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## Parenting Interventions for Children with Autism Spectrum and Disruptive Behavior Disorders: Opportunities for Cross-Fertilization

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### Abstract

Empirical support exists for parent training/education (PT/PE) interventions for children with disruptive behavior disorders (DBD) and autism spectrum disorders (ASD). While the models share common roots, current approaches have largely developed independently and the research findings have been disseminated in two different literature traditions: mental health and developmental disabilities. Given that these populations often have overlapping clinical needs and are likely to receive services in similar settings, efforts to integrate the knowledge gained in the disparate literature may be beneficial. This article provides a systematic overview of the current (1995–2005) empirical research on PT/PE for children with DBD and ASD; attending to factors for cross-fertilization. Twenty-two ASD and 38 DBD studies were coded for review. Literature was compared in three main areas: (1) research methodology, (2) focus of PT/PE intervention, and (3) PT/PE procedures. There was no overlap in publication outlets between the studies for the two populations. Results indicate that there are opportunities for cross-fertilization in the areas of (1) research methodology, (2) intervention targets, and (3) format of parenting interventions. The practical implications of integrating these two highly related areas of research are identified and discussed.

### Keywords

autism spectrum disorders; disruptive behavior disorders; parent education; parent training; treatment

### Introduction

Parent mediated interventions have been widely researched and shown to be effective models of intervention for a variety of childhood behavior problems (Graziano and Diament, 1992). Two populations with whom parent interventions have been frequently employed are families of children who have conduct problems or disruptive behavior disorders (DBD) and those with autism spectrum disorders (ASD). Since the 1960s, a significant amount of research has been conducted on parent training/parent education (PT/PE) interventions for

these two populations and teaching parents behavioral strategies has been identified as a crucial component of effective therapy for both groups of children. Several PT/PE interventions with strong empirical evidence have been developed for children with DBD (Bretnan and Eyberg, 1998) and children with ASD (National Research Council, 2001; New York State Department of Health, 1999). However, while PT/PE research for these two populations of children share common roots, interventions for parents of children with DBD and ASD have largely developed independently from each other.

### Common Roots of PT/PE for DBD and ASD: Operant Conditioning

In the 1960s, researchers began using operant conditioning procedures to reduce disruptive behaviors and encourage pro-social development in children with DBD (e.g., Ferster, 1961; Ferster and Simons, 1966; Patterson and Brodsky, 1966). At the same time, researchers working with children with autism were using similar strategies to reduce behavioral excesses and improve behavioral deficits such as communication and engagement in children with ASD (Ferster, 1961; Ferster and Demyer, 1962; Lovaas and Simmons, 1969; Lovaas *et al.*, 1965a, b). While DBD intervention researchers began immediately involving parents in therapy and directly training them to use the operant conditioning procedures at home (Patterson and Brodsky, 1966; Wahler *et al.*, 1965), ASD researchers began using operant conditioning procedures directly with children in University settings with little parent participation in treatment. However, it quickly became apparent to ASD researchers that, although operant treatment models were successful in a clinic environment, there was little generalization to other environments, people, or stimuli (Lovaas *et al.*, 1973). This outcome led to the examination of including parents as part of therapy programs for children with ASD. Researchers found that generalization and maintenance of behavior changes were improved when parents were trained in these highly structured behavioral methods (Koegel *et al.*, 1982; Lovaas *et al.*, 1973). Early research in both DBD and ASD employed similar research methodologies, which consisted primarily of highly structured and controlled single-subject experimental designs.

Despite the success of the early PT/PE interventions in tightly controlled environments, limitations were noted in both the DBD and the ASD literatures. Specifically, the methods developed within highly controlled environments in training parents to use specific behavior management skills were not as successful within community services contexts. In the DBD research, studies conducted using more naturalistic conditions (i.e., student therapists, shorter sessions, community clinic settings) did not replicate earlier successes from highly controlled environments (Anchor and Thomason, 1977; Bernal *et al.*, 1980). DBD researchers attributed these poor results to the significant challenges in working with families who were often severely stressed, and uncooperative in implementing the highly controlled procedures to manage their children's behavior problems (Chamberlain and Baldwin, 1988; O'Dell, 1982). Researchers responded by examining the contextual factors such as parental stress, poverty, and parental psychopathology that influence the success of PT/PE programs for this group of children. While researchers found similar issues in PT/PE for ASD, the shortfalls in outcomes were attributed to issues with the treatment strategies rather than the influence of family factors. Therefore, researchers began to develop more naturalistic methods of intervention and to develop strategies specifically designed for PT/PE programs (Hart and Risley, 1980; Koegel *et al.*, 1987; McGee *et al.*, 1985).

While the PT/PE interventions for both populations share similar roots and found similar challenges to generalization and sustainability of treatment effects, the research and intervention agendas for PT/PE interventions in DBD and ASD populations appear to split at this time and to progress simultaneously along two disparate, but highly related trajectories. ASD researchers continue to primarily use single case experimental designs, while DBD researchers began focusing on primarily using randomized clinical trials. DBD researchers

continued to have placed more of an emphasis on the role of parental factors in treatment success while ASD researchers have targeted individualization efforts at examining variability in child factors. Further, even the overarching terms differ for the two diagnostic populations with “Parent Training” being used most often in the literature for DBD and “Parent Education” being used for ASD. This difference in terminology reflects the incongruence in theory and intervention development for the two groups.

**Parent Training Models Specific for DBD**—For DBD and conduct problems, research on patterns of parent–child interactions significantly influenced the development of the parent training interventions seen in current research. Specifically, current PT/PE programs were strongly influenced by Gerald Patterson's social learning model and work on childhood aggression (Patterson, 1982) and Bandura's Social Learning Theory (Bandura, 1977). Longitudinal studies showed that disruptions or omissions in the adult's application of parenting skills were related to the development of problems for their children (Rutter *et al.*, 1970; West and Farrington, 1973). Current treatments were developed from an extensive body of research involving observations of families that demonstrated coercive interaction patterns which promoted childhood aggression and suppressed pro-social behaviors (see Patterson, 1982, for review). The parent-mediated interventions based on social learning theory have substantial empirical support for children with DBD (Brestan and Eyberg, 1998).

Given the identification of contextual and family factors that influence the success of PT/PE intervention, programs have expanded by incorporating strategies to explicitly target a number of these factors such as stress management and marital functioning (Costin *et al.*, 2004; Griest *et al.*, 1982; Kazdin and Whitley, 2003; Sanders *et al.*, 2000). For example, The Incredible Years Program (Webster-Stratton, 1992) includes a parent component, which targets skills such as (1) personal self-control, (2) communication skills, (3) problem-solving skills, and (4) strengthening social support and self-care (Webster-Stratton and Reid, 2003) specifically for parents. Likewise, the research at the Yale Child Conduct Clinic has shown success in targeting parental stress, specifically, by enhancing child-focused parent training with a parent problem-solving (PPS) component (Kazdin and Whitley, 2003).

