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## REVIEW ARTICLE

# Parent-Child Interaction Therapy for Children with Autism Spectrum Disorder: Research, Training, and Clinical Considerations

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### Abstract:

This research briefly promotes the inclusion of Parent-Child Interaction Therapy (PCIT) for children with Autism Spectrum Disorder (ASD) in a continuum of empirically-supported ASD treatments. PCIT is a manualized, short-term intervention that improves child compliance and the caregiver-child bond, and is an empirically-supported treatment backed by over 40 years of research. Caregivers are often unprepared to handle the needs of children with ASD presenting with comorbid behavioral problems. As a result, families frequently require mental health services for their children on the autism spectrum; however, access to empirically supported treatments for these families is limited. Furthermore, many mental health providers feel unequipped to treat this special population. Families with children on the autism spectrum are in desperate need of quality, time-limited, evidence-based treatments targeting disruptive behaviors. PCIT is a well-established treatment for disruptive behaviors that represents a promising treatment for complementing other evidenced-based ASD services. Research shows that after PCIT, children with ASD demonstrate improvements in disruptive behavior, social awareness, adaptability, and positive affect. Currently, the PCIT-ASD literature provides a case for conducting PCIT with preschool children who are in the higher functioning range of the autism spectrum (Levels 1 and 2) and display comorbid behavioral problems. Providing PCIT clinicians with training about the special needs of children with ASD could lead to improved access to services for this population. This paper accomplishes the following objectives: 1) Provides an overview of PCIT, 2) Summarizes the PCIT-ASD research, 3) Reviews PCIT-ASD clinical considerations and training requirements, and 3) Suggests future directions for PCIT-ASD research.

**Keywords:** : Autism spectrum disorder, Externalizing behavior problems, Behavioral parent training, Parent-child interaction therapy, Caregiver-child bond, Empirically-supported treatment.

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## 1. INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder wherein individuals have core deficits in (1) social-communication and (2) restricted and/or repetitive behaviors and/or interests. The prevalence estimate of ASD in the United States is 1 in 59, and many children with ASD often present with comorbid disruptive behaviors [1]. For instance, in a national sample of children referred for psychological treatment due to disruptive behaviors, as many as 40% had a diagnosis of ASD [2]. In a sample of community-based mental health clinics, both therapists and caregivers reported disruptive behaviors as the most common presenting problem for children with ASD [3, 4]. Because mental health providers often encounter children on the autism spectrum with comorbid disruptive behavior, there is a need for a quality, time-limited, evidence-based treatment aimed at reducing disruptive behavior, like Parent-Child Interaction Therapy (PCIT).

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## 2. PARENT-CHILD INTERACTION THERAPY

PCIT [5] is an empirically-supported treatment for children of ages two to seven years and their caregivers, originally developed to treat disruptive behavior disorders. The cornerstone of this manualized, behavioral parent-training program is live coaching of caregiver-child interactions through a two-way mirror using a microphone and an earpiece. Treatment goals include strengthening the caregiver-child relationship, increasing child compliance, and decreasing child problem behavior.

PCIT is a short-term, low-cost, early intervention. It is intended to be completed in as few as 10-14, 1-hour therapy sessions [6, 7]. PCIT can be delivered in a variety of settings, including in community- or hospital-based clinics, mobile therapy units, family homes [8], as part of wraparound services [9], and remotely, *via* internet communication [10]. In addition, group-based PCIT [11], PCIT for toddlers aged 12 to 24 months [12], and an application for classroom settings-Teacher-Child Interaction Training (TCIT)- have demonstrated

effectiveness [13].

