12 Mapping PCIT onto the Landscape of Parent Training Programs for Youth with Autism Spectrum Disorder

Karen Bearss

Abstract

Parent training (PT) is generally synonymous with "evidence-based treatment for children with disruptive behavior" and it is considered to be among the most well-established treatments in child mental health. The recognized struggles parents face in raising a child with autism spectrum disorder (ASD) have led to increased interest in the development of evidence-based parenting interventions for ASD. Due to the complex nature of ASD, PT program development in this population has taken a multifaceted path, targeting a wide range of behaviors including deficits in language, social reciprocity, self-help skills, and joint attention, as well as self-stimulatory and repetitive behaviors. This chapter presents the diverse and complex landscape of PT for individuals with ASD through an illustrative taxonomy of four main categories of programs: care coordination, psychoeducation, parent-mediated interventions for core symptoms, and parent-mediated interventions for maladaptive behaviors, noting that programs specifically targeting disruptive behaviors in this population represent just a small segment of available interventions. The chapter then highlights the unique contributions PCIT brings to the field of parenting interventions in ASD.

In child mental health services, the term "parent training" (PT) is synonymous with evidence-based treatment for children with disruptive behavior. There is a convincing body of evidence regarding the efficacy of parent training in treating disruptive behavior in children with oppositional defiant disorder and attention-deficit hyperactivity disorder from preschool to adolescence. PT is now considered to be among the most well-established evidence-based treatments in child mental health (Dretzke et al., 2009; Michelson, Davenport, Dretzke, Barlow, & Day, 2013). Clinicians can now choose from one of several well-established, structured programs, including Kazdin's Parent Training (Kazdin, 2005), Sanders' Triple P Program (triplep.net), Barkley's Defiant Children (Barkley, 2013), Webster Stratton's Incredible Years (www.incredibleyears.com), and Eyberg's Parent-Child Interaction Therapy (pcit.org; McNeil & Hembree-Kigin, 2010). This body of evidence has influenced international dissemination of parent training and prompted several clinical practice guidelines in the United States, the United Kingdom, and elsewhere in an effort to raise standards of mental health care for youth (American Academy of Child and

K. Bearss (✉)
Department of Psychiatry and Behavioral Sciences, Seattle Children's Autism Center, University of Washington, Seattle, WA, USA
e-mail: kbearss@uw.edu

C. B. McNeil et al. (eds.), *Handbook of Parent-Child Interaction Therapy for Children on the Autism Spectrum*, https://doi.org/10.1007/978-3-030-03213-5_12

Adolescent Psychiatry, 2007; National Institute for Health and Care Excellence, 2006).

12.1 Parent Training in ASD

Parent training (PT) as a mode of treatment in autism spectrum disorder (ASD) has taken a different and somewhat multifaceted path for obvious reasons—the complexity of the disorder, with deficits in social communication, imitation, and play, requires a more expansive approach. Due to the child's multiple needs, "best practices" for children with ASD have historically involved intensive, child-focused, school-based services (National Research Council, 2001) targeting core symptoms of ASD. Because parent participation is included as one of the six main tenets of the Individuals with Disability Education Act (IDEA; 34 C.F.R.§ 300.321, 2004), parent training may be provided as a supplement to these comprehensive school-based programs. In this context, PT is designed to play a supporting role in the promotion of continued skill acquisition and generalization from class to the home and community.

12.2 Role of Parent Training

Challenges associated with caring for a child with ASD do not end when the child leaves the classroom. Multiple studies confirm the burden and stress parents face (Hayes & Watson, 2013; Kogan et al., 2008; Tonge et al., 2006). Without resources available through the school system, parents have to look elsewhere for support and guidance on managing the challenges of raising a child with ASD. Unfortunately, access to quality community-based services is limited. This lack of availability of appropriate services is compounded by the lack of trained specialists (Brookman-Frazee, Drahota, Stadnick, & Palinkas, 2012). Although children with ASD represent 10–14% of psychiatrically referred populations (Joshi et al., 2010), only 5% of community mental health therapists consider themselves to have expertise in ASD (Brookman-Frazee, Drahota, & Stadnick, 2012). Moreover, training on the assessment and treatment of ASD is limited (Brookman-Frazee, Drahota, Stadnick, & Palinkas, 2012). Parents also report frustration about the slow pace of progress in treatment and lack of practical "tools" to manage children with ASD (Brookman-Frazee, Drahota, & Stadnick, 2012). As a result, the demand for parent support in caring for children with ASD, both within the school and community systems, far outpaces the availability of services by skilled providers in the community. This lack of access often results in long waiting lists for services and families resorting to treatments without empirical support (Wacker, Lee, Padilla Dalmau, Kopelman, & Lindgren, 2013). Many other children on the autism spectrum simply do not have access to needed services.