**Parent Education Models Specific for ASD**—As behavioral programming for children with ASD evolved from teaching single behaviors to a broader focus of increasing general motivation and responsivity in children with ASD (Koegel *et al.*, 1987), PT/PE also began to change. Parents were taught more naturalistic strategies which were easier to use in the home, required fewer hours of training, increased both leisure and teaching time and increased parent satisfaction and enjoyment of the treatment (Schreibman and Koegel, 1996). Parents became collaborators in all levels of programming from assessment through goal development and treatment delivery, rather than simply learning the techniques specified by the researcher (Lucyshyn *et al.*, 2002).

However, because the goal of the early ASD PT/ PE was to improve child behavior, with little focus on family functioning (Lovaas *et al.*, 1974), there continues to be less emphasis on parental issues. Although ASD researchers have reported on the need for improving the quality of the parent–child relationship and raised concerns regarding parental stress, PT/PE programs for this population largely remain focused on improving child behaviors. Those studies that have addressed parental functioning have most often examined the collateral effects of child intervention on factors such as parental stress and depression, rather than targeting them directly.

Although ASD researchers have borrowed from the work of PT/PE programs designed for families of children with other behavioral disorders (e.g., Marcus *et al.*, 1997) they also

recognize that children with ASD have additional difficulties such as uneven and variable skill development, inconsistent responding and a lack of responsiveness to typical parenting strategies such as social praise. These behaviors often lead to confusion and stress in families and therefore these child behaviors are often specifically addressed in PT/PE for this population. These issues may have led to the focus on the child's skill acquisition in parent education programs for children with ASD. Finally, parents of children with developmental disabilities such as ASD must face a series of challenges which span the child's entire life, rather than focusing on behavioral issues which may be relatively short-lived and ameliorated with appropriate treatment (Baker, 1996). Such unique features in ASD children may lead to differences in methodology from those seen in the DBD population.

### Need for Cross-Fertilization

Although PT/PE interventions are heavily emphasized with both these populations and the interventions share similar roots in operant conditioning, information regarding program efficacy has been reported in two different literature traditions: mental health (for DBD) and developmental disabilities (for ASD). This has led to minimal cross-fertilization between the two bodies of research. Examining the recent literature in domains such as research methodology, intervention targets, and PT/PE format may be useful in facilitating knowledge transfer between these two bodies of knowledge. This is especially relevant in the current era of translating intervention research into actual clinical practice and conducting research that is relevant to stakeholders in the “real world”.

While the two bodies of research may be distinct, the two populations may actually have similar or overlapping needs. For example, there is growing evidence that children with ASD often display co-occurring mental health problems (Bradley *et al.*, 2004; Day, 1993) and have similar clinical presentations to youth with conduct problems (Green *et al.*, 2000) and those presenting for community-based mental health services (Gadow *et al.*, 2005). Green *et al.* (2000) highlight that the overlapping externalizing symptoms of the two disorders may result in misdiagnosing Asperger's Disorder (a type of ASD) as a conduct-related disorder. Further, Mandell *et al.* (2005a) found that over 40% of children with ASD were referred for community-based mental health treatment for disruptive behaviors including, aggression, non-compliance, hyperactivity and truancy; moreover, children without ASD were referred for services for similar reasons. Further, research indicates that many children with conduct problems also present with developmental issues (Fagan and Iglesias, 2000; Kaiser *et al.*, 2000, 2002). These children may exhibit delays in communication skills and/or learning disabilities, which, in turn, may exacerbate behavior problems. Therefore, traditional dissemination models in which one treatment protocol is prescribed for a specific diagnostic group many not fit within real world community practice. In clinical settings, providers often work with children and families who have multiple needs, which may be best addressed through a combination of intervention strategies.

The need to bridge the gap between evidence-based treatments and community services has been identified as a critical area of research by NIMH in both the *Bridging Science and Service* (National Advisory Mental Health Council, 1999) and *Translating Behavioral Science Into Action* reports (National Advisory Mental Health Council, 2000). Currently, clinicians working with children who have multiple issues must access and understand two separate bodies of literature. Encouraging more integration of the PT/PE literature on the two populations may assist in providing a closer link between research and practice by making research more relevant to clinicians' needs.

Examining key areas such as the research methodology employed, the procedures used to teach parents, and the focus of skills taught to parents can facilitate enhancing both the content of PT/PE programs and the way in which they are studied for both populations. For example, it is possible that methods used in the DBD literature to assist parents with their own mental health issues will be useful for parents of children with ASD. Conversely, parents of children with DBD may benefit from learning methods of improving their children's communication skills. Lastly, while many of the PT/PE interventions for both populations are based, at least in part, on operant conditioning principles, understanding how many of the PT/PE interventions continue to utilize operant procedures can illustrate how the ASD and DBD research have progressed over time.

## Current Review

Given that children with ASD and children with conduct-related problems may share similar clinical characteristics when presenting for “real world” services, future research on PT/PE interventions may benefit from efforts to integrate the knowledge gained in the two bodies of literature. While sharing common roots, current approaches have largely developed independently from one another. Therefore, the purpose of this review is to provide a systematic overview of the current (1995–2005) empirical research on PT/PE for children with DBD and ASD. This overview summarizes characteristics of PT/PE studies in three key domain areas: (1) research methodology employed, (2) focus of PT/PE intervention, and (3) types of PT/PE procedures. It is hypothesized that, although research in the two areas share common roots, they may differ in a few critical areas. For example, the research methodologies employed may differ. ASD studies may be more likely to utilize single subject research designs and observational measures, as the individual skill set of the child is more often targeted in PT/PE interventions. In contrast, DBD research may primarily utilize randomized controlled trials with parent and youth self-report outcome measures. Further, it is likely that the ASD and DBD programs employ different strategies to teach parents with different target goals (i.e., child versus parent specific skill sets). It is hypothesized that ASD PT/PE programs will be more likely to target specific child skills, while DBD programs will be more likely to target parent specific skills such as remediating parenting practices and addressing parent and family issues. Finally, the practical implications of integrating these two highly related areas of research are identified and areas in which the two bodies of literature can inform each other are highlighted.

