

Positive Family Intervention for Severe Challenging Behavior I: A Multisite Randomized Clinical Trial

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Abstract

The present study was a multisite randomized clinical trial assessing the effects of adding a cognitive-behavioral intervention to positive behavior support (PBS). Fifty-four families who met the criteria of (a) having a child with a developmental disability, (b) whose child displayed serious challenging behavior (e.g., aggression, self-injury, tantrums), and (c) who scored high on a measure of parental pessimism were randomly assigned to either PBS intervention or a combination of PBS and optimism training for parents (positive family intervention [PFI]). A manualized approach to both interventions was used for eight weekly individual sessions. Both groups improved in scores of parental pessimism as well as on standardized measures and direct observations of child challenging behavior. The PFI intervention resulted in significantly improved scores on the General Maladaptive Index of the *Scales of Independent Behavior–Revised* when compared with the PBS alone group. No differences in attrition were observed across the two different approaches. Importantly, significant improvements in child behavior at home were achieved through a clinic-based approach. Implications for working with families who may be less likely to benefit from parent training are discussed.

Keywords

severe challenging behavior, behavioral parent training, autism spectrum disorders, positive behavior support

Challenging behaviors such as tantrums, self-injury, and aggression are highly prevalent among children with autism spectrum and other developmental disorders (e.g., Einfeld & Tonge, 1996; Emerson et al., 2001). Serious forms of these behaviors (including those that cause harm to the person and others) are estimated to be present in 10% to 15% of this population (Lowe et al., 2007). In addition to frequency, the stability of these behaviors is also of great concern. Several studies document that, even with efforts to treat these behaviors, they may still be problematic a decade later (Emerson et al., 2001; Totsika, Toogood, Hastings, & Lewis, 2008). Problem behaviors interfere with efforts to help these individuals live more independently by disrupting educational and vocational efforts as well as home life (Fox, Vaughn, Wyatt, & Dunlap, 2002). In addition, there is a growing body of research demonstrating that when children with developmental disorders engage in problem behaviors, their parents are also likely to report more stress and related psychological symptoms such as anxiety and depression (Hastings, 2002; Hastings & Johnson, 2001; Lecavalier, Leone, & Wiltz, 2006; Seltzer et al., 2010).

Behavioral Parent Training and Positive Behavior Support (PBS)

Reducing the frequency and intensity of challenging behaviors is typically a top priority for treatment in families of these children. Helping families intervene with their child's behavior problems is a theme that goes back to the earliest efforts of the pioneering behavioral scientists (e.g., Hawkins, Peterson, Schweid, & Bijou, 1966). PBS uses the application of functional assessment and positive intervention in a family-centered context to help parents develop the skills they need to support and manage their children's

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behavior (Carr et al., 2002). Fortunately, intervention research points to the potential effectiveness of PBS as a method for improving the challenging behaviors of children at home (e.g., Brookman-Frazee, Stahmer, Baker-Ericzén, & Tsai, 2006; Clarke, Dunlap, & Vaughn, 1999; Dunlap & Fox, 2007; Dunlap, Newton, Fox, Benito, & Vaughn, 2001; Lucyshyn et al., 2007). Over the years, however, concerns have been raised that approaches to parent training for the families of children with severe disabilities often downplay barriers to treatment that occur because of the attitudinal and motivational needs of these families such as stress and pessimism (e.g., Brookman-Frazee et al., 2006; Durand, 2001; Harris, 1983). This is of particular interest in behavioral intervention (Allen & Warzak, 2000) because there is some evidence that research studies in this area rarely report data on attrition and therefore may be underreporting the number of families who do not fully carry out intervention procedures (Durand & Rost, 2005).

Obstacles to Successful Parent Training

There is increasing recognition that parental attributional style significantly contributes to the success or failure of parent training (Solish & Perry, 2008; Whittingham, Sofronoff, Sheffield, & Sanders, 2009). Parental attributions are studied under a variety of labels but generally refer to how parents view their role in parenting (self-efficacy) as well as their child's role in the challenging behavior (child efficacy). Several models that speak to the obstacles to successful parent training among families with children having disabilities exist (Morrissey-Kane & Prinz, 1999). One model with some empirical support is described by Konstanterreas (1991) and includes four factors: child-related stress, resource-related stress, parental perception, and family adaptation. Child-related stress refers to the difficulties families face as a result of their child's medical and behavioral challenges. Reducing this type of stress is one of the rationales for providing families with the skills to help improve their child's behaviors. Resource-related stress is related to the provision of adequate resources and supports, both financial and emotional. Respite, for example, is often offered as a way to help reduce this stress. Parental perception refers to an individual parent's view of the nature of their child's disability. A recent study offers support for the contention that parent perception of the cause of their child's disability affected their choice of treatment (Al Anbar, Dardennes, Prado-Netto, Kaye, & Contejean, 2010). Finally, the fourth factor, family adaptation, is viewed as the combined contribution of the other three factors. Researchers in other fields are identifying child efficacy and self-efficacy as important components of successful parent training (e.g., Eisen, Raleigh, & Neuhoff, 2008).

