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Following Parent Lead: Outcomes of a Brief, Individualized Pivotal Response Treatment Education Program for Parents of Children Newly Diagnosed with Autism

A Dissertation submitted in partial satisfaction of the

requirements for the degree of Doctor of Philosophy

in Education

by

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ABSTRACT

Following Parent Lead: Outcomes of a Brief, Individualized Pivotal Response Treatment Education Program for Parents of Children Newly Diagnosed with Autism

by

Kelsey Ann Elizabeth Oliver

Families whose child has recently received a diagnosis of autism are a unique population in particular need of support and guidance. These parents often experience feelings of stress, fear, and uncertainty, which can be further complicated by challenges with understanding and navigating services. It may be especially important to consider parent preferences and experiences for the development of effective early intervention programs. Pivotal Response Treatment (PRT) and Positive Behavior Support (PBS) are two evidence-based approaches that are frequently used in the treatment of individuals with autism. However, there appears to be a paucity of literature on PBS plans that incorporate PRT education as the foundation of the multicomponent support plan. The current study examined outcomes of brief PRT education in the context of a PBS program that was individualized based on parent-reported needs. The education program was found to have a positive impact on various measures of well-being for parents whose child was newly diagnosed with autism and a positive impact on child social communication for some children. Future directions and limitations are discussed.

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Overview

There is a paucity of research regarding the impact of brief, intensive parent education programs in Pivotal Response Treatment (PRT) on the well-being of parents of children who are newly diagnosed with autism. This study aims to examine how a brief PRT parent education program embedded in a Positive Behavior Support (PBS) plan individualized to reflect parent-reported goals impacts measures of parent stress and self-efficacy immediately following the education program.

Parents of Children Recently Diagnosed with ASD

The time recently following a child receiving an autism diagnosis can be extremely stressful and confusing for many families. Parents have reported a range of emotions and concerns following their child's diagnosis, including shock, disbelief, anger, uncertainty, fear, depression, and often relief (Carroll, 2013; Casey et al., 2012; Hutton, & Caron, 2005; Gaspar de Alba & Bodfish, 2011; Mansell & Morris, 2004; McGrew & Keyes, 2014; Taylor & Warren, 2012). Many parents experience mourning over the loss of the typically developing child for which they had planned and can even exhibit symptoms of post traumatic stress following the diagnosis (Casey et al., 2012). Further, these parents often find accessing and navigating the complex service delivery system to be difficult, stressful, and confusing (Mansell & Morris, 2004; Hutton, & Caron, 2005; Keenan, Dillenburger, Doherty, Byrne, & Gallagher, 2010). Consequently, families whose child recently received an autism diagnosis are recognized to be a particularly vulnerable population in need of increased support and guidance (Carroll, 2013; Gray, Msall, & Msall, 2008; Keenan, Dillenburger, Doherty, Byrne, & Gallagher, 2010). Unfortunately, these families frequently do not receive the individualized information and comprehensive support they need in order to make

informed treatment decisions (Dunst, Trivette, & Hamby, 2007; Tolmie, Burck, & Kerslake, 2017). While there is some preliminary research examining interventions supporting parents of children who have just received an autism diagnosis (Banach, Iudice, Conway, Couse, 2010; Tolmie, Burck, & Kerslake, 2017), this body of research is very limited considering the increasing prevalence rates of autism and the related service-need discrepancy (Steiner, Koegel, Koegel, & Ence, 2012).

Parent Education and Involvement in ASD

Parent education is increasingly recognized as a crucial intervention component for successful outcomes for children with autism. Parent involvement and participation in treatment programming, including the implementation of evidence-based interventions, is highly desirable and recommended by the National Research Council (Brookman-Frazee, Vismara, Drahota, Stahmer, & Openden, 2009; Koegel & Schreibman, 1996; NRC, 2001). An early study regarding parent education for families of children with autism compared a clinical model of direct treatment, in which only a clinician worked one-on-one with a child, with a parent education model, in which a clinician trained the parent to work one-on-one with their child (Koegel, Schreibman, Britten, Burke, & O'Neill, 1982) and found that children had better outcomes when their parent was actively involved in their treatment program.

