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Combining Parent–Child Interaction Therapy and Visual Supports for the Treatment of Challenging Behavior in a Child With Autism and Intellectual Disabilities and Comorbid Epilepsy

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Abstract

About one in six children has one or more developmental disabilities, which include autism spectrum disorder (ASD) and intellectual disabilities (ID). Individuals with both ASD and ID are at higher risk of epilepsy, and those with younger onset of seizures are at higher risk of both developmental and behavioral disorders. Young children presenting with developmental and behavioral challenges are often very difficult for caregivers to manage, and challenging behavior results in reduced learning opportunities. Finding effective and efficient interventions to address behavioral issues remains a clinical priority to improve overall outcomes for all children and especially those with developmental disabilities. This case study presents the treatment of a 5-year-old girl diagnosed with ASD, ID, and comorbid epilepsy using Parent–Child Interaction Therapy (PCIT) combined with visual supports (VS). Findings from this case report documented (a) an improvement in behavioral functioning in home, school, and community settings; (b) evidence for the effectiveness of parent-mediated intervention; and (c) support for collaboration and care coordination to improve intervention outcomes.

Keywords

autism spectrum disorders, intellectual disabilities, epilepsy

I Theoretical and Research Basis for Treatment

Developmental disabilities including autism spectrum disorders (ASD) and intellectual disabilities (ID) frequently occur together, and can result in significant and lifelong impairments unless children and their families receive needed services and supports, preferably beginning in the earliest years of life (Armstrong, Hangauer, & Agazzi, 2013; Johnson & Myers, 2007).

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Approximately half of children with ASD also present with ID, as defined by an IQ score 2 or more standard deviations below the mean (American Psychiatric Association, 2013; De Bildt, Sytema, Ketelaars, & Kraijer, 2003; Fombonne, 2005). The past decade has seen an increase in the diagnosis of ASD, which is currently estimated at 1 in 88 children, with 4 times as many boys as girls affected (Centers for Disease Control and Prevention, 2012).

Epilepsy is a group of disorders characterized by the occurrence of epileptic seizures and is strongly associated with a range of behavioral and cognitive comorbidities including ID and ASD (Berg, 2011). Almost one third of children diagnosed with ASD are reported to have experienced regression from normal or near normal functioning following seizures, which is referred to as epileptiform regression (Canitano, 2007). Approximately 25% of children with epilepsy have some degree of ID, which is often referred to as epileptic encephalopathies (Berg et al., 2008). The younger the child at onset of epilepsy, the greater the risk for both ID and ASD, presumably because this is the age when both disorders begin to manifest themselves (Canitano, Luchetti, & Zapella, 2005). Poorer outcomes have been documented in children with comorbid ASD, ID, and seizures, especially those with lack of functional speech by age 5 (Johnson & Myers, 2007).

Challenging behavior is commonly seen in children with comorbid ASD, ID, and epilepsy, and may include problems such as anxiety, obsessive-compulsive and repetitive behaviors, sleep disturbances, inattention, non-compliance, and aggression (Brereton, Tonge, & Einfeld, 2006; Gadow, DeVincent, Pomeroy, & Azizian, 2004; Van Steensel, Bogels, & Perrin, 2011). Behavior problems are related to age and cognitive ability, with younger children showing greater symptoms of inattention, hyperactivity, and oppositional behaviors, whereas older children tend to demonstrate more aggression, poor peer interactions, and/or strange behavior (Gadow et al., 2004). As such, intervention becomes very complicated and may result in combinations of pharmacological and behavioral interventions. Given that one in six, or about 15% of children have one or more developmental disabilities, effective management becomes a clinical priority (Centers for Disease Control and Prevention, 2012).

Individualized and intensive behavioral interventions have been identified as the most effective treatment for young children's disruptive behaviors associated with ASD. Common gains include increases in IQ, improved communication, and adaptive skills, and decreases in ASD symptoms and other maladaptive behaviors (Butter, Mulick, & Metz, 2006; Chafant, Rapee, & Carroll, 2007; Cohen, Amerine-Dickens, & Smith, 2006; Howard, Sparkman, Cohen, Green, & Stanislaw, 2005; Smith, Eikeseth, Klevstrand, & Lovaas, 1997; Van Steensel et al., 2011). Behaviorally based interventions that build on a child's interests teach replacement skills through a series of simple steps, engage a child's attention, and provide regular reinforcement of pro-social skills to improve functioning of children with developmental disabilities, especially when the intervention is delivered by familiar caregivers such as parents and teachers (Horner, Carr, Strain, Todd, & Reed, 2002; Oono, Honey, & McConachie, 2013; Strauss, Mancini, & Fava, 2013).