The recognized struggles parents face in raising a child with ASD have led to increased interest in the development of evidence-based, parent-focused interventions for ASD. PT is a fitting treatment model for several reasons: (1) it is traditionally a time-limited approach (typically 10–20 sessions) delivered during brief (1–1.5 h) weekly sessions; (2) it has demonstrated efficacy in treating disruptive behavior in typically developing children (Dretzke et al., 2009; Kaminski, Valle, Filene, & Boyle, 2008; Lundahl, Risser, & Lovejoy, 2006; Michelson et al., 2013); (3) it empowers parents by emphasizing their role as the change agent; (4) it is more effective compared to interventions delivered by a therapist alone (Buschbacher, Fox, & Clarke, 2004; Ingersoll & Dvortcsak, 2006); (5) it is deliverable in a wide range of service settings. Finally, there is increased recognition that intensive, school-based interventions are costly (Solomon, Necheles, Ferch, & Bruckman, 2007) and specialized, intensive services may not be available in all communities (Croen, Grether, Hoogstrate, & Selvin, 2002). Teaching parents to be the therapist for their child allows for delivery of treatment across settings and contexts (Burrell & Borrego, 2012).

12.3 What Is Parent Training in Autism Spectrum Disorder

As noted above, parent training in the general child mental health field refers to a systematic approach designed to reduce disruptive child behaviors. In the field of autism spectrum disorder (ASD), however, the term "parent

training" is attached to a variety of treatments that may not share common features. The ambiguity of the term "parent training" in ASD may be due to differences in the targets of intervention. Whereas traditional PT typically has a clear focus on disruptive behaviors like aggression and defiance, "parent training" with ASD targets a wide range of behaviors, including deficits in language, social reciprocity, self-help skills, and joint attention, as well as self-stimulatory and repetitive behaviors. Thus, although the term "parent training" is a clear label for describing an empirically supported treatment for children with disruptive behavior uncomplicated by ASD, the application of this term within ASD is significantly more complex (Nevill, Lecavalier, & Stratis, 2018; Oono, Honey, & McConachie, 2013; Postorino et al., 2017). Given this broad application of the label "parent training" in ASD, it is not surprising that clinicians (even those well versed in ASD) offer differing definitions. Confusion about the label *parent training* in ASD may also extend to parents, clinic administrators, insurance companies, and policy makers. Thus, given the ambiguities of terminology used to describe parent training programs in ASD, clarification is vital (see Fig. 12.1).

12.4 Parent Training: Characterizing the Label

The first division of parent training programs within ASD is whether the program is focused on imparting information to the parent that promotes understanding of ASD versus promoting skill acquisition in the child or management of maladaptive behavior (Bearss, Burrell, et al., 2015). Figure 12.1 highlights the differences in these two broad categories. This initial classification schema can be broadened to include programs within four main categories: care coordination, psychoeducation, parent-mediated interventions for core symptoms, and parent-mediated interventions for maladaptive behaviors. Each of these modalities has a tradition and a history. Moreover, each has varying levels of research support from case reports, through rigorous single-subject design and, rarely, randomized controlled trials with structured interventions.

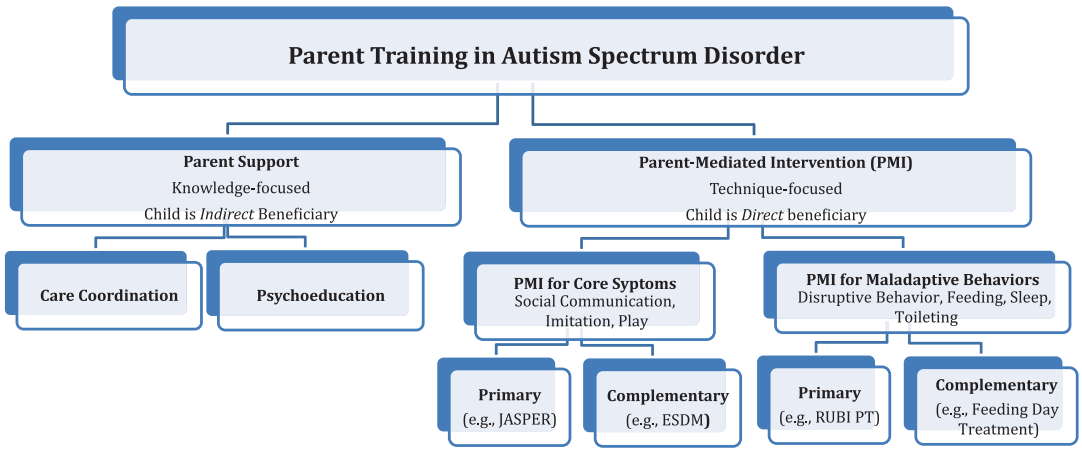

Fig. 12.1 Taxonomy of parent training in autism spectrum disorder (Bearss, Burrell, Stewart, & Scahill, 2015). RUBI-PT stands for Research Unit in Behavioral Intervention-Parent Training (Bearss, Johnson, et al., 2015). ESDM stands for Early Start Denver Model (Dawson et al., 2010). JASPER stands for Joint Attention, Symbolic Play, Engagement, and Regulation (Kasari et al., 2014)