Positive Behavior Support and Families

Decades of research has established Positive Behavior Support (PBS) as a gold standard of how to involve parents and support families of children with disabilities. The goals of PBS programs are to promote effective, durable changes in child behavior and skills, to augment problem-solving skills for parents and family members, and to have a meaningful

impact on family quality of life (Carr et a., 2002; Dunlap, Carr, Horner, Zarcone, & Schwartz, 2008; Lucyshyn et al., 2007; Lucyshyn, Albin, & Nixon, 1997). The core features considered to be the foundation of PBS for families are outlined in further detail in the following sections and include (a) collaborative partnerships with members of the family; (b) attending to family values, goals, and resources in order to ensure good contextual fit of the support plan; (c) utilizing functional assessment to understand problem behavior and respond effectively; (d) multicomponent support plans including prevention strategies in addition to teaching new skills; and (e) using family routines and common activities for intervention and analysis (Buschbacher, Fox, & Clarke, 2004; Clarke, Dunlap, & Vaughn, 1999; Lucyshyn et al., 2007; Lucyshyn, Horner, Dunlap, Albin, & Ben, 2002).

Collaborative partnerships. Collaborative approaches to treatment planning, wherein professionals and families collaboratively provide input and guide treatment, contribute to more positive outcomes than prescriptive treatment planning, during which the professional directs treatment planning and decision-making (Brookman-Frazee, & Koegel, 2004; Moes & Frea, 2000). Collaborative, family-directed treatment often involves interviewing families on their needs, preferences, support systems, etc. to develop a treatment plan as a team in order to address disruptive behavior and other skills. Child outcomes of parent-clinician collaborative approaches include decreases in challenging behaviors, increases in compliance, increased levels of positive affect, greater verbal responsivity, and increased engagement with their parents (Brookman-Frazee, & Koegel, 2004). Parent outcomes of parent-clinician collaborative approaches include decreased levels of observed parent stress and increased levels of parent confidence during parent-child interactions. These findings suggest that parent education programs emphasizing collaboration and partnership

between parents and clinicians can be effective at improving both child and family well-being.

Contextual fit. It is important to ensure that PBS plans have good contextual fit with family goals and values. Establishing PBS plans with good contextual fit involves collaborating with families by asking open-ended questions during semi-structured interviews about their self-reported goals, values, areas and times of need, strengths, and support systems (Lucyshyn, Albin, & Nixon, 1997; Lucyshyn et al. 2015; Moes & Frea, 2000). This process recognizes parents to be the experts on their family ecology (Lucyshyn, Albin, & Nixon, 1997). Contextual fit, or goodness of fit, is regarded as an important variable contributing to the durability of family support interventions (Lucyshyn et al., 2007). PBS plans with good contextual fit have been defined as "multicomponent support plans that are congruent with relevant child, implementor, and setting variables" in addition to the self-reported needs of family members (Lucyshyn, Albin, & Nixon, 1997)

Functional assessment. Another component of PBS plans involves providing parents with instruction on functional behavior assessment (FBA). Past research has combined assessment of the family ecology with conducting FBA for problem behaviors in order to develop a multi component support plan (Lucyshyn & Albin, 1993; Lucyshyn, Albin, & Nixon, 1997). The first step in this process is often an interview with parents to determine potential setting events and maintaining factors for their child's problem behaviors (Buschbacher, Fox, & Clarke, 2004; Lucyshyn et al., 2015). After the function of a behavior is determined through interviews and observation, appropriate replacement behaviors that serve the same function are established and taught to children.

Multicomponent support plans. The literature proposes that effectively supporting families is frequently a "complex endeavor in which no single technique or program will suffice" (Wang, Lam, Singer, & Oliver, 2016). Once family goals, values, and routines have been established, multicomponent support plans can then be constructed based on teaching approaches that fit with the family's desires (Moes & Frea, 2000). Multicomponent support plans for families can include intervention strategies for setting events, preventative techniques, teaching strategies, and consequence responses (Buschbacher, Fox, & Clarke, 2004; Lucyshyn et al., 2015). They often involve functional communication training and differential reinforcement procedures (Moes & Frea, 2000).