Research on the influence of child efficacy on behavioral parent training is limited in the field of developmental disabilities. In one exception, researchers found that participation in a parent training program resulted in parents being less likely to believe that their child's problem behavior was caused by intrinsic factors and more likely to be capable of change in the future (Whittingham et al., 2009). In addition, these changes in attributional styles resulted in improved parental parenting practices (e.g., less overreactivity to problems). Parental attributions of their child's behavior may be important when assessing potential for successful intervention.

Self-efficacy—a parent's perception of their own ability to change their child's severe behavior problems—has received more attention through the years (Hastings & Brown, 2002). Substantial evidence exists indicating that parental self-efficacy influences child behavior both directly and indirectly (through parenting practices; Jones & Prinz, 2005). For example, one study examined predictors of parental involvement in Early Intensive Behavioral Intervention (EIBI) with children with autism spectrum disorders (ASD). Parents and therapists completed a series of questionnaires aimed at seeing how parent self-efficacy, knowledge of autism, and belief in EIBI as an effective intervention predicted involvement in the program (Solish & Perry, 2008). Self-efficacy accounted for almost half of the variance related to who would or who would not participate—suggesting that feeling capable of implementing behavioral procedures is an important aspect of success.

These findings are consistent with preliminary research in this area which indicates that parental optimism/pessimism significantly impacts the development of later challenging behaviors. A 3-year longitudinal prospective study was conducted that examined factors that contribute to later behavior problems in young children (Durand, 2001). Children who were 3 years of age and who had a cognitive and/or developmental disability and displayed behavior problems were identified and followed up for 3 years. A number of factors were measured to assess their role in predicting which children would later display more severe behavior problems. The best predictor of which children would have more severe problems 3 years later was a measure of parental optimism/pessimism. In other words, parents who had limited confidence in their ability to influence their child's behaviors by the time the child was 3 years of age were most likely to have children with more difficult behaviors later in life. For example, if parents resisted placing demands on their child for fear of escalating behavior problems, then children were more likely to develop severe behavior problems as they became older. This finding was true despite the fact that some of the children with more optimistic parents initially had more severe deficits and behavior problems (Durand, Hieneman, Clarke, & Zona, 2009). Research with families having a child with Down's syndrome replicated this observation (Esbensen & Seltzer,

2011). It appears that parental optimism may serve as a protective factor for these children and parental pessimism may put a child more at risk of developing severe behavior problems at a later date.

The Current Study

The present study was designed to assess whether a cognitive-behavioral intervention could improve parents' ability to implement PBS and thereby improve child outcomes. We adapted a version of Seligman's (1998) optimism training for parents and compared the effects of PBS alone with PBS plus optimism training (referred to as *positive family intervention* [PFI]). We also sought to assess whether a cost-effective approach—a clinic-based intervention just for parents—could result in significant changes in child behavior at home. The study targeted parents who reported high levels of pessimism and had a child with a developmental disability who exhibited severe behavior problems. We hypothesized that the group receiving PFI (a) would demonstrate a greater decrease in pessimism, (b) that their children would show more improvements in their severe challenging behaviors, and (c) that they would have less attrition from treatment. We further hypothesized that a clinic-based intervention would result in significant improvements in child behavior at home.

Method

Participants

Participants for this study were recruited through various referral sources (e.g., schools, physicians, therapy groups), fliers at conferences, and local media at two research sites (university centers in Florida and New York) over a 5-year period from 2005 to 2009. Eligibility for inclusion was assessed using the following predetermined selection criteria. The parents or legal guardians could not have participated in previous parent training or received in-home assistance in behavioral parent training and needed to score a 6 or above on the pessimism scale of the Questionnaire on Resources and Stress—Short Form (QRS-SF; Friedrich, Greenberg, & Crnic, 1983). In addition, the child needed to be between the ages of 3 and 6, have an identified developmental disability (through a diagnosis from a school psychologist or other qualified professional), and exhibit serious problem behavior as evidenced by a score of -20 or below on the General Maladaptive Behavior Index (GMI) of the *Scales of Independent Behavior—Revised* (SIB-R; Bruininks, Woodcock, Weatherman, & Hill, 1996). Typical problem behaviors of the children included tantrums, aggression, noncompliance, and stereotyped behaviors.