Parent training can also be characterized by the program's format, intensity, location, duration, and target age group of the child (Beaudoin, Sébire, & Couture, 2014; Oono et al., 2013; Schultz, Schmidt, & Sticher, 2011; Steiner, Koegel, Koegel, & Ence, 2012). *Format* refers to how information is presented to the parent. Self-guided material may be available online or in self-help books. Alternatively, therapist-guided programs may be offered in groups or one to one. The most common and most complex format involves therapist-guided parent-child interactions (Schultz et al., 2011). Parent training programs may also range from low to high *intensity*. Low-intensity programs may include brief consultation with a care coordinator or bimonthly meetings with a therapist. Other more intensive programs may include 60–90-min weekly outpatient or in-home sessions (Bearss, Johnson, et al., 2015; Hardan et al., 2014; Kasari et al., 2014). High-intensity programs may involve multiple sessions a week or day treatment (Dawson et al., 2010; Sharp, Jaquess, Morton, & Miles, 2011; Wong & Kwan, 2010). In their review of parenting programs for children with ASD, Schultz et al. (2011) reported that intensity of treatments ranges from 1 to 25 h a week. *Location* is where the intervention takes place and may include clinic, school, home-based services or in recent years online presentation or delivery via telehealth (Bearss et al., 2018; Wacker et al., 2013). *Duration* reflects the length of time for the parent intervention. The range of parent training programs for young children with ASD varies widely from 1 week to 2 years (Oono et al., 2013). Finally, programs may focus on specific *target age* groups. For example, in younger or newly diagnosed children, services may focus on increasing parent understanding of their child's diagnosis and how to navigate educational planning and related systems of care. Treatments targeting parents of young children commonly focus on addressing core skill deficits, such as communication, socialization, and joint attention (Dawson et al., 2010; Kasari et al., 2014). Conversely, parents of older children and transition-age youth may instead benefit from programs targeting long-term planning (Smith, Greenberg, & Mailick, 2014).

12.5 Parent Support

Parent support encompasses programs intended to provide indirect benefit to the child by providing support to the parent and increasing parental knowledge about ASD. Parent support can be categorized as *care coordination* and *psychoeducation*.

12.5.1 Care Coordination

The Agency for Healthcare Research and Quality (AHRQ) defines care coordination as "the deliberate organization of patient care activities between two or more participants involved in a patient's care to facilitate the appropriate delivery of health care services" (AHRQ, , 2014, p. 41). Given the complex medical and educational requirements of children with ASD, care coordination is an essential element in the overall clinical management. Indeed, children with ASD use more healthcare resources than the general pediatric population (Gurney, McPheeters, & Davis, 2006; Liptak, Stuart, & Auinger, 2006). Parental effort required to coordinate multiple services is substantial, which results in parents reducing working hours or discontinuing work outside the home to meet service demands (Kogan et al., 2008). For example, in a sample of 2088 families from the 2005 to 2006 National Survey of Children with Special Health Care Needs, 25% of families reported spending 10 or more hours per week coordinating the child's care (Kogan et al., 2008). This burden of care could be reduced if access to appropriate services and better integration of available services were available (Parellada et al., 2013).

The goal of care coordination is to connect families to services and to bridge gaps along a care pathway. This often involves assisting parents to navigate the complicated array of medical, behavioral, alternative, educational, and medical treatments. Care coordination tends to be

a brief and time-limited consultative service delivered by a social worker or case manager. State and local agencies may also provide care coordination services. For example, in Pennsylvania, families can register their child with the Office of Developmental Programs to obtain services from a support coordinator who will serve as an advocate and develop an Individual Support Plan (Lubetsky, Handen, Lubetsky, & McGonigle, 2014). Although there are accepted recommendations for educational and medical services for children with ASD (e.g., National Research Council, 2001; National Standards Report, 2009), empirical support for current models of "care coordination" in ASD is sparse. A major barrier to rigorous testing of care coordination models is the wide range of regional differences in available services. In addition, the services indicated for children with ASD across the range of severity and age pose a challenge for care coordination. As in many areas in ASD, one size does not fit all.

12.5.2 Psychoeducation

Among the most frequently expressed unmet need by parents of children with ASD at the point of the child's diagnosis is access to quality information about ASD (Hamilton, 2008; Whitaker, 2002). By providing parents with up-to-date information about ASD, effective psychoeducational programs can help parents adjust expectations for the child's future and advocate for appropriate services. For example, psychoeducation can help parents prepare for the challenges in the development of an Individualized Education Plan (IEP). Parents of newly diagnosed children need guidance about interventions with empirical support, interventions without solid evidence that are promising, as well as interventions that are unfounded and unsafe. Psychoeducation can also be beneficial as new challenges unfold throughout the child's lifetime, such as the onset of puberty or transition to independent living.