Parent-Child Interaction Therapy (PCIT) is an evidence-based intervention designed for children 2 to 7 years with disruptive behavior disorders (Bagner & Eyberg, 2007; Brinkmeyer & Eyberg, 2003). PCIT integrates concepts from behavioral theory, traditional play therapy, and attachment theory to enhance the parent-child relationship and improve child behavior by fostering nurturing interactions during play activities and increasing parents' proactive behavior management skills. Compared with applied behavior analysis (ABA), which may require 20 to 40 hr of weekly therapy over the course of a year or more (Lovaas & Smith, 1989; Vismara & Rogers, 2010), PCIT typically requires 14 to 20 sessions of live coaching, and 5 min of daily practice at home. Thus, PCIT may offer a more efficient and low cost approach that teaches parents to use behavioral strategies to reduce challenging behaviors that interfere with healthy child development and family routines (Bagner & Eyberg, 2007).

A few studies of PCIT with children with ASD have documented reductions in parent perceived behavioral problems and increases in child compliance and pro-social verbalizations (Agazzi, Tan, & Tan, 2013; Armstrong & Kimonis, 2012; Masse, McNeil, Wagner, & Chorney, 2008; Solomon, Ono, Timmer, & Goodlin-Jones, 2008). Masse and colleagues (2008) described implementation of PCIT with young children with high functioning ASD toward reducing disruptive behavior problems. Solomon et al. (2008) reported a decrease in disruptive behaviors among older, high functioning school-aged children with ASD and comorbid behavior problems. Armstrong and Kimonis (2012) documented improved behavioral functioning with the use of PCIT with a 5-year-old boy with Asperger's disorder, one of the disorders now included under the ASD diagnosis. Agazzi et al. (2013) described improved child compliance and decreases in disruptive behaviors in a 7-year-old boy with ASD and severely aggressive behaviors. In each of these case studies, gains were maintained at 3-month follow-up.

PCIT has also been demonstrated as an effective intervention for young children with ID. Bagner and Eyberg (2007) documented the use of PCIT for children ages 3 to 6 years with mild ID and comorbid Oppositional Defiant Disorder (ODD) in a randomized control trial. Caregivers who participated in PCIT reported more sustained and significant improvements in their children's disruptive behaviors than caregivers in the control group. In addition, increased positive interactions and higher child compliance rates were observed among the treated parent-child dyads. Changes in behavior among treated children in this study were comparable with the behavioral changes of children without ID who completed PCIT (Bagner & Eyberg, 2007).

Building on the successes of these studies, we utilized the Eyberg and Funderburk (2011) PCIT protocol combined with visual supports (VS) to intervene with a 5-year-old child diagnosed with ASD, moderate ID (IQ between 35 and 49), and comorbid epilepsy with severe limitations in expressive and receptive language and significant disruptive behavior. VS were added to enhance communication and have been endorsed as an evidence-based practice for use with individuals with ID and ASD by the National Autism Center (2009). We included VSs to augment social interaction and communication, as PCIT relies heavily on parent verbal behaviors to improve behavioral functioning.

PCIT differs from other parenting interventions in that the therapist uses live coaching to enhance caregiver skills that improve the parent-child relationship and child behavior, and to teach parents to consistently manage their child's inappropriate behavior. The first phase of PCIT, Child-Directed Interaction (CDI; six to seven sessions on average), is intended to build a warm and responsive relationship between parent and child through selective attention by attending to appropriate behavior and ignoring minor misbehavior (Eyberg & Funderburk, 2011). During approximately 50-min coaching sessions, parents are coached in key CDI skills during play (labeled praises, reflections, and behavior descriptions) and are instructed to practice the skills for 5 min daily during special play sessions at home. Parent progress toward mastery of the CDI skills is monitored on a weekly basis with the Dyadic Parent-Child Interaction Coding System (DPICS; Eyberg, Nelson, Duke, & Boggs, 2004), and these data determine when to move on to the next phase of intervention, Parent-Directed Interaction (PDI). In addition, parents complete the Eyberg Child Behavior Inventory (ECBI; Eyberg & Pincus, 1999) on a weekly basis over the course of treatment to document intensity of child behavior problems and the discharge criterion is a raw score below 114, which converts to a *T*-score of 55 or less.