Of the 257 families assessed for eligibility, 203 were excluded due to not meeting the inclusion criteria (e.g., age

of child, less severe behavior, low score on the measure of pessimism; $n = 165$) or for reasons such as moving away, not wanting to be videotaped, or having participated in previous parent training programs ($n = 38$). The eligible families ($n = 54$) were randomly assigned to either the PBS only group (PBS) or the PFI group by the clinical director at the Florida site. Institutional Review Board (IRB)-approved consent forms (from both participating universities) were used to document consent to participate and to videotape sessions with the family and child observations at home.

Adequacy of randomization analyses. Once parents were assigned to a treatment group, attrition was monitored (defined as a parent's refusal to continue or failure to attend three consecutive sessions or respond to attempts to schedule). Only those families who completed all 8 sessions of treatment were included in the final analysis. Of the 27 families in the PBS group, 17 completed all sessions (63.0%) and of the 27 families in the PFI group, 18 completed all sessions (66.7%). This completion rate is comparable with other similar research studies (Kazdin, 1996; Roberts, Mazzuchelli, Studman, & Sanders, 2006) and was higher than expected as the participants were specifically selected for having significant levels of pessimism. A series of *t* tests and chi-square analyses verified that the completers and non-completers were not significantly different according to child and parent variables listed in Table 1 ($p > .05$). In addition, the PBS completers and the PFI completers also did not significantly differ on the child and parent variables listed in Table 1, with the exception of years of education (parents in the PFI group had more years of education, $p < .01$) and the proportion of children with different disorders (higher proportion of children with ASD in PBS group, $p < .01$).

Research Design

This study used a randomized control design (Durand & Wang, 2011) with two conditions: (a) PBS and (b) PBS plus optimism training (PFI). Parents were randomly assigned to the two conditions by the clinical director, matching therapists to parents based on their proximity and availability. All therapists administered both interventions. Measures were administered prior to initiating intervention and within 2 weeks of completing intervention. Research assistants administered all assessments and a separate group of assistants videotaped scripted parent-child routines at a separate time. None of these assistants participated in delivering the interventions. Although instruments were administered to both parents when possible, only the data from the primary caregivers were analyzed.

Measures

QRS-SF. The QRS-SF is a 52-item true-false instrument measuring four factors (parent and family problems,

Table 1. Demographic Data for Participants

Variable	PBS alone (<i>n</i> = 17) ^a				PFI (<i>n</i> = 18)			
	<i>M</i>	<i>SD</i>	<i>n</i>	%	<i>M</i>	<i>SD</i>	<i>n</i>	%
Parent demographics								
Parent age								
Female	35.1	3.69	17	70.8	37.3	5.41	17	70.8
Male	35.0	2.58	7	29.2	41.7	8.52	7	29.2
Parent race								
Caucasian			19	79			22	92
African American			2	8			1	4
Hispanic			2	8			0	0
Asian			0	0			0	0
Other			1	4			1	4
Parent education ^b	13.8	2.0			15.3	2.4		
High school			12	55			7	32
College			10	45			9	41
Graduate hours			0	0			6	27
Pessimism score (pre)	7.5	1.1			7.9	1.3		
Child demographics								
Age of child	4.1	1.0			4.4	0.9		
Female			2	12			3	17
Male			15	88			15	83
Diagnoses ^c								
Autistic disorder			8	47			11	61
PDD-NOS			4	24			0	0
Other			5	29			7	39
SIB-R (General Maladaptive Index) score	-38.8	7.7			-37.6	8.8		
SIB-R support score (pre)	19.2	9.8			18.7	9.7		

Note. PBS = positive behavior support; PFI = positive family intervention; PDD-NOS = Pervasive Developmental Disorder-Not Otherwise Specified; SIB-R = General Maladaptive Behavior Index of the *Scales of Independent Behavior-Revised*.

^aThe *n* for each group represents the number of families completing intervention.

^b $\chi^2(2, n = 43) = 12.98, p < .01$.