There are many self-guided psychoeducational resources available to parents, such as Volkmar and Wiesner's (2009) book "A Practical Guide to Autism: What Every Parent, Family Member, and Teacher Needs to Know," or Web-based resources such as the Autism Speaks 100 Day Kit (http://www.autismspeaks.org/family-services/tool-kits/100-day-kit). Informal psychoeducation also occurs as a part of regular clinical practice (e.g., within the primary care or mental health setting). A structured psychoeducational program is likely to be more intensive than care coordination in the number of visits and can be delivered by case managers, social workers, psychiatric nurse practitioners, or psychologists. Structured psychoeducational programs are generally short term in duration (i.e., 6–12 sessions) and can be conducted in group or individual formats. Group programs have the added value of promoting mutual support and opportunities to share personal experience with other parents (Daley, Singhal, Weisner, Barua, & Brezis, 2013; Farmer & Reupert, 2013).

Common outcomes for psychoeducational programs in ASD include increased parental knowledge, enhanced competence in advocating for the child, decreased parental stress, and a reduced sense of isolation (Daley et al., 2013; Farmer & Reupert, 2013; Smith et al., 2014; Tonge et al., 2006). Psychoeducation also may include a few sessions on behavioral management strategies or techniques to enhance communication. Given the brief coverage of these topics within a broader psychoeducation program (Farmer & Reupert, 2013; Smith et al., 2014), these few sessions may increase parental knowledge on behavioral techniques, but are unlikely to provide adequate guidance on management of moderate or greater behavioral problems. To date, research on psychoeducation in ASD is limited. A few pilot studies have examined psychoeducation as a stand-alone intervention for ASD (Daley et al., 2013; Farmer & Reupert, 2013; Smith et al., 2014) or as a "control" condition (Bearss, Johnson, et al., 2015; Hardan et al., 2014; Tonge et al., 2006; Tonge, Brereton, Kiomall, Mackinnon, & Rinehart, 2014).

12.6 Parent-Mediated Interventions

Parent-mediated interventions are *technique focused* where the parent is the agent of change and the child is the *direct* beneficiary of treatment (Bearss, Burrell, et al., 2015). As shown in Fig. 12.1, parent-mediated interventions may focus on the treatment of core features of ASD or maladaptive behaviors.

Programs that fall within parent-mediated interventions may be further divided into ***primary*** or ***complementary*** interventions. This distinction is based upon whether the parent is the primary change agent or a team member in a therapist-led intervention. ***Primary*** programs actively engage the parent from the outset in order to facilitate the child's acquisition of specific skills (e.g., joint attention; Kasari et al., 2014) or the reduction of the child's maladaptive behaviors (Bearss, Johnson, et al., 2015). In ***complementary*** programs, the treatment, at least initially, involves the child working with a therapist. The therapist then may work with the parent to promote generalization of techniques from therapist to parent (e.g., Early Start Denver Model; Dawson et al., 2010) or from clinic into the home and community (e.g., Marcus Autism Center Feeding Program; Sharp et al., 2011). Although this distinction is useful for classifying interventions, hybrid programs have emerged in which interventions initially designed as complementary have expanded to include primary programs (e.g., Early Start Denver Model, Rogers et al., 2012).

12.6.1 Parent-Mediated Intervention (PMI) for Core Symptoms

PMIs for core symptoms include treatments that focus on teaching parents how to promote social interaction, communication, imitation, and play skills. Although there are self-guided PMI resources for parents (e.g., *Teaching Social Communication to Children with Autism: A Manual for Parents* (Ingersoll & Dvortcsak, 2010); *More than Words: A Parent's Guide to Building Interaction and Language Skills for Children with Autism Spectrum Disorder or Social Communication Difficulties*, Sussman, 2012), most PMI programs for core symptoms involve therapist working with the parent-child dyad (Oono et al., 2013; Schultz et al., 2011). PMIs can be delivered in the home and community settings. These locations may be preferred because interactions and skill acquisition occur in a naturalistic setting (Carter et al., 2011; Dawson et al., 2010; Drew et al., 2002; Roberts et al., 2011; Siller, Hutman, & Sigman, 2013; Smith, Groen, & Wynn, 2000). Most programs run 2–3 h per session, but the frequency ranges widely from twice daily to monthly (Oono et al., 2013). Duration varies as well. Although many structured PMIs targeting core symptoms are over 1 year in length (Casenhiser, Shanker, & Stieben, 2013; Dawson et al., 2010; Drew et al., 2002; Green et al., 2010; Roberts et al., 2011), a few programs teach skills to parents within 1–2 weeks (Nefdt, Koegel, Singer, & Gerber, 2010; Wong & Kwan, 2010). PMIs may be delivered by a variety of professionals including special educators, speech pathologists, psychologists, psychiatric nurse practitioners, and Board Certified Behavior Analysts.

Currently, most parenting interventions for core features of ASD focus on socialization and communication or imitation skills (Oono et al., 2013). The review by Schultz et al. (2011) noted that nearly half of the 30 identified parent training studies focused on communication as the primary target for intervention. In Beaudoin et al.'s (2014) review on parenting interventions for toddlers with ASD, communication was a main goal in all 15 included studies. Finally, Nevill et al. (2018) recently completed a meta-analysis of 19 RCTs of parent-mediated interventions for core symptoms, with sample sizes ranging from 20 to 152. Outcomes focused on ASD symptom severity, socialization, communication-language, and cognition, with results indicating that change on most domains was associated with small effects (weighted Hedges' *g* varied from 0.18 (communication-language) to 0.27 (socialization) and averaged 0.23 across

domains. While the strength of treatment effects varied depending on the informant (parent versus clinician), outcomes were not significantly different based on dose of treatment or type of comparator condition (e.g., treatment as usual, active comparator).

