over time. Notably, neither intervention yielded a statistically significant increase in the likelihood of child positive affect following parent positive affect or parent "do skills." This may be due to the inherent nature of autism spectrum disorder, which is characterized in part by flatter affect (APA, 2020). Given the social vulnerabilities that are inherent to autism, it is unlikely that changes in social responsiveness will be seen within the short period that encompasses the duration of these intensive PCIT interventions. Instead, we expect these changes to emerge gradually after several months. If child responsiveness were to increase over time following this intervention, it could serve as social reinforcement that would encourage parents to continue using positive parenting skills.

Lastly, study findings also revealed a decrease in reported autism symptomatology following both the traditional PCIT and PCIT-EF, as evidenced by the significant reduction in Social Responsiveness Scale scores. This suggests that the core therapeutic components of PCIT, focused on parent-child interaction and positive reinforcement, may be instrumental in improving social behavior in children with autism, regardless of the inclusion of the Parent-

Directed Interaction (PDI) phase or the addition of an emotion regulation component. Future research is warranted to explore the specific mechanisms by which PCIT, in its traditional and modified forms, leads to positive outcomes beyond externalizing behaviors in this population.

Despite the valuable insights that this study offers, there are certain limitations that need to be considered. As part of a pilot RCT study, these findings are limited to preliminary efficacy and not generalizable to broader populations. Larger-scale studies with more participants are needed to further investigate the effectiveness and generalizability of PCIT-PDI and PCIT-EF across diverse populations and settings. Furthermore, most of the participants in the study identified as white and most children were males. Therefore, results might not be representative of more diverse samples. In future recruitment efforts, specific strategies will be implemented to enhance diversity in the sample. These may include translation of materials and recruitment of bilingual clinicians, targeted outreach to communities that are often underrepresented in autism research (e.g., non-English speaking communities, gender diverse youth) and collaboration with community organizations serving diverse populations. Additionally, the low number of participants that exhibited externalizing behaviors during the video probes limits the statistical analysis that can be made to draw conclusions about this outcome measure. Further research should explore behavioral coding during more challenging parent-child situations (e.g., clean up or parent-directed play) to better understanding the impact of different versions of intensive PCIT on observed externalizing behaviors. Lastly, because of the short nature of intensive PCIT, changes in outcome measures that might happen over longer periods of time might have not been

captured in the current results. Therefore, future efforts should be made to understand the longitudinal effects of intensive time limited PCIT in both child and parent behavior.

Chapter 5: Conclusion

 Given the current debate that exists around the use of timeout for children with autism, it is crucial that alternative models are empirically examined for preliminary efficacy (Canning et al., 2021). This study demonstrates the promise of two different intensive PCIT models in the autism population. While both EF and PDI approaches show preliminary efficacy in teaching parents positive parenting skills, only the inclusion of a timeout procedure (PDI) resulted in preliminary improvements in parent perceived self-efficacy. These findings challenge the notion that time-out procedures are not well-suited for autistic children and suggest that time-out might be needed for managing more severe behaviors. If this pattern of findings were replicated in a larger, fully powered RCT, it would suggest that substituting Parent-Directed Interaction (PDI) for Emotion-Focused (EF) approaches in PCIT may not be effective for families of autistic children who struggle with severe behaviors. In that case, including motivational strategies and collaborative problem solving around the use of timeout might be more effective than substituting timeout for EF approaches (Canning et al., 2021; N'zi el al., 2017).

Moreover, the implications of this study extend beyond the immediate benefits in parent perceived and observed efficacy. The observed reduction in parent-reported autism symptomatology in both PCIT-PDI and PCIT-EF underscores the potential of both intervention models to address core vulnerabilities in autism, particularly in the social domain. This suggests that the CDI phase, which is included in both modalities, might be especially useful in targeting underlying autism symptoms. Preliminary findings from our

behavior observations suggest that PCIT-EF was effective in increasing the number prosocial behaviors observed in children. While not statistically significant differences were observed for this outcome for families who received the PCIT-PDI intervention, the medium effect size suggests that the change may still be clinically relevant. To get more clarity on these results, it will be important to examine these outcomes in a fully powered RCT. If significant improvements in observed prosocial behaviors are limited the PCIT-EF group in a fully powered RCT, this might suggest that PCIT-EF is more appropriate for families of children with autism that want to target social deficits rather than disruptive behavior concerns. It would also suggest that EF could be implemented as a modular adaptation of PCIT (Mazza, 2018) for children with autism. On the other hand, if similar improvements in prosocial behavior were observed in PCIT-PDI and PCIT-EF groups, the substitution of PDI for EF might not be warranted.

Preliminary results of moment-by-moment interactions between children and their parents demonstrated that within just two weeks and in a telehealth format, parents' abilities to recognize positive child behaviors, such as verbalizations and prosocial behaviors, were significantly enhanced in the PCIT-PDI and PCIT-EF groups. This shows great promise for the use of intensive, telehealth PCIT models that might increase accessibility to services. Although no changes were observed in children's responsiveness to their parent's positive affect and "do" skills for either group (i.e., responding to parents with positive affect), parents exhibited an increased use of "do" skills from pre to post treatment. This suggests that parents successfully learned and implemented "do" skills in a short period of time despite not being socially reinforced by their children. To better understand longitudinal trajectories for this moment-by-moment interactions in intensive telehealth formats, it will be

important to examine follow-up data that might shed light into potential long-term changes in child responsiveness to parental skill use.

A follow-up fully powered RCT holds considerable promise for families navigating the challenges of caring for children with autism who exhibit disruptive behaviors. Prospective results could offer guidance on the most effective type of intensive PCIT modality, thereby empowering clinicians and caregivers with evidence-based strategies tailored to the unique needs of each child and family. Moreover, by establishing which components of PCIT are most impactful for children with autism (i.e., the CDI phase, the inclusion of timeout procedures or emotion-focused modules), future research could pave the way for more targeted and efficient interventions, reducing the burden on families and healthcare systems alike.

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