PCIT consists of two treatment phases. During the first phase of treatment, Child-Directed Interaction (CDI), caregivers are taught to increase positive parenting skills (*i.e.*, Praise, Reflect, Imitate, Describe, Enjoy; PRIDE) and decrease negative parenting skills (*e.g.*, commands, questions, negative talk; the “don’t skills”). As part of CDI, caregivers also learn to decrease their child’s disruptive behavior by differentially reinforcing other behavior using social attention. For example, a caregiver may ignore a child’s yelling during a session and quickly praise the child for using a quiet voice as soon as the yelling ceases. Weekly CDI coaching sessions and daily, five-minute at-home practice sessions are referred to as “special playtime” for the identified child. In sessions, a therapist coaches the caregiver through a two-way mirror or from another area using an earpiece. Coaching involves a parallel process, as therapists use PRIDE skills, avoid “don’t skills,” and differentially reinforce caregivers’ behavior to meet the goals of CDI. CDI mastery criteria is met when a caregiver uses at least 10 labeled praises, 10 reflections, 10 descriptions, and fewer than 4 of the “don’t skills” in a 5-minute coding period [5]. As caregivers increase their use of the PRIDE skills, decrease the use of the “don’t skills,” become skilled at differential reinforcement of other behavior, and provide consistent opportunities for special playtime, the caregiver-child relationship typically improves markedly. Families often experience dramatic decreases in disruptive behavior during the CDI phase of treatment [14, 15]. Following satisfaction of CDI mastery criteria, families advance to the second phase of treatment. CDI is expected to last for about six to eight sessions with consistent attendance and at-home practice.

Children on the autism spectrum often have difficulties with pragmatic use of language skills in social interactions. The strategies included in CDI promote the use of social initiations and contingent responsive interactions from caregivers, which may help increase social communication skills. Importantly, children lead the play in CDI with caregivers providing socially reinforcing attention and engagement *via* non-directive play skills (*i.e.*, PRIDE skills). Specifically, imitation promotes spontaneous language, joint attention, and social responsiveness. Behavior descriptions facilitate parallel talk, follow-in comments from the child, self-talk, and linguistic mapping. Reflections encourage the child to expand upon statements and allow the adult to build on the child’s meaning. Thus, children are building play schemes, learning new language skills, and honing important social skills in CDI.

The second phase of PCIT focuses on improving child compliance and decreasing the remaining problem behavior. This phase, called Parent-Directed Interaction (PDI), begins with a didactic session focused on introducing the principles of giving effective commands and providing consistent follow-through to the caregiver(s). Effective commands for young children should be direct, positively stated, singular, specific, age-appropriate, respectful, explained before they are given or after they are obeyed, and used sparingly [5]. Consistent follow-through after a command consists of praising child compliance if the command is obeyed or following up with a scripted warning statement and time-out from social

reinforcement if the command is not obeyed. The time-out procedure in PCIT is extremely detailed so that caregivers can calmly provide highly consistent, predictable consequences. Therapist coaching in PDI skills, especially the calm delivery of consistent follow-through, is crucial to the success of PCIT. One major goal of PDI is to draw a stark contrast for children between the exciting, positive, social responses for compliance and the boring, predictable responses for non-compliance. During PDI, caregivers continue to engage the child in special playtime weekly in sessions and daily at home while adding the component of PDI skills practice. PDI skills mastery occurs when a caregiver demonstrates 75% effective commands and consistent follow-through within a 5-minute coding period [5]. Following PDI mastery, therapists and families may focus on generalizing PDI skills to other goal areas such as sibling relationships and public behavior, if appropriate. PDI mastery frequently requires about six to ten sessions.

Throughout PCIT, caregiver(s) complete the Eyberg Child Behavior Inventory (ECBI) [16], at each appointment. This caregiver-report measure indicates the current intensity and level of perceived problems caused by a child’s behavior. To graduate from PCIT, scores on the ECBI must fall to at least one-half of one standard deviation below the mean for behavioral intensity as compared to the normative sample; in addition, caregivers must attain mastery of CDI and PDI skills and report confidence in handling their child’s behavior on their own [5].

PCIT is supported by an extensive literature base providing evidence of “very large” to “huge” effect sizes ( $d = 1.39, 1.65$ ) [17 - 19]. PCIT outcome research often demonstrates dramatic improvements in child compliance, disruptive behavior, aggression, parenting stress, teacher and caregiver skills, and maternal depression [13, 20, 21]. Through both tightly controlled efficacy trials and less controlled, community-based effectiveness research, PCIT has shown robust effects [6, 22]. Significant positive outcomes are evident when comparing PCIT treatment groups with no-treatment control groups and among pre-intervention, post-intervention, and follow-up measures [19, 20]. These positive outcomes occur across a variety of cultural groups [23] and mental health diagnoses such as Oppositional Defiant Disorder (ODD), Attention-Deficit/Hyperactivity Disorder (ADHD), Autism Spectrum Disorder (ASD), anxiety, and depression [24 - 28]. Further, medium to large effects in a large community-based sample have been measured even for families who dropped out of treatment before graduation [6].