## Methods

### Selection of Studies

For the purposes of highlighting key similarities and differences in the PT/PE, we conducted a thorough literature search on all PT/PE models for children with ASD and children with DBD and conduct problems from 1995 to 2005. Recent years were chosen to examine current state-of-the-art PT/PE practices in each field. We first conducted a search in Psycinfo and ERIC library search databases for English language peer-reviewed journal articles published between 1995 and 2005 using the following search terms: (1) parent education or parent training and autism or ASD and (2) parent education or parent training and disruptive behaviors disorders or conduct problems. This initial search resulted in 53 ASD articles and 47 DBD articles. Then we reviewed the reference lists in those studies and included applicable studies cited in references lists. We included studies that: (1) used both experimental (randomized clinical trials and single subject designs) and quasi-experimental designs (pre-/post-designs and those without control groups or random assignment), and (2) included a clear description of PT/PE procedures (or a clear description was available in a referenced publication). Program descriptions that did not involve data collection were not included. Further, studies that targeted both populations were excluded as they could not be

clearly categorized as ASD or DBD. From these searches, a total of 22 ASD studies and 38 DBD studies met our inclusion criteria and were coded for review.

### Coding Criteria

For the purpose of this review, we compared literature in three main areas: (1) research methodology, (2) focus of PT/PE intervention, and (3) PT/PE procedures. We initially reviewed all articles and compiled an exhaustive list of potential characteristics within the three domains as the bases for comparison between empirical studies from the two bodies of literature. From this list, the authors extracted the PT/PE characteristics that were most commonly described across populations and studies. Characteristics related to *research methodology* included experimental design and methods used to assess outcome. Characteristics under the category of *focus of PT/PE intervention* included: areas targeted through the PT/PE program and attention to family factors that may or may not be incorporated into treatment. In the category of *PT/PE procedures*, age of participant children, gender of participant children, setting of PT/PE, instructional strategies, and PT/PE format (i.e., individual, group, etc.) were included. Since many of the PT/PE interventions for both populations were based, at least in part, on operant conditioning principles, we were interested in gaining an understanding of how many PT/PE interventions for each population continued to utilize procedures based on operant conditioning principles. Therefore, the use of operant conditioning principles was added as a code. Each study was coded as having a given characteristic if it was stated in the study. On occasion, studies referred to previously published articles for program descriptions. In these cases, the original study was used to extract relevant information. The following is a list of the specific codes used for each study.

### Research Methodology

- a. *Experimental design.* Coders were instructed to identify whether each study reported use of the following designs: (a) randomized clinical trial, (b) single subject design, or (c) a quasi-experimental design, such as a pre-/post-design.
- b. *Method used to assess outcome.* The method used to assess outcome was characterized by the following categories: (a) Behavioral observation (child), (b) Behavioral observation (parent), (c) Structured self/parent report of *child* functioning (d) Structured self-report of *parent* functioning, and (e) Child developmental functioning. The behavioral observations measures of child and parent behavior were coded for any study that reported using a direct observation of behavior. This could be conducted in vivo or through videotaped observation. The structured measure of child functioning was coded for any study that used a structured parent or child report of child functioning (e.g., Child Behavior Checklist, Youth Self-Report, Eyberg Child Behavior Inventory). The structured measure of parent functioning was coded for any study that used a self-report of parental functioning (e.g., Parenting Stress Index, Beck Depression Inventory, Sense of Competence Scale). Child developmental functioning measures were coded when a study employed a standardized measure of cognitive or language functioning.

### Focus of PT/PE Interventions

- a. *Areas targeted.* Areas targeted were coded in the following categories: (a) improve parenting practices (e.g., effective discipline), (b) improve parent-child relationship, (c) improve child or parent problem-solving skills, (d) improve marital functioning (e.g., communication), (e) increase parental stress management skills, (f) increase child communication skills, (g) increase child social skills, and (h)

increase parental use of functional assessment procedures. These were coded when studies explicitly stated that these were the goals of intervention.

- b. *Parent factors.* Programs were coded on how parent factors were addressed. Specifically, they were characterized by (a) explicitly targeting parent factors such as depression, stress, or marital functioning, and (b) active partnership of parents in the development of the intervention program. The first category was coded if a study targeted parent factors (e.g., depression, marital discord, stress) explicitly as part of the PT/PE program. For example, a study that had a specific parent component designed to increase spousal communication would be coded here (this study would also be coded under the “Targeting Marital Functioning” category within the “Areas Targeted” domain above). The second category was used when a study stated that parents were active partners in developing the intervention plan for their child/family. For example, this code was used if a study had the parent decide on the specific child goals.

### PT/PE Procedures

- a. *Age of participant children.* In order to characterize the age of participant children, ages were broken down into the following categories: (a) under age 5, (b) between ages 5 and 12, and (c) between ages 13 and 18. These categories were selected to distinguish, in particular, those programs considered “early intervention” (under age 5) and those developed for teens. Coders were instructed to endorse multiple categories if the study included children in multiple age groups.
- b. *Gender.* The percent of the sample that was male in each study was calculated. The average percent male in each study for the two groups is presented.
- c. *Setting of PT/PE.* Setting was characterized by the following categories: (a) home, (b) clinic, (c) school, and (d) community. The home setting included the child's primary residence. The clinic setting included any PT/PE that was conducted in a university-based laboratory/clinic or community-based outpatient or inpatient treatment center. The school setting included any educational setting including Head Start Programs. Community settings included unstructured settings outside of the home such as the grocery store, park, zoo, etc. Coders were instructed to endorse multiple categories if the treatment was conducted in multiple settings.
- d. *Format of PT/PE.* The format was categorized as either (a) individual family, or (b) group. Individual family format was coded for studies in which a therapist or coach met individually with either one or more parents or caregivers of a single child. The group format code was endorsed when a therapist or coach met with the parents/caregivers of at least two unrelated children at the same time. Coders were instructed to code both Family and Group if the PT/PE included both types of instruction. Coders also indicated whether or not the child was present during any of the PT/PE sessions. Lastly, the fidelity of implementation code was used if an adherence measure was used for either the parent or therapist.
- e. *Instructional methods.* Instructional methods included *how* therapists taught parents skills. The categories within this section included techniques that were employed in at least two studies: (a) review of manual or written materials, (b) didactic instruction, (c) therapist modeling, (d) videotape modeling, (e) role-play, (f) bug-in-ear device, and (g) in-vivo feedback/coaching. These categories were not mutually exclusive. These categories were coded as listed (or described) by authors of the individual studies. Review of manual/written materials was coded when authors reported that parents were given a manual, chapter or written materials to read on their own. While many of the studies examined manualized interventions,

only those that explicitly reported providing a manual or written materials directly to the parent were coded here. Didactic instruction was coded when therapists specifically *taught* intervention procedures in a lecture-type format. Modeling was coded when studies reported that a therapist demonstrated specific procedures to the parents during the parent education session. Videotape modeling was coded when studies reported that videotapes were shown to parents to demonstrate specific skills. Role-play was coded when studies reported that parents were asked to practice parenting skills with someone other than the target child (such as another parent or the therapist). Bug-in-ear was coded when a study reported using a bug-in-ear device in which the therapist provided feedback and instruction to a parent through a one-way mirror. In-vivo feedback/ coaching was coded when a study reported that the therapist provided feedback to the parent directly as the parent interacted with his or her child.