Family routines and activities. Another core feature of quality PBS plans is incorporating intervention into everyday family routines and activities. This generally refers to routines within the home such as bedtime, mealtime, toileting, but can also include any leisure or play activities families in which families engage together, such as watching tv, playing board games, or going to the park (Buschbacher, Fox, & Clarke, 2004; Koegel, Stiebel, & Koegel, 1998; Moes, & Frea, 2000).

Parent Education in Pivotal Response Treatment

Pivotal Response Treatment (PRT), which aims to target the pivotal area of motivation so that collateral positive effects can occur in other domains of behavior affected by autism, is a treatment approach commonly taught to parents (Koegel & Koegel, 2006; Koegel, Koegel, & Kuriakose, 2012). It has been suggested that because PRT is a naturalistic approach, it requires little to no "extra" time outside of a family's everyday routine to be implemented (Steiner, Koegel, Koegel, & Ence, 2011), providing parents with a cost-effective opportunity to provide virtually "round-the-clock" intervention (Koegel, Koegel,

Kellegrew, & Mullen, 1996; Koegel, Koegel, Frea, & Smith, 1995). Furthermore, parent training and education can contribute to increased generalization of a child's skills, as parents can implement PRT in a wide variety of contexts both in the home and the community.

A body of literature has focused on the positive collateral benefits that parent training and education programs can provide for parents and families, including reduced stress levels, increased self-efficacy, increased positive affect, improved quality of parent-child interactions, and improved quality of sibling interactions (Bandura, 1997; Brookman-Frazee & Koegel, 2004; Koegel, Bimbela, & Schreibman, 1996; Koegel, Steibel, & Koegel, 1998; Moes, 1995; Schreibman, Kaneko, & Koegel, 1991; Steiner, Gengoux, Klin, & Chawarska, 2013; Steiner, Koegel, Koegel, & Ence, 2012). Parent training programs in PRT have been shown to empower families by improving parents' competence with implementing techniques to facilitate their child's communication, which can subsequently contribute to a reduction in stress.

There is an extensive amount of research demonstrating the efficacy of delivering PRT parent-training programs individually to one family at a time (Baker-Ericzen, Stahmer, & Burns, 2007; Coolican, Smith, & Bryson, 2010; Schreibman & Koegel, 2005; Stahmer & Gist, 2001; Steiner, Gengoux, Klin, & Chawarska, 2013; Steiner, Koegel, Koegel, & Ence, 2012; Symon, 2005; Vernon, 2014; Vernon, Koegel, Dauterman, & Stolen, 2012). This approach can be advantageous because it allows each child's intervention to be highly individualized and provides parents with opportunities to practice techniques while receiving direct feedback (Kaiser & Hancock, 2003; Steiner et al., 2012). Further, due to the heterogeneity and complexity of families of children with autism, the literature has

recommended the development of support plans on an individual, family-by-family basis to tailor interventions and evaluations (Wang, Lam, Singer, & Oliver, 2016).

In order to address the service-need discrepancy, some research has sought to establish effective strategies for providing interim PRT treatment to families that are not in close proximity to treatment facilities or that are waiting to receive treatment (Nefdt, Koegel, Singer, & Gerber, 2010; Koegel, Symon, & Koegel, 2002). Such research is vital because these families may be particularly vulnerable to the service-need discrepancy since access to quality services is limited in many areas and waitlists for ongoing treatment can be long. For example, Koegel, Symon, & Koegel (2002) provided families from geographically distant locations with a 25-hour training program in PRT. Following this brief parent education program, parents demonstrated mastery of PRT techniques and exhibited increased happiness. There were also significant gains in social-communication for all children. Further, parents generalized these skills to the home setting upon completing the program and maintained these gains for up to one year. These findings are highly encouraging and suggest that brief parent education programs in PRT are an effective way to disseminate PRT to families who are on waitlists for more comprehensive or ongoing treatment. However, the research appears highly limited regarding how these brief, individualized PRT programs could be incorporated as a component of a PBS plan for families who don't have immediate access to services (Wainer, Hepburn, & Griffith, 2017). Further, information is limited on how this impacted parents.