PCIT is a powerful intervention for several reasons. PCIT is based on principles of behaviorism [29]; for example, the use of positive social reinforcement for desirable behavior and withholding of such reinforcement for undesirable behavior promote behavioral change when delivered from therapist to caregiver and from caregiver to child. Social learning [30] occurs through modeling and observation of consequences throughout treatment. Child-caregiver attachment [31] is targeted by increasing responsive, sensitive caregiving in CDI and providing calm, consistent, predictable consequences in PDI. Therapists teach and coach authoritative parental control [32]- an effective balance between high levels of warmth (CDI)

and control (PDI)- throughout PCIT. Finally, based on the Hanf two-stage parenting training model [33, 34], PCIT incorporates all of the above components into a format involving live modeling, in-session practice, at-home practice, and real-time coaching through a bug-in-the-ear. The Hanf model serves as the blueprint for PCIT and other evidence-based behavioral parent training programs (e.g., Defiant Children [35]; the Incredible Years [36]).

PCIT's powerful effects are also tied to its emphasis on behavioral assessment and mastery-based criteria for progression through treatment. At each session, caregiver-child interactions are coded using the Dyadic Parent-Child Interaction Coding System (DPICS [37];), and caregivers report on child behavior using the ECBI [16]. In these ways, treatment progress is consistently assessed and areas for improvement are targeted immediately. Further, the focus on "overpractice- using CDI and PDI skills at high rates during sessions [7]- helps families maintain treatment gains years after treatment completion [20, 38]. For these reasons and others, PCIT is one of the most effective, low-cost, short-term, early interventions available and has the potential to prevent long-term negative outcomes for children and families.

### 3. PCIT-ASD RESEARCH

#### 3.1. Theoretical Foundations

Over the past decade, there has been a proliferation of research into the application of PCIT-ASD [39]. Children with ASD were historically excluded from participating in PCIT because social contingencies (e.g., verbal reinforcement, ignoring, and time-out) were assumed not to be effective, and social contingencies are a major component of PCIT. Early theoretical research provided a conceptual framework for PCIT-ASD. With a focus on developmental disabilities, McDiarmid and Bagner [40] drew parallels between components found in current treatments for children with developmental disabilities and PCIT. Similarly, Masse, McNeil, Wagner, and Chorney [41] published a theoretical justification for PCIT-ASD by exploring similarities between PCIT and well-known treatments for ASD, suggesting that PCIT could be used to supplement other interventions to maximize the effectiveness of therapy.

Broadly speaking, each treatment phase in PCIT-ASD has a specific, overarching goal. For children on the autism spectrum, CDI makes caregiver attention more reinforcing for the child and makes caregiver-child play more rewarding. In the PDI phase, child compliance increases, which provides children with ASD more opportunities to learn and obtain benefits from complementary services (e.g., occupational therapy, speech therapy).

#### 3.2. Single-Case Research

Numerous case studies were followed to build upon theoretical research. One PCIT-ASD case report demonstrated reductions in disruptive behavior as measured by the ECBI in a child presenting with ASD and a disruptive behavior disorder [42]. In this study, the child was 5 years of age and received 13, 90-minute sessions [42]. Upon completing PCIT, Budd *et*

*al.* [42] found that the child no longer met the criteria for a disruptive behavior disorder and that behaviors improved to within normal limits as measured by the ECBI.

#### 3.2.1. Complex Comorbidities

Given the complex clinical presentation of ASD, other researchers have published PCIT-ASD case reports with complex comorbidities. Case reports on complex PCIT-ASD cases (e.g., clients with comorbidities) are helpful for both clinical practice and research. Case reports provide rich details which providers may find helpful to guide effective treatment with similar cases. Furthermore, these case reports guide future research because they explore the efficacy of PCIT-ASD with children who fall anywhere within the wide spectrum. For instance, Armstrong and Kimonis [43] conducted PCIT-ASD with a 5-year-old child diagnosed with Asperger's disorder, comorbid attention-deficit/hyperactivity disorder, oppositional defiant disorder, and obsessive compulsive disorder. After 16 sessions, Armstrong and Kimonis [43] found ECBI Problem scores decreased steadily across the treatment.