- f. *Use of operant conditioning principles.* This was coded if authors reported that at least a portion of the PT/PE intervention was based on operant conditioning principles.

### Reliability

Five (23%) ASD and eight (21%) DBD studies were randomly selected for dual coding in order to examine coding reliability. The percent agreement for each study was calculated using the following formula: number of agreements divided by the number of agreements and disagreements multiplied by 100. The average percent agreement was 90.6% (range: 78–97%) and 96% (range: 92–100%) for ASD and DBD studies, respectively. The average kappa across studies was .782 (range: 0.571–.939) and 0.919 (range: 0.870–1.00) for ASD and DBD studies, respectively.

### Results

Our literature search from 1995 to 2005 resulted in 22 studies on PT/PE for ASD and 38 studies on PT/PE for DBD that met the inclusion criteria. These studies are listed in Table I and were published in 13 and 23 peer-reviewed journals for ASD and DBD, respectively. There was no overlap in publication sources or outlets between the studies for the two populations. The specific journal sources for each group are shown in Table II.

All studies showed improved performance for subjects in the PT/PE condition over a baseline condition or control condition. In one ASD study, the participants in the PT/PE condition did not make as much improvement as those in a clinician-delivered intensive program, but children in the PT/PE still made developmental and language gains over baseline.

Table III presents the proportion of studies utilizing each of the coding characteristics within the three domains of comparison: (1) research methodology, (2) focus of PT/PE, and (3) PT/PE procedures. Areas in which substantial difference were identified between studies of children with DBD and those with ASD are highlighted in the text that follows.

### Research Methodology

**Experimental Design**—The vast majority of ASD and DBD studies employed different experimental designs. Specifically, 64% of the ASD studies were conducted using single-subject designs, while 77% of DBD studies were conducted as a randomized clinical trial.

**Method Used to Assess Outcome**—The studies differed in the methods used to assess outcome. The most frequently used methods in the ASD studies were behavioral



observations of child (77%) and behavioral observations of parent (55%). Very few ASD studies used structured report of parent functioning (9%). The most frequent methods used to assess outcome in the DBD studies were structured report of child functioning (87%), and structured report of parent functioning (71%). Approximately half of these studies included behavioral observations of child (50%) and behavioral observations of parent (53%). ASD studies were also more likely than DBD studies to include a standardized measure of developmental functioning for the child (23% of ASD and 8% for DBD).

### Focus of PT/PE Interventions

**Areas Targeted**—The most frequently targeted intervention area in ASD studies was child communication skills (68%), while none of the DBD studies mentioned targeting these skills. Conversely, the DBD studies most frequently stated improved parenting and discipline practice as the target of intervention (100%), while none of the ASD studies mentioned teaching parenting practices. The DBD studies were also more likely to report targeting parental stress management skills as part of the program (16% for DBD versus 0% for ASD).

**Parent Factors**—While 55% of the ASD studies mentioned that parents were active partners in planning the child's intervention program, only 5% reported explicitly addressing the needs of the parents. The one ASD study that did explicitly address parental factors specifically targeted marital functioning. While 26% of the DBD studies reported explicitly targeting parent factors as a parent of the program (e.g., marital functioning, stress-management), only 11% stated that parents were included as active partners in developing an intervention for their child.

### PT/PE Procedures

**Age of Participant Children**—While both groups of studies targeted a range of ages, a large percent (82%) of ASD studies included children under 5 years, 41% included latency age children, and none included adolescents. In contrast, 66% of the DBD studies included children under age five, 76% included latency age children, and 11% included adolescents.

**Setting of PT/PE**—The largest difference between the ASD and DBD studies was whether the PT/PE was conducted in the child's home (73% of ASD and 13% of DBD studies) or in a clinic setting (74% of DBD studies and 59% of ASD). DBD studies were also more likely to be conducted in educational settings (24% of DBD and 0% of ASD). It is important to note that these codes were not mutually exclusive. That is, the PT/PE occurred in two settings in a number of the studies.

**Format of PT/PE**—Ninety-six percent of ASD studies conducted PT/PE individually with families, and 18% conducted the PT/PE in groups whereas 55% of DBD programs educated families individually and 45% in groups. The child was present for the PT/PE in 77% of ASD studies and 50% of the DBD studies.

**Instructional Methods**—Both types of studies reported using a variety of methods to teach parents strategies. The most frequently reported methods reported in the ASD studies were modeling (68%), review of a manual/ written materials (64%), in-vivo feedback/ coaching (55%), and didactic instruction (55%). The most frequently reported method used in DBD studies was didactic instruction (82%).

**Use of Operant Condition Procedures**—Seventy-three percent of ASD studies used procedures that were at least, in part, based on operant conditioning, while 100% of DBD studies included these procedures.

## Discussion

This review provides a targeted overview of the current focus and methodology of PT/PE intervention research for children with ASD and DBD. As evidenced by the lack of overlap in publication sources in the two groups of studies, the literature bases are distinct from one another, making transfer of knowledge from one field to another most unlikely. There are many similarities between PT/PE programs for the two groups of children, including the continued use of strategies based on operant conditioning principles, the high proportion of males represented, the use of a variety of PT/PE instructional methods, and the incorporation of fidelity measures in about half of the studies. However, a number of differences were elucidated that may provide opportunities for cross-fertilization and integration of the two bodies of knowledge leading to improved care for both populations. This is especially important as it relates to the focus on bridging the research-practice gap.