During PDI, parents learn to give effective commands and provide consistent discipline strategies when needed. More specifically, parents are taught how to create commands that are clear, developmentally appropriate, and direct. Furthermore, a key component of this phase of treatment is first teaching parents to deliver the command and then providing the child with an opportunity to comply with the command after which the parent either gives a labeled praise for compliance or a warning. If the child does not comply with a warning, the parent sends the child

for a brief time-out following which the child must comply with the command. DPICS coding is continued to ensure that parents are maintaining CDI skills, and implementation of effective commands is similarly documented. Treatment may be concluded when 75% of the commands are effectively implemented, including follow through to time-out when needed (Eyberg & Funderburk, 2011). VSs are tools to enhance communication with individuals who have difficulty understanding or using language, and might include the use of objects, pictures, and/or written words. These supports improve parent-child communication and also provide children a means to communicate more effectively with others. VSs have been used with children with developmental disabilities to improve social interactions, task engagement, play skills, transitions, and daily living skills (Dauphin, Kinney, & Stromer, 2004; Johnston, Nelson, Evans, & Palazolo, 2003; Pierce & Schreibman, 1994). In this case study, we utilized picture cards, a visual schedule, and a social story to ensure that the child understood parental expectations. Picture cards included pictures of toys and activities familiar to the child. The visual schedule utilized pictures of the child completing steps within the bedtime routine, for example, wearing pajamas, brushing teeth, reading with parent, lying in bed, and lights out. The social story again incorporated actual pictures showing the child playing with familiar toys, following parent's directions, not following parent's directions, along with consequences for these choices.

With these concepts in mind, we describe the use of PCIT combined with VS with a 5-year-old girl diagnosed with ASD, ID, and comorbid epilepsy, presenting with challenging behavior. Pre-intervention measures were completed by the child's parents and teacher 2 weeks prior to beginning therapy, and post-intervention measures were completed at the last visit and again at 5 months post-intervention. Throughout the 10 treatment sessions, progress was monitored weekly using the DPICS coding system and the ECBI. At the end of each session, we completed integrity checks as described in the 2011 PCIT treatment manual and achieved 98% treatment integrity.

2 Case Introduction

Carrie was a 5-year-old girl, brought to a university pediatric clinic due to challenging behaviors that included non-compliance, loud screaming, biting, and pinching. These behaviors occurred across settings and caregivers, and were not responding to behavior management strategies. Carrie attended school and was placed in a special education setting with five other children with similar delays. Her behavior at school was difficult to manage and created safety concerns for herself and fellow students. Carrie was treated by a psychiatrist and a neurologist, who each had prescribed several different medications to manage her seizures and behavior, but unfortunately, her behavior showed no improvement. She accessed therapies outside of school (i.e., physical, occupational, and speech), but her challenging behavior interfered with her progress in each of those programs. Parents were unable to take Carrie out in the community because of her aggressive behavior and thus, her learning experiences and opportunities were limited, and the family quality of life was compromised. By the time Carrie came to us, she had been diagnosed with epilepsy, ASD, ID, and Attention-Deficit Hyperactivity Disorder (ADHD).

3 Presenting Complaints

Carrie was described by her parents as an extremely moody child, with unpredictable and aggressive behaviors. She developed typically for the first 2 years of life, until she began having seizures that were difficult to bring under control, and at this point, her skills regressed. Carrie's expressive vocabulary consisted of five words, including the word "no," which she frequently yelled out when she did not want to do something. Her receptive vocabulary was difficult to determine; however, she could follow simple instructions with gestures. Carrie's aggressive behaviors (e.g., pinching, hitting, and biting) occurred so frequently that her mother described

Carrie as being “out of control.” One of her father’s most pressing concerns was sleep-related issues. Carrie would scream and bang on the bedroom door for at least an hour when parents put her to bed and would only stop when one of them lay down with her until she was soundly asleep.