Another complex comorbidity case, published by Agazzi, Tan, and Tan [44], conducted PCIT with a 7-year-old with ASD, severe behavior problems, sleep problems, developmental delays, hearing impairment, premature birth, and in-utero substance exposure. After 15 sessions of standard PCIT, Agazzi *et al.* [44] found clinically significant decreases in ECBI intensity scores. Similarly, a case study by Lesack, Bearss, Celano, and Sharp [45] found clinically significant decreases in ECBI scores in a 5-year-old child with ASD, severe developmental delay, and significant disruptive behavior. This child was unable to produce any words with intended meaning, and the researchers made a multitude of deliberate adaptations over the 22 treatment sessions [45].

Armstrong, DeLoatche, Preece, and Agazzi [46] conducted PCIT-ASD with a 5-year-old child diagnosed with ASD, intellectual disability, attention-deficit hyperactivity disorder, and epilepsy. Armstrong *et al.* [46] demonstrated that from pre-treatment to 5-month follow-up, caregiver- and teacher-reported child behavior decreased from the clinical to normal ranges on the ECBI. Researchers introduced visual supports to help the child better comprehend expectations [46].

Hansen and Shillingsburg [47] examined the impact of PCIT-ASD on language in two children with ASD and considerable language impairments. Both children demonstrated changes in child vocalizations. One child was observed vocalizing 18 words at pre-treatment and 48 words following PCIT. Another child was observed vocalizing 50 words post-treatment as compared to 5 vocalizations pre-treatment. Primary findings from this study suggest that PCIT-ASD can address both behavior and language.

#### 3.3. Group-Design Research

The earliest published PCIT-ASD group-design study was conducted by Solomon, Ono, Timmer, and Goodlin-Jones [48] using a matched waitlist case-control design with 19 males ranging between 5 and 12 years old who met diagnostic criteria for ASD as well as demonstrated clinically significant externalizing behavior, IQ score above 70, and sufficient

receptive and expressive language skills. According to Solomon *et al.* [48], participants received an average of 12.5 PCIT sessions and were assessed 2 weeks before treatment (*i.e.*, pretreatment) and 2 weeks after treatment (*i.e.*, post-treatment). Overall, participants demonstrated clinically significant improvements in adaptability, atypicality, and ECBI Problem scores [48].

Using a non-concurrent multiple baseline design, Masse, McNeil, Wagner, and Quetsch [49] demonstrated the efficacy of standard PCIT protocol with children on the autism spectrum implemented in the home. Researchers adapted the treatment context by implementing PCIT in the client's home for 1-hour sessions twice per week. Child disruptive behavior significantly decreased from pre-treatment to post-treatment across all participants. From pre-treatment to three-month follow-up, all participants demonstrated increases in child compliance rates.

In an open-label pilot, Zlomke, Jeter, and Murphy [50] examined the efficacy of standard PCIT for children with ASD. A sample of 17 caregiver-child dyads received treatment weekly with an average of 19 sessions per dyad. Results from this study demonstrated significant decreases in child disruptive behavior, improvements in child compliance, more positive parental following behavior, and fewer negative parental leading behavior. Additional analyses showed improvements in child adaptive functioning with a significant increase in measures of children's social skills.

Ginn, Clionsky, Eyberg, Warner-Metzger, and Abner [51] conducted the first randomized controlled trial examining the efficacy of PCIT for children with ASD. Specifically, the experiment utilized only the CDI phase, not the full PCIT protocol. Thirty participants were assigned to an immediate treatment group or a waitlist group and received eight sessions of CDI over ten weeks. Children in the immediate treatment group demonstrated improved levels of social awareness, significantly more positive parent following behavior, fewer negative parent leading behavior, and fewer child disruptive behaviors compared to those on the waitlist. Furthermore, researchers found that growth in parenting skills significantly mediated improvements in child behavior problems, which parallels previous research in typically-developing populations [52]. Extending upon the work of Ginn *et al.* [51], Furukawa *et al.* [53] completed a study examining the effects of CDI on Japanese children with ASD. This study utilized a wait-list control design with 21 caregiver-child dyads with children diagnosed with ASD and ranging from 4 to 7 years of age [53]. According to Furukawa *et al.* [53], children with ASD demonstrated improvements in social cognition, decreases in disruptive behavior, and reductions in parental stress.