12.6.2 Parent-Mediated Intervention for Maladaptive Behavior

Recent findings suggest that the most stressful part of parenting a child with ASD is not managing core symptoms, per se, but the presence of co-occurring disruptive behaviors (Osborne & Reed, 2009). This is of significance as up to half of children with ASD exhibit high rates of disruptive behaviors, such as tantrums, aggression, property destruction, noncompliance with routine demands, self-injury, and hyperactivity (Kaat & Lecavalier, 2013; Kanne & Mazurek, 2011; Maskey, Warnell, Parr, Couteur, & McConachie, 2013; Mayes et al., 2012; Mazurek, Kanne, & Wodka, 2013) as well as more focal concerns such as food refusal (Sharp et al., 2013), sleep disturbance (Hoffman, Sweeney, Gilliam, & Lopez-Wagner, 2006; Johnson et al., 2014), toileting problems (Maskey et al., 2013; Simonoff et al., 2008), and elopement (Anderson et al., 2012). These maladaptive behaviors may interfere with a child's response to educational intervention, lead to further isolation from peers, and increase caregiver stress due to disruptions in daily activities (Brereton, Tonge, & Einfeld, 2006; Hayes & Watson, 2013; Herring et al., 2006; Simonoff et al., 2008; Tonge et al., 2006). These behaviors can also erode the family's quality of life (Hayes & Watson, 2013). Compared with parents of neurotypical children, parents of children with ASD report a greater sense of helplessness and are more likely to avoid conflict when facing challenges of parenting (Herring et al., 2006). Children with ASD with disruptive behavior who actively resist acquiring new skills or performing already acquired skills will likely fall behind in adaptive functioning (Scahill et al., 2016). Indeed, on measures of adaptive functioning, children with ASD are often a full standard deviation below their assessed cognitive ability (Kanne et al., 2011; Perry, Flanagan, Dunn Geier, & Freeman, 2009). This connection between disruptive behavior and impaired adaptive functioning provides a compelling rationale for PMIs designed to reduce the child's behavioral problems.

Until recently, most studies on training parents to reduce disruptive behavior in their children with ASD have used single-subject designs (Campbell, 2003). These studies offer proof of concept for specific parent-mediated techniques for children with ASD and maladaptive behavior; however, the individualized approach may hinder replication (Smith et al., 2007). In addition, study samples were often inadequately characterized making generalization difficult. To move the field forward, the consensus was that testing PT requires the use of structured manuals in randomized trials to promote replication, dissemination, and eventual implementation in real-world settings (Smith et al., 2007).

More recently, several open prospective case series (Bearss, Johnson, Handen, Smith, & Scahill, 2013; Brookman-Frazee, Drahota, & Stadnick, 2012; Dababnah & Parish, 2016; Okuno et al., 2011; Roberts & Pickering, 2010; RUPP, 2007; Wacker et al., 2013) and quasi-experimental trials (Lindgren et al., 2016; Tonge et al., 2014) using structured manuals have been published, supporting the efficacy of PT in reducing behavioral problems in children with ASD. Additionally, six randomized clinical trials (RCTs) of PT as a stand-alone treatment have been published to date, with sample sizes ranging from 26 to 180 (Bearss, Johnson, et al., 2015; Ginn, Clionsky, Eyberg, Warner-Metzger, & Abner, 2017; Reitzel et al., 2013; Sofronoff, Leslie, & Brown, 2004; Tellegen & Sanders, 2014; Whittingham, Sofronoff, Sheffield, & Sanders, 2009). PT has also been shown to be an effective adjunct treatment to medication in youth with ASD: atomoxetine in the treatment of attention deficit hyperactivity and noncompliance (Handen et al., 2015) and risperidone in the treatment of serious behavioral problems (Aman et al., 2009). Most recently, a meta-analysis of eight randomized controlled trials has showed

that PT is an effective intervention for reducing disruptive behavior in children with ASD (age 2–14 years). The quality and duration of PT varied and effect sizes ranged from small to large. The overall effect size was 0.58 (Postorino et al., 2017).

12.7 Clinical Implications of Characterizing Parent Training Programs

The simple division of parent support programs and parent-mediated interventions for children with ASD illustrated in Fig. 12.1 is a starting place for positioning a given intervention into the broader treatment landscape. The diverse nature of available programs involving parents requires the field to avoid using labels that do not elucidate the program content. In practical terms, this implies that saying a program is a "PMI" is insufficient. The label should, for example, promote distinction between a "PMI for communication" versus a "PMI for disruptive behavior." Although this expanded description may seem unnecessary or burdensome, it may be especially useful to insurance companies, policy makers, and clinic administrators. These stakeholders may not be familiar with the similarities and differences across various parent training programs—but they play an important role in determining program viability. Moreover, parents, who are the primary consumer of these services, are often inundated with information and may be overwhelmed by treatment choices. Clear descriptions will help parents decipher treatment options.