Prior to participating in PCIT, parents had completed a 7-week group parent training class that focused on behavior support strategies such as determining the function of behavior, using antecedent based intervention, and implementing differential reinforcement to improve behavior. Carrie’s parents believed that the function of her challenging behaviors was to communicate her wants and needs as she could not effectively communicate them with words, and as such, they often reminded her to “use her words,” even during times when she was biting or pinching them. They had tried using time-out but felt that it was totally ineffective with Carrie because she would yell or leave the time-out area. Her father voiced that he came from “old-school” parenting, but had found that spanking and other forms of punishment such as removing items or privileges, had little effect on Carrie’s behavior.

In the school context, Carrie’s kindergarten teacher reported having a very positive relationship with Carrie and her parents. Carrie was observed to seek out and respond positively to her teacher’s attention, as indicated by Carrie’s smiles and reaching toward her teacher for hugs. However, Carrie had difficulty staying seated during small-group instruction and would frequently pinch or hit other students. Carrie also had difficulty staying seated in the cafeteria during lunch and at times would leave the table to run through the cafeteria and into the kitchen requiring an adult to chase after her. Carrie’s teacher perceived this behavior as extremely dangerous and consequently decided to keep her entire class in the classroom for lunch to manage Carrie and prevent her elopement.

4 History

Carrie was born following a healthy pregnancy and delivery, and for the first 2 years, reached developmental milestones as expected. She was walking, beginning to use words and phrases, and showed interest in toilet training. However, she began having seizures at age 2 that adversely affected her development and resulted in the loss of motor and communication skills. Furthermore, Carrie’s behavior worsened so much that her parents sought assistance from the neurologist managing Carrie’s seizures, who tried Carrie on various stimulant medications in an attempt to reduce aggressive and inattentive behaviors. Unfortunately, the medication did not improve Carrie’s behavior and, in fact, made her more moody and difficult to manage.

Carrie participated in early intervention services and received speech, occupational, and physical therapies. She learned to walk again, but continued to lag behind in communication and adaptive skills. She moved into a special education preschool classroom at age 3 and, prior to kindergarten, was assessed by a school psychologist. Carrie’s IQ and adaptive behaviors were reported to be in the moderate range (IQ score = 35-55), and she was found eligible for a full-time special education classroom. Her challenging behaviors continued to worsen, so parents took her to a child psychiatrist for help. Carrie was then diagnosed with ASD and began taking clonidine, a non-stimulant agent used to manage ADHD symptoms. Her parents reported that the medication made Carrie sleepy, but had little effect on her inattention, aggression, and non-compliant behaviors.

Both of Carrie’s parents worked full-time, and her father’s job required long hours, meaning he often arrived home after she had gone to bed. Carrie’s two older siblings, both in college and out of the home, occasionally watched Carrie to give her parents a break. Carrie preferred her mother over all other caregivers, and after staying with her father or siblings, became even more demanding of her mother’s attention and increasingly aggressive toward her. Carrie’s older siblings did not enjoy spending time with their family because of Carrie’s behavior, and as a result, their visits were becoming less frequent.

Table 1. Data Collected at Pre- and Post-Intervention and 5-Month Follow-Up.

Assessment tool	Pre-intervention	Post-intervention	5-month follow-up
ECBI ($M = 50$, $SD = 10$)			
Intensity	69 ^a	47	63 ^a
Problem	64 ^a	47	56
SESBI-R ($M = 50$, $SD = 10$)			
Intensity	75 ^a	63 ^a	65 ^a
Problem	63 ^a	59	73 ^a
CBCL ($M = 50$, $SD = 10$)			
Affective Problems	70 ^a	52	63
Anxiety Problems	57	50	54
Pervasive Developmental Problems	70 ^a	66	50
Attention Deficit/Hyperactivity	76 ^a	60	70 ^a
Oppositional Defiant Problems	77 ^a	55	67
Conduct Problems ^b	NA	NA	72 ^a
TRF ($M = 50$, $SD = 10$)			
Affective Problems	79 ^a	70 ^a	68
Anxiety Problems	68	67	61
Pervasive Developmental Problems	82 ^a	74 ^a	50
Attention Deficit/Hyperactivity	96 ^a	96 ^a	69
Oppositional Defiant Problems	74 ^a	66	70 ^a
Conduct Problems ^b	NA	NA	69

Note. ECBI = Eyberg Child Behavior Inventory; SESBI-R = Sutter–Eyberg Student Behavior Inventory–Revised; CBCL = Child Behavior Checklist; TRF = Teacher’s Report Form.