Zlomke and Jeter [54] conducted the first study comparing the effect size for PCIT between children with and without ASD. Of the 37 families of children with externalizing behavior problems who completed PCIT, 14 children were in the ASD group. Caregivers of children with and without ASD both reported similar improvements in the intensity of disruptive behavior after receiving PCIT. Researchers also found statistically significant and clinically meaningful improvements in atypical, withdrawal, and adaptability

behaviors for children with and without ASD. For instance, children with ASD moved from the "clinically significant" range to "average" range for Atypicality scores. Interestingly, children with ASD demonstrated significant improvements in functional communication from pre- to post-treatment. Furthermore, both caregivers of children with and without ASD reported significant improvements in parenting stress after receiving PCIT.

More recently, Ros and Graziano [55] evaluated the feasibility and efficacy of a large-group adaptation of PCIT-ASD with 37 preschoolers with co-occurring ASD and externalizing behavior problems. Group PCIT-ASD was conducted in conjunction with an 8-week multimodal intervention (*i.e.*, summer treatment program for pre-kindergarteners) with four CDI and four PDI sessions [55]. Each session occurred weekly, with one hour dedicated to the PCIT protocol, and utilized the following format: large group didactic, two to three caregiver subgroups to practice skills with their children, and group discussion to review. Because sessions were weekly for two hours, half of each session was dedicated to school readiness topics and included a focus on strategies used in PCIT. Overall, Ros and Graziano [55] demonstrated the feasibility and efficacy of group PCIT for children with ASD and externalizing behavior problems. From pre- to post-treatment, caregivers showed significant improvements in parenting stress and negative parenting practices; at the six month follow-up, caregivers showed significant improvements in positive parenting practices [55]. Additionally, Ros and Graziano [55] demonstrated significant improvement in caregiver "do" skills, "don't" skills, and treatment knowledge from pre- to post-treatment.

Replicating and extending upon previous studies, Parladé *et al.* [56] conducted a study evaluating PCIT-ASD using a matched case-control design with 16 children with ASD and 16 children without ASD. Overall, both groups demonstrated significant improvements in child externalizing behavior, executive functioning, parenting skills, and parenting stress [56]. This study provides additional evidence that children with disruptive behaviors with and without ASD demonstrate similar outcomes following standard PCIT. Moreover, children with ASD in this study demonstrated improvements in the core symptoms of ASD. For the ASD group, participants demonstrated statistically significant improvements in multiple core symptom areas of ASD from pre- to post-treatment: overall social responsiveness, social awareness, restricted and repetitive behavior, overall adaptive skills, adaptability, social skills, and activities of daily living [56].

Scudder, Wong, Mendoza-Burcham, and Handen [57] discussed lessons learned from an open clinical trial and a randomized controlled trial examining the efficacy of standard PCIT for reducing disruptive behavior in children with ASD with a mental age of at least 30 months. In the open clinical trial, Scudder *et al.* [57] found four of eight participants to be "PCIT responders"; where in, participants who responded to treatment demonstrated a  $\geq 20\%$  decrease in ECBI Intensity score from pre-treatment to post-treatment. Furthermore, Scudder *et al.* [57] noted that increased parental use of PRIDE skills may not always be associated with improved behavior for

children with ASD. Specifically, Scudder *et al.* [57] noted that PDI seems to play an important factor before improvement on the ECBI Intensity score.

**4. CLINICAL CONSIDERATIONS**

Clinicians with experience working with children on the autism spectrum and certified PCIT therapists are well positioned to provide PCIT-ASD. PCIT therapists who are interested in working with children on the autism spectrum are encouraged to seek out additional training and/or consultation in PCIT-ASD from master clinicians. For more information about becoming a certified PCIT therapist, please visit the PCIT International website (*i.e.*, [pcit.org](http://pcit.org)); Warner-Metzger [58] discusses PCIT-ASD core training competencies in more detail (*e.g.*, a potential mechanism for ASD-specific training). Certified PCIT therapists treating children with ASD should understand the assessment and diagnosis of ASD, be able to connect families with ASD services and resources, and have prior experience working with children on the autism spectrum. Please, see Table 1 for an overview of clinical recommendations.