## Research Methodology

The differences in the methodology for the PT/PE programs for children with ASD and DBD reflects the status on the evidence-base for interventions in general for these populations. While extensive evidence exists based on randomized clinical trials for children with DBD (Brestan and Eyberg, 1998), interventions for children with ASD have primarily utilized single-subject designs and have not conducted large-scale randomized clinical trials. In recent years, there has been discussion in the ASD literature on the need to incorporate RCT methodology in the intervention research in order to more accurately examine the efficacy and effectiveness of various treatments for children with ASD (Lord *et al.*, 2005). There are significant challenges, however, in using this methodology in ASD research such as the lower base rates of ASD than DBD, the heterogeneity of the population, developmental nature of the disorder, ethical considerations of placing children in a control condition, and the sophistication of parents, which makes contamination of the control group highly likely (Lord *et al.*, 2005; Schopler, in press). Advantages of a clinical trial model include methodological rigor and clear examination of the effects of the independent variable. However, examination of pre-treatment characteristics that may moderate response to the independent variable requires a very high number of subjects in an RCT. On the other hand, single subject design methodology used in ASD studies has particular strengths that may benefit the DBD literature as a greater attention to treatment process variables and elements of change. Single subject designs could compliment RCTs by examining innovative treatments in their early stages to determine readiness for a clinical trial, as well as for individualizing treatment protocol based on specific child and family characteristics (Lord *et al.*, 2005). Therefore, these two types of research methodology may be complimentary, and useful to the facilitation of more effective treatments in both populations.

The studies from the two groups also differed in their selection of outcome measures. While a majority of DBD studies used structured reports of child and parental functioning, the ASD studies were more likely to use behavioral observations of the child. This difference may reflect the DBD studies' emphasis on procedures targeting a broad range of behavioral and parenting issues and the ASD studies' emphasis on targeting individual child skills. It also reflects the differences in research methodologies employed. While there are limitations of using standardized measures (see Konold *et al.*, 2004), it may be important to incorporate standardized measures of functioning, which compare across children and are easily completed by a parent or a provider, into ASD research as more large-scale studies are conducted. Standardized questionnaires assessing child functioning developed for DBD populations may also be applicable to children with ASD. For example, the Child Behavior Checklist (Achenbach, 1991; Achenbach and Rescorla, 2001) has scales measuring behavior as well as a scale specifically examining characteristics of ASD. Due to the heterogeneity of

the ASD population, as well as the focus on teaching parents to facilitate specific child behaviors, idiosyncratic observational coding systems were developed in order to carefully examine changes in the specific child behavior being taught. However, use of these detailed, specific measures makes comparison across studies difficult. Researchers in the ASD community have suggested that the development of standardized observational coding systems would facilitate the comparison of various how they are affected (Dinca *et al.*, 2005; Lord *et al.*, 2005). Some standardized observational systems, which examine both child and parent behavior have been developed in the DBD literature (e.g., Dyadic Parent–Child Interactive Coding System, Robin and Eyberg, 1981). These types of measures might be useful for the ASD PT/PE community as well. In addition, although ASD researchers have studied stress and depression in parents, there is limited research on how they are affected by PT/PE participation (Baker-Ericzén *et al.*, 2006). Standardized observational assessments and attention to parent factors in ASD may be facilitated by knowledge transfer from the DBD PT/PE literature.

Observational coding systems have been developed for use in DBD research; however, they are used less often than in the ASD studies. While, admittedly, these measures may be time consuming with large samples, it may enhance the validity of the DBD studies to include observational measures, even for a subset of participants. Baseline observational measures are often used in the ASD studies to set goals for PT/PE interventions and individualize procedures for characteristics of each child. DBD studies may benefit from the use of observational measures in the individualization of programs for children. Observational data specifically taken from systematic functional assessments may be particularly useful for this purpose. Functional assessment procedures are being increasingly used in the ASD PT/PE programs and are actually a legal requirement in educational settings through the Individuals with Disabilities Education Act. Teaching parents (including those with children with DBDs) how to systematically identify the functions of disruptive behavior will not only help parents manage problem behaviors at home, but also to understand the procedures when employed by educational professionals at school.

### Focus of PT/PE Interventions

Treatment areas chosen as the target or focus of intervention in the two populations differed somewhat from each other. All of the DBD programs mentioned that a main goal of intervention was, at least in part, to improved parenting practices. This is not surprising given the theoretical rationale for improving impaired parent–child interactions in interventions for this population. That is, dysfunctional parenting practices are viewed as directly related to child psychopathology (Patterson *et al.*, 1992). While early psychoanalytic explanations for ASD cited parenting practices as a possible cause of “autistic” symptoms (Bettelheim, 1967), research has debunked these notions (e.g., Schreibman, 2005) and in fact, researchers may be wary of implicating any negative parenting practices in the treatment protocol for ASD. Therefore, in the ASD studies, authors more often reported that the purpose of including parents was to instruct them in methods for teaching their children specific skills (communication, social) or to instruct them to systematically determine the functions of disruptive behaviors through functional assessment procedures. Although authors may discuss difficulties in the parent–child relationship, typically due to the child's developmental disorder, until recently, it has rarely been the focus of intervention (with the noted exception of the Floor Time approach; Greenspan and Wieder, 1998). This is not to say that the DBD studies did not target specific child skills as well. For example, a number of studies targeted either child or parent problem-solving skills (e.g., Kazdin and Wassell, 2000). Further, DBD studies also targeted teaching parents to facilitate peer relations (e.g., Webster-Stratton studies of the Incredible Years Program). The DBD studies did not explicitly state that they taught parents to employ functional assessment procedures.

As research moves to focus on implementation in community settings, the focus of PT/PE programs is important. Children in usual care community services may exhibit symptoms similar to that of both populations. For example, children presenting with DBD issues may also have communication delays. Teaching parents strategies to build additional skills, such as appropriate communication, in their children may enhance programs for DBD. Many of the methods taught to parents of children with ASD to enhance child communication skills are relatively simple and have been developed to be incorporated naturalistically into families' daily lives. Since many children with DBD also have communication difficulties, including a focus of communication skills has the potential to greatly enhance the effectiveness of the programs. Further, parents of children with ASD presenting for intervention in community settings may also benefit from basic parenting skills that are standard in most DBD programs. Children with ASD are often very difficult to engage, which may affect basic parent-child interactions leading to similar parenting issues as seen in the DBD populations (Greenspan and Wieder, 1998).

Another main area of difference identified under this domain is how parent factors are incorporated into the intervention program. The role of parent factors is an issue that is highly relevant across studies for both populations, although it has been conceptualized differently. Parental stress and depression in parents of children with ASD has often been discussed as a result of raising a child with a disability, while environmental stressors and parental psychopathology has been associated with increased child symptomatology in children with DBD. The results were consistent with these conceptual differences. ASD interventions were much more likely to explicitly state that parents are active collaborators in designing interventions for their children (e.g., Brookman-Frazee, 2004) and addressing stress as a reaction to the child issues, while DBD interventions were more likely to target parent factors such as stress, depression and marital problems as a structured part of their PT/PE program that are suggestive of causal attributes to child issues (e.g., Kazdin and Whitley, 2003). Parents of children with DBD may benefit from taking a more active role in choosing intervention methods and goals for their children. This may provide additional confidence in parenting skills, motivating and empowering parents and help improve the parents' view of the child's positive qualities. While collaboration with parents has been discussed in the DBD literature and is a specific component to wraparound program models, it is not highlighted in the empirical literature reviewed here.