^aScores above 70 are considered to reach the clinical cutoff whereas those above 65 are described as borderline clinical for all age ranges.

^bAt 5-month follow-up, Carrie was 6 years old and an additional scale is available for children ages 6 and older.

5 Assessment

Prior to initiating PCIT, baseline data were collected across caregivers. Parents completed the Child Behavior Checklist/1.5-5 (CBCL; Achenbach & Rescorla, 2000) and the ECBI. Carrie’s teacher completed the Teacher’s Report Form/1.5-5 (TRF; the teacher version of the CBCL) and the Sutter–Eyberg Student Behavior Inventory–Revised (the teacher version of the ECBI; SESBI-R; Eyberg & Pincus, 1999). The CBCL and TRF are standardized assessment scales that measure various aspects of behavior, including competencies and behavioral or emotional problems through parent/caregiver and teacher ratings. *T*-scores are summarized into Total Problems, Internalizing Problems, Externalizing Problems, Syndrome scales, and *Diagnostic and Statistical Manual of Mental Disorders (DSM)*-Oriented Scales. Both parent and teacher ratings on the CBCL and the TRF were above the clinical cutoff on *DSM*-Oriented Scales for Affective Problems, Pervasive Developmental Problems, Attention Problems, and Oppositional Defiant Problems (see Table 1).

The ECBI and SESBI-R assessed the intensity of Carrie’s disruptive behaviors, as well as caregiver perceptions regarding how problematic the behaviors were to them on a *T*-score scale. Carrie’s ECBI and SESBI-R Intensity and Problem scale scores were in the clinical range at the beginning of the treatment (see Table 1). Given these data, we believed that Carrie would benefit from PCIT.

6 Case Conceptualization

Carrie’s behavior problems were defined through history, observations, interviews, and standardized behavior rating scales completed by her parents and teacher. Carrie’s problem behaviors

included screaming, shouting *no*, hitting, pinching, hair pulling, and biting. These problems occurred frequently, were demonstrated across settings, and she was the most aggressive toward her mother. The perceived function of her behavior was to gain attention or access to reinforcers such as toys or activities (e.g., parent's cell phone), and Carrie frequently got what she wanted and would then calm down. Our treatment goal was to teach parents to use behavioral strategies including positive reinforcement and planned ignoring along with contrasting reinforcement to increase desired behavior and eliminate mildly disruptive behavior, as well as a consistent discipline sequence to eliminate aggressive behavior and non-compliance.

PCIT was selected for treatment because of its documented effectiveness in improving behavior in young children with disruptive behavior problems including those with mild ID and ASD in a relatively short period of time (Bagner & Eyberg, 2007; Eyberg, Nelson, & Boggs, 2008; Masse et al., 2008; Solomon, Ono, Timmer, & Goodlin-Jones, 2008). The PCIT protocol used in the study was created by Eyberg and Funderburk in 2011. We added VS because of Carrie's communication challenges and the research to support their use with children with language difficulties (National Autism Center, 2009). Both parents understood the commitment that this approach would require of them and agreed to modify their work schedules to attend all coaching sessions together. Carrie's father expressed his doubts that our plan would work, but with coaxing from his wife, agreed to participate and attended all sessions. Last, we noted that Carrie was very interested in gaining her parents' attention, which was another plus for selecting PCIT for intervention.

VSs were utilized to augment this intervention to ensure that Carrie understood behavioral expectations including how to get her needs met. First, we used a visual schedule of the bedtime routine using pictures of Carrie completing each step. Carrie's screaming at bedtime caused her parents a great deal of stress and interfered with her sleep duration. We encouraged parents to use the schedule as a teaching tool by reviewing it with Carrie and providing labeled praise whenever Carrie followed the steps in her bedtime schedule. We also asked them to consistently ignore her screaming once she was in bed, a strategy referred to as extinction, and reassured them that consistent use of this procedure has been documented for use with children with ASD and ID (Weiskop, Richdale, & Matthews, 2005; Wolf, Risley, & Mees, 1964). We also forewarned them about the extinction burst (intensification of disruptive behavior) and encouraged them to be consistent (Reid, Walter, & O'Leary, 1999).