^c $\chi^2(1, n = 35) = 11.68, p < .01$.

pessimism, child characteristics, and physical incapacities; Friedrich et al., 1983). The 11-item pessimism factor measures the parent's pessimism about immediate and future events associated with the child's prospects of achieving self-sufficiency and was used as the measure of parental pessimism in this study. The pessimism scale ranges from 1 to 11; based on prior research, a score of 6 or higher was used for inclusion in this study. Several studies have supported the reliability and validity of the QRS-SF (Scott, Sexton, Thompson, & Wood, 1989).

SIB-R (GMI). The SIB-R is a comprehensive, norm-referenced assessment used to measure the skills required to function independently in home, social, and community settings. The problem behavior section yields a GMI. The scores on the GMI (used in screening and as an outcome measure) indicate the degree of seriousness of the following behaviors: hurtful to self, hurtful to others, destructive to property, disruptive behavior, unusual or repetitive habits,

socially offensive behavior, withdrawal or inattentive behavior, and uncooperative behavior. The seriousness of the child's problem behaviors is summarized on the GMI as falling within the following categories: normal = +10 to -10, marginally serious = -11 to -20, moderately serious = -21 to -30, serious = -31 to -40, and very serious = -41 and below. A minimum score of -21 (moderately serious to very serious) was used for inclusion in this study. The SIB-R manual (Bruininks et al., 1996) reports adequate test-retest reliability, interrater reliability, construct validity, and criterion validity for the Maladaptive Behavior Index.

Behavioral observations. Project staff developed a task analysis of home routines identified as most problematic by the family. Common routines included transition periods, demand situations, times when parental attention was removed, and other typical—but stressful—daily situations. The expectations for the child (e.g., putting away toys,

going to bed at night) were written out for the family to implement. The target children were videotaped during 20- to 30-min probes interacting with their parents during these scripted routines prior to and following intervention. The videotaping was conducted unobtrusively at the same time of day on 3 separate days during a 2-week period at each assessment point until there was a stable trend, or until the taping needed to be terminated due to parental concerns. At no time did observers provide feedback to parents on how to intervene with their child.

The videotapes were scored using a 10-s partial-interval time sampling procedure. Trained observers (who were not naïve to the experimental condition but who did not deliver the interventions) scored problematic behavior for the children. The categories of problem behavior included aggression, destruction, opposition, stereotyped behavior, and inappropriate vocalizations. Interobserver agreement was conducted for a minimum of 33% of the videos. The mean for the interobserver agreement data (calculated as agreements/agreements + disagreements) was 92% (80%–100%) for problematic behavior for pre observations and 95.3% (79%–100%) for post observations. Because the original observers were not naïve to condition, an additional observer who was not aware of the experimental conditions scored one pre session and one post session for each child. These observations were then compared with the original data, and the mean for the interobserver agreement data (calculated as agreements/agreements + disagreements) was 86% (72%–100%) for problematic behavior for pre observations and 88.1% (69%–100%) for post observations. Kappa was also calculated from these observations and was 0.64 (suggesting substantial agreement). These data suggest that there were no apparent biases in the original observations.

Attrition. Data were maintained on the parents' attendance of sessions to evaluate their rate of completion and/or attrition from the program. Therapists recorded sessions, indicating dates and lengths of sessions and whether the sessions were completed as scheduled. Length of sessions was used to insure comparable session duration for both treatments. A family was considered as a noncompleter if they refused to continue or failed to attend three consecutive sessions or respond to attempts to schedule. To insure consistency in the data, specific procedures for providing reminders and follow-up following missed sessions (i.e., no more than three attempts to contact the parent) were maintained.

Parent Satisfaction Questionnaire (PSQ). We created a 10-item questionnaire with 5 items used to assess satisfaction with the skills taught through the project (e.g., "I have a greater understanding of what affects my child's behavior.") and 5 items used to assess satisfaction with the outcomes (e.g., "My child's problem behavior has decreased."). Questionnaire items were rated on a 5-point Likert-type scale ranging from 5 (*strongly agree*) to 1 (*strongly disagree*).

This questionnaire was administered immediately after the last intervention session.