The delineation of parent support programs and parent-mediated interventions implies that the resulting categories are mutually exclusive. In clinical settings, however, the demarcation may not be so firm and there may be overlap across the four areas (i.e., care coordination, psychoeducation, PMI for core symptoms, PMI for maladaptive behaviors). In some settings, clinicians provide a combination of supportive and skill-based treatments by necessity. Alternatively, there may be programs that are designed primarily to address core symptoms or behavioral issues in children with ASD but may also include, as part of the program, sessions on enhancing language acquisition.

12.8 Evidence-Based PMIs for ASD and Disruptive Behavior

The taxonomy described by Bearss and Burrell et al. (2015) illustrates the complexity and diversity of parenting programs for individuals with ASD. It also highlights how programs specifically targeting disruptive behaviors in this population represent just a small segment of available interventions. The remainder of this chapter highlights two programs that qualify as "Primary Parent-Mediated Interventions for Disruptive Behavior" that contain the bulk of empirical support within this category: the RUBI parent training program and PCIT.

12.8.1 The Research Unit in Behavioral Intervention (RUBI) Program

To date, the RUBI parent training program (RUBI-PT) is the best studied PMI for reducing disruptive behavior children with ASD (Aman et al., 2009; Bearss et al., 2013, 2018; Bearss, Johnson, et al., 2015; Johnson et al., 2007; RUPP, 2007; Scahill et al., 2012, Scahill et al., 2016). The RUBI-PT program consists of 11 core and 7 supplemental (focal-problem) sessions (e.g., toileting, feeding, sleep issues) as well as booster sessions and home visits. The intervention is based on the principles of applied behavior analysis (ABA), which posits that disruptive, noncompliant, and aggressive behaviors serve a function for the child: to access a tangible item (certain food or preferred toy), gain attention, escape from a demand, or because it is self-stimulatory in nature. Within the ABA model, the key to changing a behavior is to identify its function as a means to inform modifications to the situations that precede and the consequences that follow the behavior. Within

RUBI-PT, therapists set out to teach parents how to modify the child's behavior, setting up the parent as the change agents. The RUBI-PT program targets routine activities that often pose a daily struggle for parents of children with ASD including getting dressed, getting ready for bed, or managing trips to the grocery store.

With funding from the National Institute of Mental Health (NIMH), the initial version of the RUBI-PT manual was tested in a multi-site feasibility trial with 17 children (RUPP Autism Network, 2007). This was followed by a 6-month, randomized trial comparing risperidone alone to risperidone plus RUBI-PT in 124 school-age children (4–13 years) with ASD and serious behavioral problems. In that study, both treatments resulted in substantial reduction of disruptive behavior. But risperidone plus RUBI-PT was superior to drug only (Aman et al., 2009). The RUBI-PT manual was then revised for younger children with ASD and disruptive behaviors under the simple assumption that a downward extension of the manual may prevent the emergence of more severe behaviors in school-age children and avert the need for medication. An open pilot trial of RUBI-PT as a stand-alone treatment in 16 children between the ages of 3 and 7 years supported the feasibility and initial efficacy of the modified manual (Bearss et al., 2013). The RUBI Autism Network then launched a NIMH-funded multi-site trial in 180 children (age 3–7 years) with ASD and disruptive behavior. Subjects were randomly assigned to RUBI-PT or a structured 13-session parent education program (PEP) for 6 months. PEP provided parents with an up-to-date overview of topics related to ASD (e.g., differential diagnosis, genetics, available treatments, and educational placement); however, PEP did not include any information on child behavior management. Both RUBI-PT and PEP were delivered individually to parents by trained therapists over 24 weeks.

In the RUBI trial, independent evaluators, who were blind to treatment assignment, classified 69% of children in RUBI-PT with a positive response compared to 40% in the PEP group at week 24 (Bearss, Johnson, et al., 2015). A key secondary outcome of interest was change in adaptive skills as measured on the *Vineland Adaptive Behavior Scales*. In line with the model that reducing disruptive behavior sets the stage for improvements in adaptive skills, there was a significant improvement in Vineland Daily Living Skills in RUBI-PT compared to no change in PEP (Scahill et al., 2016). Parents attended 92% of the core therapy sessions and attrition by week 24 was low at 11%. Therapist fidelity to the treatment was excellent, averaging 97%. Similar findings were noted with a subsequent open-label pilot trial of the RUBI-PT program when delivered via telehealth (Bearss et al., 2018). These results provide strong evidence that the RUBI-PT program significantly reduces disruptive behavior, parents are engaged in treatment, and therapists can reliably deliver the intervention. Table 12.1 summarizes outcomes of the RUBI-PT program across the five trials (RUPP, 2007; Aman et al., 2009; Bearss et al., 2013, 2018; Bearss, Johnson, et al., 2015).