While there is significant attention to the increased parental stress associated with raising a child with a severe disability, limited attention has been given to systematically addressing these issues within the context of a parent training intervention. There is research with parents of children with autism indicating that clinical levels of parental stress (not directly related to child-rearing) negatively impacts child gains made during parent training interventions (Plienis *et al.*, 1988; Robbins *et al.*, 1991). Some researchers have begun to develop interventions specifically to teach parents of children with severe disabilities coping and stress management skills (Nixon and Singer, 1993); however, these types of interventions were not systematically incorporated in the empirical research on PT/PE for children with ASD.

A number of the DBD programs have systematically added components targeting parental factors (e.g., stress, coping, problem-solving, communication) and addressing parent and/or other family problems (e.g. parent depression or marital discord) to their treatment protocol. These are typically addressed through adjunctive interventions and have been discussed as a vehicle to enhance parent training (Forehand and Kotchick, 2002). For example, Griest *et al.* (1982) developed Parent Enhancement Therapy as an adjunct to the Helping the Non-compliant Child parent training program that included components targeting marital conflict, symptoms of depression, communication skills, problem-solving skills, and shared pleasant

activities by spouses. Likewise, Webster-Stratton and colleagues (e.g., Webster-Stratton and Reid, 2003) have incorporated a parent-focused component to their basic parenting intervention (The Incredible Years) used with children with conduct problems. Incorporating the direct targeting of parent factors is associated with greater therapeutic changes in the children and the reduction of barriers to participation in family interventions (Kazdin and Whitley, 2003). These types of adjunct therapies may be beneficial to families of children who have ASD as well. More research is needed for both populations on how to adapt standard therapies for parent characteristics.

### PT/PE Procedures

There were a number of notable differences between the two areas of research in the area of PT/PE procedures. For example, a significant majority of the ASD studies focused on children under the age of 5 years, while DBD studies crossed the age ranges. This may be explained by the emphasis on early identification and intervention for children with ASD (National Research Council, 2001). Further, federal early intervention regulations under the Individuals with Disabilities Education Act (IDEA) Part C require that parents be actively included in interventions. Based on the diagnostic criteria for DBDs versus ASDs, children with DBD may be diagnosed later than children with ASD. Early identification of autism in children under age 3 is becoming increasingly common (Charman and Baird, 2002; Filipek *et al.*, 1999, 2000; Mandell *et al.*, 2005b).

Again, this difference in procedures provides the possibility for knowledge transfer between the fields. While the DBD studies spanned the age ranges, there has been a growing movement toward targeting younger children to prevent the development of conduct problems in children who are at risk. For example, in the area of DBD, Webster-Stratton and colleagues have recently focused on targeting families of young children in Head Start programs. As DBD researchers attempt to implement their programs for younger children, they will need to consider the developmental appropriateness of their programs, and may need to modify some of the techniques to fit younger populations. Researchers working with ASD populations have had to do this already (e.g., Koegel *et al.*, 1999) and may inform DBD researchers in this area. While the importance of early intervention for children with ASD is clear, future PT/PE research in ASD might consider developing programs for parents of older children as their needs may differ significantly from those with younger children, as may the needs of these parents. With the increase in children being diagnosed with ASD, researchers and interventionists are also faced with growing populations of children in need of services through school-age into adolescence and adulthood. Often, behavioral issues and important skill sets change as children grow older. ASD researchers have called for research examining treatment protocol for the increasingly underserved population of older children with mild to moderate ASD (National Institute of Mental Health, 2004). The DBD literature may provide an excellent source of information for this growing population.

Other differences in PT/PE procedures were noted. For example, while both types of programs often held PT/PE sessions in a clinic-based facility, ASD programs more often provided sessions in the home and DBD studies were more likely to take place in educational settings. DBD studies may find increased generalization of skills learned in PT/PE programs if conducted in children's homes. This may be especially important for the increasing number of DBD studies that target younger children (under age 5) as community-based early intervention programs for young children are often conducted in the home settings. As evidence-based interventions are implemented in "real world" practice, programs developed for use in-home may be more consistent with public service systems.

While both types of programs used a variety of instructional methods to teach parents, there are a few distinct differences. ASD studies were more likely to report using modeling and in-vivo feedback/ coaching and DBD studies were more likely to report using didactic instruction. These differences may be attributed to the differences in the formats. Specifically, ASD studies were more likely to work with individual families, while DBD programs often provided the training in a group format. There are strengths to both of these approaches. Group parent training is a very efficient and cost-effective way to reach parents of a large number of children. This may become increasingly important for the ASD population as the number of children diagnosed with this disorder increases. Further, group treatment provides a forum for parents to collaborate and learn from each other (Webster-Stratton, 1997). This has been shown to be important in one preliminary study of parents of children with autism who learned the PT/PE techniques better when individual treatment sessions were combined with a support group (Stahmer and Gist, 2001), however, this has not been systematically examined in the ASD population. Providing PT/PE for individual families, on the other hand, provides more intensive intervention that is more able to individualize the intervention to family and child characteristics. This may be critically important for families of children with ASD, as these children represent a highly heterogeneous group. There may also be families of children with DBD who require more individualized attention to learn parenting techniques or children with particularly challenging characteristics, which require more specific intervention. Future research in both areas may examine who benefits most from the different PT/PE formats and what teaching formats are associated with the greatest generalization and maintenance of skills in both parents and children.

### **Practical Application of Cross-Fertilization**

Overall, the DBD interventions were more likely to teach general parenting skills, while ASD programs were more likely to individually teach parents to facilitate specific child skills (e.g., communication) in the home environment. The ASD programs may benefit from incorporating general parenting skills into the curricula, which could be taught in a group format, and systematically targeting parent factors; and the DBD programs could benefit from targeting individual child skills with the child present. There have been recent attempts to do this. For example, autism researchers are beginning to study the use of Parent-Child Interaction Therapy (a program developed for children with DBD) with families of children who have high functioning ASD and report preliminary success with the procedures (Solomon and Goodlin-Jones, 2004). Further, Sharry *et al.* (2005) have developed an early intervention parent-training program (Parent Plus Early Years Programme) designed for children with disruptive behavior problems and those with a range of mild developmental disabilities. This program builds on both the research on children with DBD and those with developmental and communication delays, by teaching parents a combination of general parenting strategies and specific skills to enhance child communication. Further, this program uses both group video-tape instruction and individual coaching to families. The preliminary research on this program illustrates not only the overlapping needs of the population of children, but also the effectiveness of integrating PT/PE methods developed for the two populations of children.