Interventions

PBS. In the PBS condition, parents were provided with eight weekly sessions lasting 90 min each based on principles of applied behavior analysis and PBS (Durand, 1990; Hieneman, Childs, & Sergay, 2006). The sessions were formally outlined using a therapist protocol¹ and adhered to the following sequence: Session 1—Introduction and goal setting, Session 2—Gathering information on challenging behavior, Session 3—Analyzing data and plan design, Session 4—Using prevention strategies, Session 5—Using consequences, Session 6—Replacing challenging behavior with appropriate alternatives, Session 7—Implementing the strategies, and Session 8—Monitoring the results. Parents were guided to establish a support team (e.g., of family members and service providers) with whom they would work throughout the process. The therapist helped the parents to analyze patterns surrounding their child's behavior (functional behavioral assessment) and—based on these patterns—develop interventions. The final sessions focused on insuring that the interventions fit the family circumstances and needs, monitoring implementation, and relapse prevention. Although therapists adhered strictly to the written protocols, their primary goal was to help parents apply the principles of PBS to understand and resolve their own problems, rather than just teaching procedures. This was accomplished through questioning (e.g., "What could you do to respond differently given this pattern?") instead of just presenting solutions.

PFI. In the PFI condition, each family also received eight weekly sessions lasting 90 min each. The outline and content of the sessions were identical to the PBS condition with the addition of an adaptation of optimism training (Seligman, 1998). Therefore, in addition to teaching parents how to identify patterns in their child's behavior and develop intervention strategies, they were also helped to identify patterns in their own thoughts and feelings and taught strategies for cognitive restructuring. Practice on identifying thoughts and feelings associated with their child's behavior (e.g., "I feel out of control" and "I must be a bad parent") along with strategies for looking at these situations in a better way was incorporated into these sessions according to the following sequence: Session 1—Identifying situations and associated self-talk; Session 2—Determining consequences of beliefs; Session 3—Disputing current thinking; Session 4—Using distraction to interrupt negative thinking; Session 5—Substituting pessimistic thoughts with positive, productive thoughts; Session 6—Practicing skills to recognize/modify self-talk; Session 7—Practicing skills to recognize/modify self-talk; and Session 8—Maintaining positive changes in self-talk. For example, if a problem situation was being described (e.g., child screaming at a store), in addition to discussing

the possible reason for the difficulty (e.g., child wanting attention), the therapist would also help the parent identify self-talk (e.g., “My child is out of control.”) and problem solve how this self-talk influenced the parent’s behavior (e.g., “I yelled at my child and then spent a great deal of time lecturing on proper behavior.”). In later sessions, parents were helped to create alternative strategies for both dealing with the child problem (e.g., attending to the child for good behavior) as well as their unproductive self-talk (e.g., using an alternative thought such as “This is a situation I can handle.”). Parents in the PBS-alone condition were provided with additional examples or extra time to discuss homework to equate the amount of therapist contact so that both groups received approximately 90 min for each of the 8 sessions (see treatment integrity and fidelity section).

Procedure

All sessions were conducted by therapists with master’s degrees or PhDs and background in PBS and/or clinical psychology. These sessions occurred individually with the parents (i.e., children were not in attendance) at the university or other professional sites. The sessions followed a consistent instructional process in which the therapist introduced each concept by presenting a rationale and description of the features or steps, providing examples, offering an opportunity for the parent to apply the concept, and then assigning homework so that the parent could practice the concept with her child.

Treatment integrity and fidelity. Several quality assurance methods were used to maximize the integrity of the interventions across therapists and participants, and over the course of the study. First, the clinical director provided initial training in the protocols by having the therapists review session tapes and discuss the strategies used, as well as assigning the therapists background reading as needed. The clinical director also facilitated periodic meetings among the therapists (via teleconferencing across sites) to problem solve and achieve greater consistency among the therapists in implementation.

Sessions were videotaped and either delivered to the main research site or digitized and transferred via a virtual private network. Procedural fidelity assessments were completed by research assistants for 89.3% of the sessions via videotapes. These assessments included 10 to 13 objectives to be covered in each session, scoring whether each objective was addressed. These data were used to provide feedback to the therapists, to insure that the protocols were followed and that there was no coverage of optimism training in the PBS conditions. The fidelity data for the sessions (percentage of objectives included) are as follows: PBS = 98.4% (75%–100%) and PFI = 94.6% (64%–100%). Interobserver agreement was assessed for more than 50% of the fidelity

checklists by having a second recorder complete the checklists separately and by comparing scores on an item-by-item basis. Interobserver agreement for the procedural fidelity checklists 98.6% for PBS, 95.8% for PFI (calculated as the number of agreements / number of agreements + number of disagreements). The mean duration of sessions for each condition was 87.3 min ($SD = 12.03$) for the PBS condition and 90.7 min ($SD = 13.23$) for the PFI condition. A t test revealed no significant differences in session duration across groups ($t = 1.48; p > .05$).