**Table 1. Clinical and training considerations.**

<u>Concern</u>	<u>Recommendation</u>
Age	1. Work with children between the ages of 2 and 6 years.
Language	2. Work with children with receptive and expressive language abilities at or above 24 months.
Cognitive Functioning	3. It may be easiest to work with children with IQ scores above 70.
Training Readiness	4. Become a certified PCIT therapist. 5. PCIT therapists should seek out additional training and experience with children on the autism spectrum. 6. Consult with PCIT therapists with expertise in ASD. 7. Experienced PCIT therapists may require only 1-8 hours of extra workshop training to be effective with higher functioning children on the autism spectrum.

*Note.* Seven tips for practitioners are outlined in the above table. PCIT = Parent-Child Interaction Therapy. ASD = Autism Spectrum Disorder.

Most children participating in PCIT-ASD studies range in age from two to six years, which coincides with the recommended age range for standard PCIT [7]. Successfully adapting PCIT to older children requires careful consideration due to the size of the child, not just mental age [59].

Language ability impacts treatment, and providers should assess language ability in deciding the appropriateness of PCIT-ASD. Based on the current body of research, providers ought to ensure children having at least the equivalent of 24-month-old language comprehension to understand simple commands. Primarily, research has focused on children with receptive and expressive language abilities at or above 24 months. Future research should examine changes in child vocalizations and language ability from pre- to post-treatment.

The literature does not provide clear guidance on whether a child with ASD is appropriate for PCIT based upon cognitive functioning. Scudder *et al.* [60] recruited participants with IQ

scores equivalent to age 30 months and above; however, some studies did not specify or exclude participants based upon IQ requirements. It is recommended that providers use PCIT-ASD for children with IQ scores above 70, as this population is expected to require less adaption from standard PCIT.

**5. RESEARCH RECOMMENDATIONS**

Researchers are encouraged to continue to conduct and publish results from randomized controlled trials to continue to grow the empirical evidence for the efficacy of PCIT-ASD. A systematic review with meta-analyses offers many advantages over narrative reviews, including greater transparency, risk of bias assessment, and the ability to account for moderators that may influence outcomes [61]. Currently, the PCIT-ASD literature contains too much heterogeneity in study design that restricts the ability to combine results across different types of studies.

Future research should also be more collaborative. Providers often can easily obtain rich datasets by including additional research consents at intake. Researchers are encouraged to bridge the science-to-practice gap by working closely with providers to examine relations between child characteristics and treatment outcomes, replicating studies, and examining underrepresented populations.

**5.1. Social-Directed Interaction**

Future PCIT research would also benefit from developing a third phase of treatment: Social-Directed Interaction (SDI [28];). SDI is an experimental, third phase of PCIT with the goal of improving social functioning- a core deficit in children with ASD- as well as language. During this phase of treatment, the caregiver is taught and coached to coach his or her child in either PRIDE skills or other target skills (*e.g.*, eye contact, asking questions). Children are coached on PRIDE skills for two reasons: 1) PRIDE skills make the child’s play more reinforcing to other children, and 2) PRIDE skills encourage appropriate social play and conversation. Lieneman, Ruckle, and McNeil [15] were the first to implement an SDI phase upon the completion of standard PCIT. Future research should investigate the feasibility, acceptability, and efficacy of SDI.

**CONCLUSION**

PCIT is a promising treatment for children with autism and co-occurring disruptive behavior [28]. Furthermore, children on the autism spectrum receiving PCIT may also gain improvements in social awareness, adaptability, positive affect, atypicality, socially withdrawn behavior, and functional communication. The PCIT-ASD literature provides initial support that PCIT improves social interactions for children with ASD, and future research should include measures assessing these outcomes. Primarily, the PCIT-ASD literature has focused on children with mental or chronological ages between 3 and 7 years and with language ability consistent with 24 months. Future research should prioritize collaborations with providers and practitioners to provide additional evidence about the efficacy and effectiveness of PCIT-ASD. Moreover, research should identify interactions between subgroups of children with ASD and PCIT-ASD

treatment components to guide timely, effective treatment practice.

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### CONFLICT OF INTEREST

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