Similarly, recent research compared a strength-based approach to a deficit-based approach to parent training in PRT (Steiner, 2011). While teaching parents to implement PRT with their child, therapists made statements that either highlighted strengths of the child

(e.g., “He seems to be interested in many toys today”) or emphasized certain deficits (e.g., “He’s having trouble staying engaged with one toy at a time”). It was found that during the strength-based condition, parents exhibited improved overall affect. Results also indicated that in the strength-based approach condition, parents made more positive statements about their child and exhibited more physical affection toward their child compared to a deficit-based approach to parent training. Child responsivity was also higher in the strength-based condition. This study suggests that focusing on a child’s strengths and capabilities during parent training sessions in PRT can improve the quality of social interactions between the parent and child in addition to increasing the child’s verbal communication.

It is evident that parent training in PRT is both a cost effective method of disseminating evidence-based intervention and a highly efficacious approach for improving child and family outcomes. What is not evident in the literature, however, is a clearly delineated process for implementing PRT parent education within the context of a multicomponent PBS program. Despite PRT being considered one of few empirically validated treatments for autism and having extensive rigorous experimental support, there appears to be a significant gap in the research regarding how to effectively incorporate PRT into PBS programs for families, especially for families with a recent autism diagnosis. As such, it is unclear what effect such comprehensive parent education programs could have on family well-being.

Purpose of Study

The aim of this study was to examine how a brief PRT parent education program embedded within an individualized PBS plan incorporating parent-reported goals impacted parent well-being for families with a recent ASD diagnosis.

Newly diagnosed families. Research on supporting parents whose young child as recently been diagnosed with ASD still appears to be in its early stages (Davis, & Carter, 2008; Keen, Couzens, Muspratt, & Rodger, 2010; Tomlie, Bruck, & Kerslake, 2017). It has been suggested that "parents of very young, newly diagnosed children with ASD who engage in parent-mediated intervention are likely to be a unique community with a number of strengths and areas of unmet need" (Wainer, Hepburn, & Griffith, 2017). Thus, gathering information on in the individual needs of these families to guide treatment programming might better inform the development of early intervention programs.

PRT and PBS. There appears to be paucity of literature on PBS plans that incorporate PRT as the foundation of the multi-component support plan. While numerous parent support and education programs have been established for addressing child goals and parent well-being, the literature appears scarce on how PRT might be embedded within a comprehensive PBS treatment package and associated outcomes. While the primary focus of the current study was to teach parents to implement PRT, parents were also provided with strategies within a comprehensive PBS plan to address other skills, such as challenging behaviors and social play skills. These skills are important to address, as a child's social relatedness has been associated with high levels of stress for both mothers and fathers (Davis & Carter, 2008) and parental stress has been predicted by their child's externalizing behaviors and regulatory problems (Hastings et al., 2005).

Parent reported self-goals. Parents are frequently asked about their goals for their child (Brookman-Frazee & Koegel, 2004; Gaspar de Alba & Bodfish, 2011; Overton & Rausch, 2002). However, research is far more limited on asking parents to identify goals for *themselves* during treatment programs, and there doesn't appear to be research on doing this

during PRT parent education. In fact, the majority of related research focuses on improving outcomes for the child and places less emphasis on parent outcomes (Karst & Van Hecke, 2012; Wainer, Hepburn, & Griffith, 2017). It has been suggested that assisting parents in identifying and understanding their own needs is a critical component of problem-solving skills that parents will utilize repeatedly as they face challenges regarding their child (Turnbull, 1988). Early intervention can thus be an important time for professionals to assist parents in prioritizing their goals and needs.

Research Questions

The following research questions were addressed:

For families whose child recently received a diagnosis of ASD, will a brief PRT parent education program embedded in an individualized PBS plan incorporating parent-reported goals have an impact on:

1. Parent stress?
2. Parent confidence?
3. Parent self-efficacy?
4. Parent hope?
5. Child verbal initiations?

Method

Participants

Participating in this study were three young children diagnosed with autism and four parents. Each child had one primary caregiver participate, with the exception of family two. This was done to remain consistent with the principles of PBS, as this family expressed during assessment interviews that both parents equally shared caregiving responsibilities and

that their primary goal was for both parents to learn to implement intervention strategies. Child participants were selected based on their (a) current age (b) recency of diagnosis, and (c) basic social-communication skills. Age criteria ranged from 24-54 months. Children had received a diagnosis of autism spectrum disorder no more than one year prior to enrolling in the study. Children were required to have no more than 500 words in their repertoire according to parent report.