12.8.2 Parent-Child Interaction Therapy (PCIT)

PCIT (www.pcit.org) is widely recognized as an evidence-based program designed to target disruptive behaviors in typically developing children aged 2–7 (Eyberg & Funderburk, 2011; Eyberg, Nelson, & Boggs, 2008; McNeil & Hembree-Kigin, 2010) and is emerging as an efficacious treatment for disruptive behaviors in youth with ASD. Its efficacy has been demonstrated by numerous randomized trials over the past 25 years (Herschell, Calzada, Eyberg, & McNeil, 2002; McNeil & Hembree-Kigin, 2010). More recently, PCIT has been successfully used in the treatment of preschoolers with depression, ADHD, and anxiety and is also considered a best practice for children and families served in the child welfare system (Lenze, Pautsch, & Luby, 2011; Matos, Bauermeister, & Bernal, 2009; McNeil, Herschell, & Gurwitch, 2005; Pincus, Santucci, Ehrenreich, & Eyberg, 2008; Timmer, Ware, Urquiza, & Zebell, 2010).

Table 12.1 Outcomes of the RUBI-PT program across four trials

Study	*N*	Design	Therapist fidelity to PT	Attrition	Effect size[a]	Outcome
RUPP, 2007	17	Open label, pilot	94%	18%	0.88	Supported feasibility and preliminary efficacy for multi-site study
Aman et al., 2009	124	Two group RCT[b]: risperidone vs. risperidone + RUBI-PT	95%	27%	2.61	Drug + PT > drug alone
Bearss et al., 2013	16	Open label, pilot	93%	13%	0.94	Supported feasibility and preliminary efficacy in young children
Bearss, Johnson, et al., 2015	180	Two group RCT[b]: RUBI-PT vs. parent education	97%	10%	1.77	PT > parent education
Bearss et al., 2018	14	Open label, pilot	98%	7%	1.25	Supported feasibility of delivering RUBI via telehealth

[a]Within-subject effect size for RUBI-PT on the primary outcome measure, the Aberrant Behavior Checklist. ES = (Mean at baseline − Mean at endpoint)/Baseline standard deviation
[b]*RCT* Randomized clinical trial

Based on Baumrind's (Baumrind, 1966, 1978) developmental theory of parenting, PCIT synthesizes attachment theory, which promotes warmth in the relationship between parent and child, with operant and social learning theory, which utilizes differential reinforcement to modify and decrease disruptive behavior (McNeil & Hembree-Kigin, 2010). PCIT accomplishes this balance through a two-stage intervention: child-directed interaction (CDI) and parent-directed interaction (PDI) . Treatment begins with CDI, which involves a therapist behind a one-way mirror coaching the parent to actively engage in play with the child. CDI encourages parental warmth and responsiveness in order to promote a secure parent-child relationship, which then contributes to the child's greater social-emotional regulation when frustration occurs. A secure parent-child attachment, in turn, enhances the child's desire to please and willingness to comply. CDI is designed to increase parent use of "*PRIDE*" skills (*P*raise appropriate behaviors, *R*eflect child speech, *I*mitate the child's play, *D*escribe the child's actions, engage with *E*njoyment) and to ignore inappropriate behavior during play. Once a parent masters these skills, PDI is initiated, which emphasizes how behavioral contingencies shape dysfunctional interactions between disruptive children and their parents. To interrupt a cycle of escalating disruptive behaviors between parent and child, parents learn to incorporate clear limit setting within the context of an authoritative relationship.

PCIT is designed to address the *proximal* target of parent use of appropriate strategies to improve the interactional pattern between parent and child. This is accomplished by teaching the parent to provide intensive positive social attention and language modeling while playing with the child via the PRIDE skills. Change in parenting skills is designed to promote *distal* changes in the child—increasing the saliency of the caregiver as a positive social partner and setting up the child to be more tolerant of demands that will begin during PDI. Using time series analyses, Pemberton, Borrego, and Sherman (2013) demonstrated improvement in parental differential attention over the course of PCIT in relation to changes in child behavior (reduction in disruptive behavior).

12.8.2.1 Expanding PCIT to ASD

There has been notable interest in expanding PCIT to children with ASD and disruptive behaviors, noted by statement papers (Masse, Wagner, McNeil, & Chorney, 2007), case studies (Agazzi, Tan, & Tan, 2013; Armstrong, DeLoatche, Preece, & Agazzi, 2015; Armstrong & Kimonis, 2013; Hansen & Shillingsburg, 2016;