Second, we developed a social story to teach Carrie the discipline sequence used during PDI. A social story combines pictures and text to describe a situation in which there are choices to be made. Social stories include other's perspectives, suggest an appropriate response, and have been used to help children with ASD and ID (Gray & Garland, 1993; Reynhout & Carter, 2007). Praise is imbedded within the story for making good choices and is considered to be an essential element in reinforcing desired behavior, as it is in PCIT. Similar to the visual schedule, we embedded photos of Carrie in the social story and asked her parents to read it daily prior to transitioning to do PDI and during to ensure she understood the expectations.

7 Course of Treatment and Assessment of Progress

Prior to treatment, parent and teacher ratings on the CBCL and the TRF fell within the clinical range on *DSM*-Oriented Scales for Affective Problems, Pervasive Developmental Problems, Attention Problems, and Oppositional Defiant Problems. ECBI Intensity and Problem scale scores as rated by parents were also clinical, suggesting the need for treatment. All pre-treatment assessments were repeated during the last PCIT session. Carrie's scores on all rating scales had declined, and in some areas, were in the normal range as shown in Table 1. Parent ECBI scores were in the average range for both Intensity and Problem scales. Although Carrie's teacher's ratings declined across the SESBI scales, the Intensity score was still elevated. A similar trend was

observed on the CBCL and the TRF wherein parents endorsed subclinical Affective Problems, Anxiety Problems, and Oppositional Defiant Problems, whereas teacher ratings remained in the clinical range (but were reduced) for Affective Problems, Pervasive Developmental Problems, and Oppositional Defiant Problems. Anxiety Problems and Attention Deficit/Hyperactivity Problems remained unchanged, per teacher ratings.

Of note, the parents reported that they were now able to take Carrie out to eat at a restaurant, which was something that they had not been able to do since she was a toddler. The mother took Carrie on shopping trips and occasionally had to follow the discipline sequence, but generally, Carrie stopped misbehaving with a verbal warning. If Carrie needed a time-out, the mother would pull a placemat out of her purse to define the time-out area. Carrie's older siblings were also following the PCIT procedures and as such, were more willing to babysit their sister because they could manage her behavior. Carrie was going to bed willingly, which made for calmer evenings. Carrie's father reminded us that in the beginning, he did not believe that PCIT would help, but was wrong and thankful for the assistance.

8 Complicating Factors

PCIT sessions were completed at the conclusion of the school year, and we did not see Carrie and her parents over the summer. We contacted the parents at the beginning of the school year to see how Carrie was adjusting to her new teacher and classmates, and the news was not good. Carrie's short attention span and challenging behavior problems continued to interfere with her progress in school and other therapies. Carrie resumed biting, screaming, and hitting classmates, would not stay in her seat or participate in group activities, and refused to participate in speech therapy. Her communication skills had not improved, so she still had difficulty communicating her wants and needs. After 1 month of school, Carrie was moved to a different classroom with a more seasoned teacher, which presumably offered more support.

Due to insurance changes, Carrie had to be seen by another child psychiatrist. The new doctor decided to take Carrie off Clonidine and referred her for additional speech and occupational therapies, which were not started due to insurance issues. Carrie's parents decided to make some modifications to Carrie's diet by removing sugar and increasing protein, which mother hoped would help Carrie focus. Her mother reported that they continued to practice skills learned in PCIT at home with Carrie, which helped, but could see Carrie's frustration increase as a result of her communication challenges.

9 Access and Barriers to Care

Initially, there were no difficulties in accessing and coordinating care. PCIT was offered in the family's community through a university-based developmental clinic, and all visits were covered by their medical insurance. Parents' employers accommodated them with time off that they needed for appointments. Carrie's school was supportive and did not count Carrie as absent when she missed class time for appointments. The first teacher welcomed our graduate students who went to Carrie's school to offer consultation so that similar behavioral strategies could be implemented in the classroom as were being used at home. We had ongoing communication with Carrie's psychiatrist, which enabled better medical management of symptoms. Unfortunately, when Carrie's medical insurance changed, we were no longer able to provide services.