Family One - Andrew and Kim

Child One, "Andrew" , age 4:1, was a Caucasian male who received a diagnosis of autism at age 3:11, or two months before participating in the study. Andrew was an only child and lived at home with his mother and father in a semi-rural area in California, though at the time of the study his parents were going through a separation and he was transitioning to living part-time with his mother at his grandmother's home. He attended preschool in a special needs class for a total of nine hours per week, where he received 30 minutes per week of services from a speech-language pathologist. Andrew had not received any in-home services at the time of the study and had no comorbid medical or psychiatric diagnoses.

According the MacArthur Bates Communicative Development Inventory, the age equivalence of Andrew's language production was 2:1, which was 2:0 behind his chronological age. The age equivalence of Andrew's language comprehension was 1:5, which was 2:8 behind his chronological age. He occasionally engaged in verbal initiations to others, primarily for gaining attention and sharing information (e.g., saying "look", "see, mama", "it's a [label of item]", etc.) and sometimes asked 'what' questions (e.g., "what's that?") It seemed, however that his repertoire of initiations was limited, as he tended to use the same phrases repeatedly. Andrew was not observed to consistently verbally request

preferred items, instead using nonverbal communication such as reaching, pointing, and/or grabbing.

Andrew's mother, Kim, was the primary caregiver participating in this education program. She was a 35 year-old European-American female who worked in retail. Kim was married but going through a separation at the time of the study. Prior to participating in the study, Kim had no exposure to PRT and had not received instruction on the implementation of PRT or other behavioral interventions.

Family Two - Rohan, Ravi, and Prisha

Child Two, "Rohan", age 3:1, was Indian-American male who received a diagnosis of autism at age 2:1, or one year before participating in the study. Rohan was an only child and lived at home with his mother and father in a small town in Texas. He attended an Applied Behavior Analysis (ABA) based special day class for approximately 12 hours per week. He did not receive any in-home intervention services and had no comorbid medical or psychiatric diagnoses.

According the MacArthur Bates Communicative Development Inventory, the age equivalence of Rohan's language production was 1:8, which was 1:5 behind his chronological age. The age equivalence of Rohan's language comprehension was 1:1, which was 2:0 behind his chronological age. Baseline observations indicated that Rohan would occasionally spontaneously initiate one- and two-word requests depending on the item or activity, though he did not ask questions. Baseline observations and parent report also indicated that Rohan infrequently engaged in eye contact when requesting or social referencing when engaging in activities with others. It was also observed and reported that he would sometimes independently initiate using a few phrases in Hindi.

Rohan's father, "Ravi", and his mother, "Prisha", were both the primary caregivers participating in this study. Ravi was a 34 year-old Indian-American male who worked as a software engineer. Prisha was a 34 year-old Indian-American female who worked as a doctor. In terms of previous exposure to PRT, Ravi and Prisha both attended the Annual Pivotal Response Treatment Conference in 2017 and had read *The PRT pocket guide: Pivotal response treatment for autism spectrum disorders* (2012). Prior to participating in the study, neither parent had received instruction on the implementation of PRT or other behavioral interventions.

Family Three - Alex and Cassie

Child Three, "Alex", age 3:2, was an Asian-American male who received a diagnosis of autism at age 2:11, or three months before participating in the study. Alex was an only child and lived at home with his mother and father in a large city in California. He attended a Mandarin-immersion Montessori preschool for 35 hours per week alongside typically developing peers. He did not receive any in-home intervention services at the time of the study and had no comorbid medical or psychiatric diagnoses.

According the MacArthur Bates Communicative Development Inventory, the age equivalence of Alex's language production was 1:11, which was 1:3 behind his chronological age. The age equivalence of Alex's language comprehension was 1:8, which was 1:6 behind his chronological age. Baseline observations indicated that Alex would occasionally spontaneously initiate requests and questions ranging from one to five words in length depending on the item or activity. Baseline observations and parent report also indicated that Alex infrequently engaged in eye contact when requesting or social referencing when engaging in activities with others.