Another specific practical way to increase cross-fertilization is through research dissemination. One critical finding was no overlap in publication sources for studies of the two populations. Journals may need to be more proactive about publishing research for both populations. National conferences may also need to target attendance of intervention developers for both populations to increase awareness of the relevance of the two bodies of research to one another and increase the synergy of future research, thus enhancing the likelihood that they may be translated into real world practice.

## Limitations of Current Review

While our literature search focused on the keywords of “parent training” and “parent education” for DBD and ASD, we are aware that there may be number of other programs that include a parent training or education component that did not come up in our search. For example, multi-component interventions for children with DBD, such as Multi-systemic Treatment (Henggeler *et al.*, 1992) and Multi-dimensional Treatment Foster Care (Chamberlain and Reid, 1991) include parent training as a part of a more comprehensive intervention package. In the area of ASD, programs such as Positive Behavior Support, and comprehensive educational programs such as Little Walden, the Denver Model, the Princeton Child Development Institute (see Harris and Handleman, 1994, 2000) and Developmental, Individual-Difference, Relationship-Based/Floortime approach (Greenspan and Wieder, 1998) were likely not captured in this literature search. Looking to these programs may also inform both the DBD and ASD PT/PE research.

For purposes of this review, we focused on two distinct groups of children for the sake of comparison. However, the PT/PE research is not limited to these groups. For example, there is a considerable amount of PT/PE research conducted on families of children with ADHD (Anastopoulus and Barkely, 1990; Barkley, 2002). Further, PT/PE has been employed with children with anxiety problems (Barret and Shortt, 2003) and depression (Stark *et al.*, 1996). These studies may be highly relevant to both DBD and ASD as these other conditions often co-occur in both of these populations. In fact, as noted, one of the studies that we did not include targeted children with DBD and/or ASD (Sharry *et al.*, 2005). This study was not included because it could not be categorized as primarily DBD or ASD; however, it does provide preliminary evidence for the utility of cross-fertilization.

## Summary and Conclusions

This review provides a systematic overview of the current (1995–2005) parent mediated intervention literature for two groups of children: those with conduct problems or DBD and those with ASD. While sharing similar roots in operant conditioning, it is clear that the research studies with these populations are represented in distinct bodies of literature. With the emphasis on moving research into community practice and conducting intervention research that is highly relevant to clinical practice, it is important to recognize that these populations may actually overlap in “real world” settings. Therefore, integrating the knowledge gained from recent research with both populations may facilitate the implementation of evidence-based practices in usual care settings. Specifically, examining the research methodology, the focus of parent interventions and actual teaching procedures can inform future implementation and intervention research.

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**Table I**  
**Summary of Studies Included in Current Review**

Study/Author	Age	N	PT/PE Program or Skills Taught to Parents
ASD studies			
Brookman-Frazee (2004)	2.8–2.10	3	Pivotal Response Training
Chandler <i>et al.</i> (2002)	1.10–2.9	10	Framework for Communication Project
Charlop-Christy and Carpenter (2000)	6–9.9	3	Modified Incidental Teaching
Drew <i>et al.</i> (2002)	<i>M</i> = 1.9	24	Social-pragmatic joint attention focused programme
Elder (1995)	2.9–7.2	4	In-home communication training
Elder <i>et al.</i> (2003)	3–7.4	4	Imitating with animation & expectant waiting
Frea and Hepburn (1999)	2.9–4	2	Functional assessment—based interventions
Harris <i>et al.</i> (1998)	3	3	Behavior analysis skills
Kaiser <i>et al.</i> (2000)	2.7–4.5	6	Enhanced Milieu Teaching
Koegel <i>et al.</i> (1996)	3–9	17	Pivotal Response Training versus Individual Target Behaviors
Koegel <i>et al.</i> (2002)	3.10–5.7	5	Pivotal Response Training
Lerman <i>et al.</i> (2000)	5–12	3	Behavior management strategies
Mahoney and Perales (2005)	1.25–4.5	50	Relationship-focused early intervention
Ozonoff and Cathcart (1998)	2.6–5.8	22	TEACCH
Smith and Lerman (1999)	4–5	2	Guided compliance and high-probability instructional sequences
Smith <i>et al.</i> (2000)	1.5–2	15	Applied Behavior Analysis
Sofronoff <i>et al.</i> (2004)	6–12	51	Comic Strip Conversations, Social Stories, Psychoeducation, management of rigidity, anxiety, and disruptive behaviors
Stahmer and Gist (2001)	1.6–4.2	22	Pivotal Response Training
Strain and Danko (1995)	3–4	3	Social skills intervention
Symon (2005)	2.10–5.4	3	Pivotal Response Training & Self-Management
Tarbox <i>et al.</i> (2002)	4	1	Response blocking
Weiskop <i>et al.</i> (2001)	5.4	1	Behavior management strategies for sleep problems
DBD studies			
Baydar <i>et al.</i> (2003)	Preschool	882	The Incredible Years Parent Training Program
Behan <i>et al.</i> (2001)	3–12	50	Parenting Plus Programme
Boggs <i>et al.</i> (2004)	4–11	64	Parent–Child Interaction Therapy
Conduct Problems Prevention Research Group (1999)	<i>M</i> = 6.5	891	Fast Track Program
Costin <i>et al.</i> (2004)	<i>M</i> = 9.7	66	The Skilled Parenting program and Perceptive Parenting program
Eyberg <i>et al.</i> (2001)	3–6	20	Parent–Child Interaction Therapy
Forgatch <i>et al.</i> (2005)	5.8–9.5	20	Parent Management Training
Funderburk <i>et al.</i> (1998)	2–7	84	Parent–Child Interaction Therapy
Gallart and Matthey (2005)	2–8	54	Group Triple P
Greene <i>et al.</i> (2004)	4–12	50	Collaborative Problem-Solving
Hartman <i>et al.</i> (2003)	4–7	81	The Incredible Years Parent Training Program
Harwood and Eyberg (2004)	3–6	22	Parent–Child Interaction Therapy
Ho <i>et al.</i> (1999)	4–10	25	Parent Management Training