Results

Pessimism Data

It was expected that families who completed the eight sessions of PFI would demonstrate a decrease in pessimism (as measured by scores on the QRS-SF pessimism scale). A 2 (treatment condition: PFI vs. PBS) \times 2 (measurement occasion: pre- vs. posttreatment) repeated-measure ANOVA with measurement occasion as a within-subject factor was used to test this hypothesis. This analysis yielded a significant main effect of measurement occasion on the scores of pessimism, $F(1, 33) = 16.41, p < .01$, partial $\eta^2 = 0.33$. For families who completed the eight sessions of either intervention, their posttreatment pessimism scores ($M = 5.77, SD = 2.83$) were significantly lower than their pretreatment pessimism scores ($M = 7.71, SD = 1.23$). Neither the main effect of treatment condition, $F(1, 33) = 0.88, p > .10$, nor the interaction effect between treatment condition and measurement occasion, $F(1, 33) = 0.13, p > .10$, was significant on the pessimism scores.

GMI Data

It was expected that the children of families who completed the eight sessions of PFI would show significant behavioral improvements as measured by the GMI score of SIB-R. This hypothesis was also tested with a 2 (treatment condition: PFI vs. PBS) \times 2 (measurement occasion: pre- vs. posttreatment) repeated-measure ANOVA. This analysis yielded a significant main effect of measurement occasion on the GMI scores, $F(1, 33) = 102.46, p < .01$, partial $\eta^2 = 0.76$. Specifically, for children from families who completed the eight sessions of intervention, their posttreatment GMI scores ($M = -21.51, SD = 10.81$) were significantly improved over their pretreatment GMI scores ($M = -38.14, SD = 8.22$). This main effect was further qualified by the significant interaction effect between treatment condition and measurement occasion on the GMI scores, $F(1, 33) = 4.67, p < .01$, partial $\eta^2 = 0.12$. This significant interaction effect suggests that after completing the eight treatment sessions, children from the PFI group improved significantly more in their GMI scores than children from the PBS

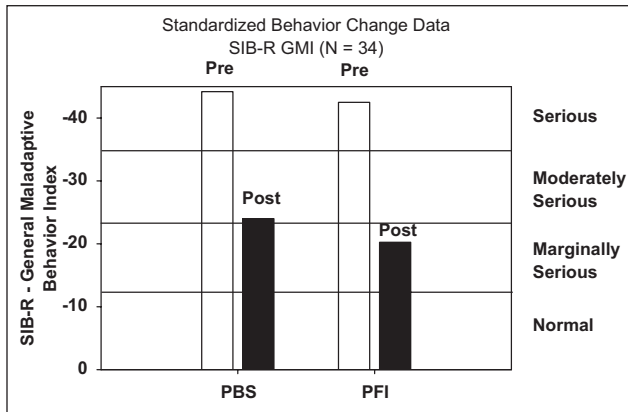


Figure 1. Mean differences in values from the administrations of the General Maladaptive Index (GMI) of the *Scales of Independent Behavior-Revised* (SIB-R) for the PBS-alone group and the PFI group prior to and post intervention.

Note. The standardized categories for behavior severity (from “normal” to “serious”) are plotted on the right axis. Both groups had significantly improved scores from pre to post, with the PFI group improving significantly more than the PBS group.

group (see Figure 1). We further calculated the reliable change index based on Jacobson and Truax (1991) for each child ($M = 1.94$, $SD = 1.19$). Specifically, 13 children in the PFI condition (72.22%) showed reliable improvement in their GMI scores, whereas only 6 families in the PBS condition (35.29%) showed reliable improvement in their GMI scores.

Behavioral Observation Data

It was expected that the children of families who completed the eight sessions of PFI would show significant improvements in problem behaviors as measured by behavioral observations. This hypothesis was also tested with a 2 (treatment condition: PFI vs. PBS) \times 2 (measurement occasion: pre- vs. posttreatment) repeated-measure ANOVA. This analysis yielded a significant main effect of measurement occasion on the observed problem behaviors, $F(1, 33) = 122.91$, $p < .01$, partial $\eta^2 = 0.79$. Specifically, for children from families who completed the eight sessions of intervention, their posttreatment problem behaviors ($M = 16.46$, $SD = 10.71$) were significantly improved over their pretreatment problem behaviors ($M = 46.71$, $SD = 16.04$). Furthermore, we calculated the reliable change index for each child ($M = -1.64$, $SD = 0.87$). Specifically, 10 children in the PFI condition (55.56%) showed reliable changes in their problem behaviors, whereas only 5 children in the PBS condition (29.41%) showed reliable changes in their problem behaviors. Neither the main effect of treatment condition, $F(1, 33) = 3.05$, $p > .05$, nor the interaction effect between treatment condition and

measurement occasion, $F(1, 33) = 0.38$, $p > .10$, was significant on problem behaviors.