Alex's mother, Cassie, was the primary caregiver participating in this education program. She was a married, 38 year-old Asian/Taiwanese female who was a stay-at-home parent that previously worked in healthcare consulting. Prior to participating in the study, Cassie had read some of *The PRT pocket guide: Pivotal response treatment for autism spectrum disorders* (2012) but had not received instruction on the implementation of PRT or other behavioral interventions.

Table 1

Parent Demographics

	Kim	Ravi	Prisha	Cassie
Parent/Child Dyad	1	2	3	4
Age	35	34	34	38
Occupation	Retail	Software Engineer	Doctor	Stay-at-home parent
Ethnicity	European/ American	Asian/Indian	Asian/Indian	Asian/ Taiwanese
Marital Status	Separated	Married	Married	Married

Table 2

Child Demographics

	Andrew	Rohan	Alex
Parent/Child Dyad	1	2,3	4
Age	4:1	3:1	3:2
Age at ASD Diagnosis	4:0	2:1	2:11
Words Produced* (Age Equivalence)	2:1	1:8	1:11
Words Understood* (Age Equivalence)	1:5	1:1	1:8

*MacArthur-Bates Communicative Development Inventory

Design

This study utilized a non-concurrent multiple baseline design across participants (Bailey & Burch, 2002). This design is ideal for this particular study because it allows for flexibility in an applied setting and can account for individual differences that might occur in response to treatment (Christ, 2007; Kazdin, 2011). It is also suitable for this study due to the irreversible nature of the target behaviors being examined (Cooper, Heron, & Heward, 2007). In a multiple baseline design, baseline data of varying lengths are collected for each participant, an independent variable is introduced, and behavior is monitored and compared across conditions (Bailey & Burch, 2002). Because each baseline phase occurs for a different duration for each participant, changes in behavior that occur after treatment implementation can be attributed to the treatment itself rather than external variables, supporting the internal validity of this design (Kazdin, 2011). Further, a non-concurrent design can help to account for history, or extraneous events that can the potential to influence outcomes (Christ, 2007).

Procedure

Baseline. For baseline data collection, each family was instructed to submit via a password-protected, HIPAA compliant Box account three videos per week from the time they enrolled in the study until they began intervention. There were three baseline probes for parent one, five baseline probes for parents two and three, and ten baseline probes for parent four. Parents were instructed to videotape the primary caregiver playing with the child as they normally would for 5 minutes while keeping both the caregiver and child within the frame of the video.

Intervention. The foundation of the intervention focused on teaching parents to implement PRT with their child as outlined in *How to Teach Pivotal Behaviors to Children*

with Autism: A Training Manual (Koegel et al., 1989). PRT instruction was embedded in a PBS plan. Consistent with the core principles of PBS, parent education consisted of (a) collaborative partnerships, (b) functional assessment (c) contextual fit (d) multicomponent support plans (e) family routines and activities. The literature suggests that in order for family support to be efficacious, intervention must often contain multiple components or techniques (Wang, Lam, Singer, & Oliver, 2016). Thus, the current study focused on PRT education and training incorporated into the complementary approach of PBS. The following sections outline the intervention program.

Assessment Interviews. In order to establish a collaborative partnership and develop a multicomponent support plan that had good contextual fit with family routines and activities, brief, semi-structured intake interviews with caregivers took place on the first day of the program. Consistent with research on cooperative planning with families of children with autism (Lucyshyn et al., 2007; Lucyshyn et al. 2015), caregivers were asked about their goals for themselves and their child during the program, their child's strengths, effective reinforcers, daily routines, etc. Providing parents an opportunity to express their goals for their child and themselves may be helpful for both individualizing treatment and validating the role of parents as active, meaningful contributors to their child's development (Turnbull, 1988). This also provided the clinician with useful information to guide the treatment program for better contextual fit for the family. Interviews were audio recorded using an iPod, uploaded to Box, and transcribed by an undergraduate research assistant majoring in psychology. Treatment goals were then developed by the author for the parent and the child based on the interview information. These goals were presented to and discussed with parents

prior to beginning intervention to ensure that the clinician had accurately interpreted what the parent had reported.