Study/Author	Age	N	PT/PE Program or Skills Taught to Parents
Hutchings <i>et al.</i> (2002)	2–10	42	Behavioural parent training
Hutchings <i>et al.</i> (2004)	2–10	42	Behavioural parent training
Ireland <i>et al.</i> (2003)	2–5	37	Standard & Enhanced Group Triple P
Kazdin and Whitley (2003)	6–14	127	Parent Management Training & Problem-Solving Skills Training
Mabe (2003)	5–9	284	The Incredible Years Parent Training Program
MacKenzie <i>et al.</i> (2004)	3–8	25	Behavioral Parent Training
Martinez and Eddy (2005)	$M = 12.75$	73	Culturally Adapted Parent Management Training
McTaggart and Sanders (2003)	Primary school age	490	Group Triple P
Muntz <i>et al.</i> (2004)	2–10	66	Behavioural parent training
Nangle <i>et al.</i> (1999)	15	1	Contingency management & Family problem-solving training
Nixon <i>et al.</i> (2004)	STD, $M = 3.9$ ,	54	Standard and Abbreviated Parent–Child Interaction Therapy
Nock and Kazdin (2005)	ABB, $M = 4.0$ 2–12	76	Parent Management Training and Participant Enhancement Intervention
O'Reilly and Dillenburger (2000)	6–7	3	Parent Management Training—Compliance training, exclusionary time-out procedure
Reid <i>et al.</i> (1999)	1st & 5th grade	671	Linking the Interests of Families and Teachers (LIFT) intervention
Reid <i>et al.</i> (2004)	Preschool	1489	The Incredible Years Parent Training Program
Reid <i>et al.</i> (2001)	4–6	634	The Incredible Years Parent Training Program
Rooke <i>et al.</i> (2004)	4–5	149	School-based group parent training
Sanders <i>et al.</i> (2000)	3	305	Triple P-Positive Parenting Program
Schrepferman and Snyder (2002)	6–12	46	Behavioral Parent Training
Schuhmann <i>et al.</i> (1998)	3–6	61	Parent–Child Interaction Therapy
Tynan <i>et al.</i> (1999)	5–11	55	Behavioral Parent Training (Based on Barkley, 1997)
Webster-Stratton (1998)	3–6	394	PARTNERS Intervention
Webster-Stratton and Hammond (1997)	4–8	97	The Incredible Years Parent Training Program
Webster-Stratton <i>et al.</i> (2001)	4	272	The Incredible Years Parent Training Program
Webster-Stratton <i>et al.</i> (2004)	4–8	159	The Incredible Years Parent Training Program



**Table II**  
**Publication Source of PT/PE Studies**

<b>Journal</b>	<b>% ASD Studies (<i>n</i> = 22)<sup>a</sup></b>	<b>% DBD Studies (<i>n</i> = 38)<sup>a</sup></b>
<i>Journal of Positive Behavior Interventions</i>	23	
<i>Autism</i>	14	
<i>Research in Developmental Disabilities</i>	14	
<i>Journal of Autism and Developmental Disabilities</i>	9	
<i>American Journal on Mental Retardation</i>	5	
<i>Behavioral Interventions</i>	5	
<i>Education and Development</i>	5	
<i>European Journal of Child &amp; Adolescent Psychiatry</i>	5	
<i>Issues in Mental Health Nursing</i>	5	
<i>Journal of Applied Behavior Analysis</i>	5	
<i>Journal of Developmental and Behavioral Pediatrics</i>	5	
<i>Journal of Emotional and Behavioral Disorders</i>	5	
<i>Scholarly Inquiry from Nursing Practice</i>	5	
<i>Journal of Consulting and Clinical Psychology</i>		23
<i>Child and Family Behavior Therapy</i>		11
<i>Journal of Clinical Child and Adolescent Psychology</i>		8
<i>Australian e-Journal for the Advancement of Mental Health</i>		5
<i>Behavior Therapy</i>		5
<i>Journal of Clinical Child Psychology</i>		5
<i>American Journal of Community Psychology</i>		3
<i>Behavioural and Cognitive Psychotherapy</i>		3
<i>Behaviour Change</i>		3
<i>British Association for Behavioural and Cognitive Psychotherapy</i>		3
<i>Child and Adolescent Mental Health</i>		3
<i>Child Development</i>		3
<i>Cognitive and Behavioural Practice</i>		3
<i>Education and Treatment of Children</i>		3
<i>Irish Journal of Psychology</i>		3
<i>Journal of Abnormal Psychology</i>		3
<i>Journal of Abnormal Child Psychology</i>		3
<i>Journal of the American Academy of Child &amp; Adolescent Psychiatry</i>		3
<i>Journal of Child Psychology and Psychiatry</i>		3
<i>Journal of Forensic Psychology Practice</i>		3
<i>The Journal of Mental Health Policy and Economics</i>		3
<i>Prevention Science</i>		3
<i>Research on Social Work Practice</i>		3

<sup>a</sup>The total percentage is greater than 100 as each number is rounded to the nearest percent.

**Table III**  
**Characteristics of PT/PE Empirical Literature in ASD and DBD**

<b>Study Characteristics</b>	<b>%ASD Studies (n = 22)</b>	<b>% DBD Studies (n = 38)</b>
<i>Research methodology</i>		
Experimental design		
Single-subject	64	8
Randomized clinical trial	18	77
Quasi-experimental	18	15
<i>Method used to assess outcome</i>		
Behavioral Observation (Child)	77	50
Behavioral Observation (Parent)	55	53
Structured self/parent report of child functioning	32	87
Structured self-report of parent functioning	9	71
Standardized measure of developmental functioning (child)	23	8
<i>Focus of PT/PE</i>		
Areas targeted		
Improve parenting practices (e.g., effective discipline)	0	100
Improve parent-child relationship	14	23
Improve child or parent problem-solving skills	0	40
Improve marital functioning (e.g., communication)	5	8
Increase parental stress management skills	0	16
Increase child communication skills	68	0
Increase child social skills	27	21
Teach parents to use functional assessment procedures	9	0
Parent factors		
Parent factors explicitly addressed as part of program	5	26
Parents active partners in developing intervention	55	11
<i>PT/PE Procedures</i>		
Ages of participant children		
<5	82	66
5-12	41	76
>12	0	
Gender		
Average % Male	89	76
Setting		
Home	73	13
Clinic	59	74
School	0	
Community	9	
Format		
Individual	96	55
Group	18	45

<b>Study Characteristics</b>	<b>%ASD Studies (n = 22)</b>	<b>% DBD Studies (n = 38)</b>
Child present during parent training	77	50
Fidelity of implementation used	50	58
<i>Instructional methods for PT/PE</i>		
Parents given manual/written materials to review	64	45
Didactic Instruction	55	82
Modeling	68	34
Videotape Modeling	14	37
Role-Play	23	45
Bug-in-ear	0	
In-vivo Feedback/Coaching	55	37
Based on Operant Conditioning Principles	73	100