Attrition Data

It was expected that the families in the PFI group would complete the eight sessions in a shorter time and show less attrition (dropout) than the PBS group. First, to test whether the families in the PFI group would complete the eight sessions in a shorter time than the PBS group, survival analysis (i.e., Cox regression) was used. Specifically, the conditional probability, $h(t)$ (i.e., the “hazard probability” in survival analysis terms), for families to complete the treatment over time was predicted by the type of treatment they went through. The resulted Cox regression coefficient was not significant ($B = 0.10$, $SE = 0.35$, Wald Statistic [1] = .09, $p > .10$), indicating that there was no differences in the amount of time for PFI ($M = 79.39$ days, $SD = 26.89$) and PBS ($M = 82.00$ days, $SD = 22.08$) groups to complete the treatment sessions.

Second, to test whether families in the PFI group would show less attrition than in the PBS group, logistic regression was used. Specifically, the probability for families to drop out of the treatment was predicted by the type of treatment they went through. The resulted logistic regression coefficient was not significant ($B = 0.16$, $SE = 0.57$, Wald Statistic [1] = .08, $p > .10$), indicating that there was no differences in the attrition rates for PFI (33.33%) and PBS (37.04%).

Parental Satisfaction Data

Parents in both groups rated the respective programs highly on a PSQ (for PBS condition: $M = 4.43$, $SD = 0.71$; for PFI condition: $M = 4.59$, $SD = 0.71$) indicating that they “slightly agreed” or “strongly agreed” with all questions related to their satisfaction with the skills taught through the project and their satisfaction with the outcomes. The two exceptions, “I am able to implement the strategies in my child’s plan consistently” (for PBS condition: $M = 3.65$, $SD = 0.86$; for PFI condition: $M = 4.47$, $SD = 0.49$) and “My child’s positive behavior has increased” (for PBS condition: $M = 3.71$, $SD = 0.77$; for PFI condition: $M = 4.50$, $SD = 0.51$) indicated scores lower than “slightly agreed” for the PBS group. Independent-sample t tests indicated that the scores on these questions differed significantly between the two groups ($t = 3.47$, $p < .001$, Cohen’s $d = 1.17$; and $t = 3.60$, $p < .001$, Cohen’s $d = 1.21$, respectively), suggesting that the PFI group believed that they were better able to implement the strategies and that their child’s positive behavior improved.

Discussion

This study evaluated the effectiveness of two forms of clinic-based behavioral parent training on the severe

challenging behaviors of children with autism and other developmental disabilities. Children whose parents participated in both treatment groups significantly improved their behavior problems as measured by both standardized scores (the GMI of the SIB-R) and behavioral observations during structured settings at home. Adding a cognitive-behavioral component to the parenting program resulted in even greater reductions in child problem behavior on the GMI when compared with the PBS alone group, suggesting parents might have been given new cognitive tools for interpreting their child's behavior in a more positive light. The scores on a measure of pessimism were reduced for parents in both groups following intervention and there was no significant difference in the groups on measures of attrition. Although both groups were highly satisfied with the programs and the outcomes, parents in the PFI group reported that they were better able to implement the strategies for their child's behavior and thought that (in addition to reductions in challenging behavior) their child's positive behavior improved as well.

An important aspect of this study was delivering manualized parent training to families without direct feedback on the implementation of the procedures at home. At no time did the therapists or the observers give feedback to parents on how they were interacting with their child based on the home observations. Feedback was delivered solely as a function of the discussion that took place during the 8 sessions. In contrast, traditional PBS is almost exclusively delivered with training that includes role-playing and direct feedback on parent responses to the child (e.g., Koegel, Bimbela, & Schreibman, 1996). The results of this study suggest that an 8-week clinic-based intervention could result in improvements not only on parental reports of child behavior but also on separate home observations of parent-identified problematic situations. Given the time-intensive nature of traditional PBS, it would be an important addition to our treatment armamentarium to be able to provide parents who face significant challenges at home with guidance that could be delivered in a more cost-effective manner. This finding will require replication and extension to demonstrate the effectiveness of this approach to parent training.