10 Follow-Up

We asked Carrie's parents and her then current teacher to complete the ECBI/SESBI and CBCL and TRF for ages 6 to 18 (Carrie had a birthday) 5 months after PCIT was completed, and these

scores are displayed in Table 1. Parent and teacher ratings showed increases for ECBI/SESBI Intensity and Problem scales, compared with post-intervention ratings, but scores were still below initial ratings. Similarly, the CBCL scores were higher compared with post-intervention ratings, but remained lower compared with pre-intervention status. Concerns remained for behaviors clustered in Affective Problems, Attention Deficit/Hyperactivity Problems, Oppositional Defiant Problems, and Conduct Problems. The 5-month TRF scores actually were lower compared with both pre- and post-PCIT intervention ratings on all scales, but were rated by different teachers. Teacher ratings remained in the clinical range for Oppositional Defiant Problems and were in the borderline range for Affective, Attention Deficit/Hyperactivity Problems, and Conduct Problems.

11 Treatment Implications of the Case

This case study described how an empirically supported intervention, namely, PCIT, combined with VS could be used to successfully treat a young child with developmental disabilities including communication and interaction deficits and aggressive behavior problems. Given that one in six children is identified with a developmental disability, identifying effective and efficient early interventions becomes critical. PCIT utilizes parents and caregivers as the agents of change, which in turn empowers them, and serves to maximize generalization of skills to the natural environment where children live and learn. VSs such as schedules or social stories may be useful to combine with PCIT in cases where children have limited communication abilities and deserve further study. In this case study, PCIT combined with VS improved child behavioral functioning and the quality of life for Carrie's entire family.

This case study also speaks to the need for long-term and coordinated care among all providers and caregivers to ensure that the needs of the child and family are addressed and that intervention gains are maintained. During the time frame that PCIT was being implemented, Carrie's care plan was coordinated and there was ongoing collaboration with providers. The teacher was interested and willing to implement similar strategies in the classroom. Our electronic medical records documented weekly progress, which was accessible to Carrie's neurologist and psychiatrist, and made coordinated care easier. However, when Carrie's medical insurance changed, we were no longer able to see her through our practice, and her new providers did not have access to our records, making collaboration and care coordination more complicated. Despite her positive response to this intervention, at 5 months post-intervention, treatment gains had declined.

12 Recommendations to Clinicians and Students

This case study supports the effectiveness of PCIT combined with VS in treating a young child with ASD, ID, and epilepsy. These strategies helped to reduce her tantrums and aggressive behaviors with consistent discipline methods and increased desired behaviors through parents' use of selective attention and positive reinforcement. We observed improvements in functional play skills and increased attention span during special play interactions, and more importantly, Carrie and her parents were able to enjoy everyday activities, such as going out to a restaurant or to a store. Because of Carrie's limited communication abilities, we added a visual schedule and a social story to make sure she understood expectations, but otherwise followed the standard PCIT treatment protocol. Weekly graphing of DPICS and ECBI data were shared with Carrie's parents so that they could see the progress they were making, which helped to encourage their efforts. Last, consultation with the classroom teacher helped her to manage Carrie's behavior in the classroom and maintaining ongoing contact with her medical providers assisted them in medical management decisions.

Future studies using PCIT with young children with ASD, ID, and other developmental disabilities might consider using additional assessment tools prior to treatment such as a functional assessment to determine the function of behavior and use of communication strategies, and identify preferred toys or activities that may be included in treatment. The addition of other standardized assessment tools such as the Autism Spectrum Rating Scale (ASRS; Goldstein & Naglieri, 2010) given before and after treatment would provide additional information as to the effect of PCIT on improving ASD-specific deficits including eye contact, gestures and facial expressions, and play. Structured observations in school and community settings might also be included to gauge the child's social growth in such settings. In-classroom coaching for the teacher might also be explored as a way to reinforce use of consistent behavioral strategies.

Although behavioral interventions in general have a solid track record of improving behavioral functioning among children with ASD, ID, and other developmental disabilities, there are few studies examining the use of PCIT with young children with both ASD and ID, and none for those with comorbid epilepsy. We are very encouraged by our success in utilizing PCIT with Carrie and anticipate future research efforts to document its effectiveness for this very vulnerable population.

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