Hatamzadeh, Pouretemad, & Hassanabadi, 2010; Lesack, Bearss, Celano, & Sharp, 2014; Masse, McNeil, Wagner, & Quetsch, 2016), one open-label trial (N = 17) (Zlomke, Jeter, & Murphy, 2017), and two small RCTs (N = 19; N = 39) (Ginn, Clionsky, Eyberg, Warner-Metzher, & Abner, 2017; Solomon, Ono, Timmer, & Goodlin-Jones, 2008). This interest is driven by the noted similarities between PCIT and other well-established treatment models in ASD. For example, PCIT follows hallmarks of applied behavior analysis (ABA), with its emphasis on the use of behavioral observation data to determine the course of treatment and assess change both within and across sessions. PCIT also utilizes live parent-child coaching to promote skill acquisition in the parent. PCIT also is similar to Naturalistic Developmental Behavioral Interventions (NDBIs, Schreibman et al., 2015), which are emerging as a common framework for many parent-mediated interventions for core symptoms of ASD. Examples of specific, evidence-based NDBIs include the Early Start Denver Model (ESDM; Dawson et al., 2010), the JASPER model (Kasari et al., 2014), and Pivotal Response Training (PRT; Koegel & Koegel, 2006). Like PCIT, NDBIs utilize learning experiences that promote cross-domain skill development, so that a particular task may be designed to promote acquisition of social, language, and cognitive skills. Additional hallmarks of NDBIs that are found in PCIT include the delivery of services in naturalistic and interactive social contexts, such as play and daily routines, while using child-directed activities as the entry point for engagement. This approach appreciates the value of allowing the child to be an active instead of passive learner. Finally, like NDBIs, PCIT focuses on promoting functional skills used in everyday life and in the context of meaningful exchanges between the child and his or her caregiver.

12.8.2.2 Novel Contributions of PCIT to ASD Interventions

Both RUBI-PT and PCIT have disruptive behavior as the primary target for treatment; however, there are important differences between the two programs. In terms of programmatic structure, RUBI utilizes didactics as the primary means of knowledge transfer and skill acquisition by the parent. PCIT, comparatively, relies on in vivo behavioral coding and coaching techniques as the primary means of promoting skill acquisition by the parent and assessing progress through treatment. The goal is to help parents over-practice parenting skills to the point of mastery (i.e., habit). A high bar for parental skill mastery has resulted in PCIT demonstrating some of the largest effect sizes in the realm of children's mental health (e.g., d = 1.65) (Ward, Theule, & Cheung, 2016) and is considered a best practice for the treatment of trauma associated with child maltreatment, as well as anxiety, hyperactivity, defiance, tantrums, and aggression in preschoolers (McNeil & Hembree-Kigin, 2010). In terms of measuring outcomes, RUBI relies heavily on parent report (change in parent skills, reductions in child disruptive behavior) whereas PCIT utilizes direct observation to assess parent skill acquisition and to determine progress (i.e., change in child behavior) as key primary outcomes. Most importantly, the RUBI program focuses exclusively on disruptive behaviors and adaptive skills. In fact, most PT programs within ASD focus on core symptoms *or* maladaptive behaviors (Bearss, Burrell, et al., 2015). While PCIT was developed as an intervention for disruptive behavior, it is unique in that changes targeted in treatment include improving the saliency of the child's social partner (caregiver) while also promoting the value of language (Costa et al., 2018; Garcia, Bagner, Pruden, & Nichols-Lopez, 2015; Tempel, Wagner, & McNeil, 2008) and play as the tools to promote engagement between parent and child, all of which are priority targets for children with ASD. The added value of targeting improvements in language and core symptoms of ASD would suggest that PCIT is an integrated treatment model that can be utilized to target *both* core symptoms and maladaptive behaviors. Parents of youth with ASD have to juggle multiple, fragmented appointments for their children—survey data suggest that parents average between four to seven different treatments at any one time; the greater the severity of symptoms, the more treatments are likely to be in

use (Goin-Kochel, Myers, & Mackintosh, 2007; Green et al., 2006). Having one program that can target multiple domains of child functioning, specifically across domains (disruptive behavior and core symptoms), may reduce the need for numerous, sequential treatments for children and their families, easing family burden and providing a tangible impact on family quality of life.

12.9 Future Directions

Acknowledging that ASD is a heterogeneous population, evaluation of the efficacy of PCIT in children with ASD, including exploration of specific baseline characteristics that may moderate treatment response, will provide guidance to clinicians and is consistent with the goal of personalized clinical care—knowing not just *if* PCIT works, but also for whom (Lei, Nahum-Shani, Lynch, Oslin, & Murphy, 2012). Additionally, as the empirical foundation for PCIT expands, there will be concomitant need for dissemination (spreading the word about the evidence-based intervention) and implementation (deliberate steps to incorporate evidence-based treatments into real-world settings). PCIT is an internationally disseminated intervention, with over 180 certified trainers and thousands of certified/rostered therapists that span all 50 states and 14 countries. PCIT also has a well-organized and centralized organization (PCIT International; www.pcit.org) supporting efforts around continuing education, international development, policy and advocacy, training, and research. The organization is committed to the provision of ongoing training of community providers and the dissemination of research through annual statewide, national, and international conferences. This well-structured organization allows for quick dissemination of new findings. As results from trials continue to support the efficacy of PCIT for children with ASD and more is learned about whom it best serves, the path to deployment (use by community practitioners) requires only dissemination of information; no new training is required. Additionally, new information and recommendation can be integrated into standardized trainings for new therapists and included in PCIT International's array of continuing education options. Put simply, PCIT has the ability to move quickly from efficacy to implementation.

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