It is important to reemphasize that the parents included in this study were selected based on their high scores on a measure of parental pessimism. More "optimistic" parents were explicitly excluded from participation in this program. Often the families that were selected were referred to the project because they had dropped out of previous programs offered by their schools or because they resisted collaborative efforts with teachers. Therefore, the relative success of both intervention strategies (PBS and PFI) provides hope that our interventions can be disseminated to families with these types of personal challenges. Our ability to maintain participation by these families may have been the result of a number of factors. We did not, for example, place a great

deal of emphasis on the collection of large amounts of home data by the parents. When parents did not complete homework assignments (e.g., filling out a log of child problems or their thoughts about difficult situations), we had them reconstruct this information in the sessions. This population is particularly vulnerable to feelings of guilt (e.g., "I am not a good mother.") and we therefore did not want to exacerbate these interfering thoughts. In addition, we emphasized in both groups the need for support teams (e.g., including grandparents, teachers, and so on in the program) to assist them with their efforts, a strategy consistent with current PBS approaches (e.g., Hieneman et al., 2006). This may have also contributed to the relatively low rate of attrition. It should be noted that small sample size may be the reason that there was nonsignificant findings in attrition. This is particularly the case for the logistic regression, as the attrition rate differed by almost 4% (i.e., less attrition for the PFI group).

Research on the serious challenging behaviors of children with developmental disorders almost exclusively relies on single-subject designs (Brookman-Frazee et al., 2006; Koegel et al., 1996; Steiner, Koegel, Koegel, & Ence, 2011). This study is one of the few randomized clinical trials (RCTs) designed to assess the effectiveness of PBS on the severe challenging behaviors observed among children with developmental disorders (for an exception, see Brookman-Frazee, Drahota, & Stadnick, in press). Other RCTs focusing on helping parents with their children who display problem behavior typically limit the study population to those children with less severe challenging behaviors (e.g., Plant & Sanders, 2007; Quinn, Carr, Carroll, & O'Sullivan, 2007; Whittingham et al., 2009). The few studies that examined parent training interventions for serious behavior problems used medication alone or in combination with behavioral intervention (e.g., Aman et al., 2009). Our goal was to evaluate whether behavioral parent training by itself could result in meaningful improvements in serious child behavior problems and the results support this hypothesis.

Next steps in this research involve identifying the mechanisms responsible for behavior change in the children. In particular, it will be important to understand the reasons behind the greater change in problem behavior in the PFI group. One clue to the differences may come from the reports by the parents in the PFI group that they were more confident in their ability to implement the behavior strategies (i.e., more likely to endorse the statement, "I am able to implement the strategies in my child's plan consistently"). Although we did observe improvements in the pessimism scores from pre to post intervention across groups, we did not observe differences in the measure of pessimism between the groups after intervention. This may reflect a limitation in using the pessimism scale of the QRS-SF to assess changes in parental perceptions. In general, this scale is designed to assess how parents perceive their child's future. Unfortunately, the scale does not directly assess self-efficacy (e.g., changes in how

parents view their abilities, or how they view the opinions of others) nor is it designed to measure changes in their attitudes about their child's potential for changing discrete behaviors in specific situations. In other words, the scale assesses their overall perceptions about their child's future which, given the nature of the groups (e.g., ASD), may be more limited in the ability to affect change. Future research will need to use measures more sensitive to these aspects of optimism/pessimism.

An additional limitation of the present study was the absence of a control group that did not receive parent training (e.g., no treatment, waitlist, attention placebo). The purpose of such groups is to assess whether behavior changes as a function of factors such as maturation, the passage of time (e.g., spontaneous recovery), anticipation of change, and so on. However, there is less concern with these types of problem behaviors displayed by this group given their relative stability over time (e.g., Totsika et al., 2008).

A unique aspect of this study is the explicit intervention on parental attitudes that may prove to be significant obstacles to successful child intervention. Although other studies report on the effects of parent training (i.e., the teaching of parent training skills) on concepts such as self-efficacy (e.g., Whittingham et al., 2009), the PFI intervention is designed to both teach parenting skills as well as directly assist parents with attitudes that may interfere with their ability to implement these skills. Anyone who provides PBS to families may need to expand their repertoire to assist them with any personal difficulties that may be barriers to successful outcomes (Durand, 2011).

This study provides support for the success of PBS to improve the severe behavior problems of children with developmental disorders. The addition of a cognitive-behavioral intervention appears to have boosted the positive intervention effect for this population of pessimistic families. Future efforts in this area will be needed to address the needs of this population of families who are in great need of psychological as well as educational support.

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1. The protocols and parent support materials for the PBS and PFI conditions are available from the first author.

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