Parent Education. The parent education program occurred for approximately 20 hours across five days. Intervention occurred for approximately four hours each day, with a two-hour session in the morning and a two-hour session in the early afternoon. The first session occurred in clinic rooms in the Koegel Autism Center while the majority of afternoon sessions were conducted in a community setting of the parent's preference (e.g., parks, playgrounds, stores, beach, zoo, children's museum, etc.) In addition to helping parents and children generalize their skills to a variety of settings, this was done in order to ensure the intervention was a good contextual fit with common family routines and activities. Additionally, community settings were conducive to addressing certain parent-reported goals, such as safety behaviors.

Each day of the parent education intervention consisted of (a) a preliminary check-in with parents for collaborative treatment planning, (b) clinician modeling intervention techniques with the child, (c) parent implementing techniques with the child while receiving clinician feedback.

Preliminary Check-In. At the beginning of each day, the clinician and parents would collaboratively determine the schedule for the sessions that day. This was a three step process involving (1) the clinician asking parents about the skills or strategies they felt they needed further guidance addressing, (2) the clinician expressing what skills or intervention strategies they felt would be important to focus on that day, and (3) collaboratively developing a general schedule for the day that included both parent and clinician preferences. For example, a parent might request additional help with addressing a disruptive behavior, while

the clinician might suggest they focus on the immediate reinforcement component of PRT, both of which would be addressed during the sessions that day.

Modeling and Teaching Intervention Strategies. Based on the goals parents identified for themselves and for their children, individualized evidence-based intervention approaches were modeled and taught to parents. The primary goal of this education program was to provide parents with training in PRT, which is outlined in *How to Teach Pivotal Behaviors to Children with Autism: A Training Manual* (Koegel et al., 1989) and include following child's choice in the selection of toys/activities, reinforcing attempts, varying hard and easy tasks, producing desired behaviors from multiple cues, and using contingent reinforcers. Recent research has expanded upon the literature on PRT by embedding social interactions within the reinforcing stimulus (Vernon, Koegel, Dauterman, & Stolen, 2012). The main idea behind embedded social reinforcement in PRT is to enhance the child's preferred item or activity by making it even more reinforcing for the child than the item or activity would be on its own. Research has shown that children had increased initiations and eye contact when caregivers added a social component to an item or activity during PRT rather than simply giving the child access to the reinforcer, which subsequently had a positive impact on parent affect (Vernon, 2014).

A practice-with-feedback approach was utilized (Brookman-Frazee & Koegel 2004), wherein the clinician modeled certain strategies with the child, then allowed the parent to practice the strategy with their while providing feedback on their implementation. During each session, a clinician would model specific strategies with the child for approximately 5 minutes at a time. Using a general positive teaching approach (Steiner, 2011), the clinician would then instruct the parent to use the strategy with their child while providing the parent

with praise and specific, positive, constructive feedback on parent implementation. Consistent with recommendations in the literature, modeling of skills occurred for no more than 25% of the each session and corrective feedback was used minimally (Ingersoll & Dvortcsak, 2006).

Dyad 1 - Andrew and Kim. Kim indicated that her goals for herself during the education program were to learn how to respond to disruptive behavior (e.g., transitioning from preferred to less preferred activities), learn how to address eloping behavior at home and in the community, and to better understand how to advocate for child with school, specifically in regards to parent rights and navigating the IEP process. Kim expressed that her goals for child during the program were increasing conversational reciprocity, increasing and expanding social communication skills, and increasing appropriate transitions away from preferred items/activities. To address Kim's goals for herself and her child, Kim was provided instruction in the following: a) PRT (Koegel, Koegel, & Kuriakose, 2012), b) functional behavior assessment (FBA) with antecedent strategies and replacement behaviors, c) strategies for transitions away from preferred activities, and d) resources on IEPs, parent rights, and self-advocacy.

PRT. To address Kim's goals of increasing and expanding Andrew's social communication skills, she was taught to implement PRT. When Andrew expressed an interest in an item or activity, Kim was instructed to prompt him to use phrases such as "My turn", "Can I have it?", "I want the toy", etc. to get his needs met. To expand his language, Andrew was sometimes verbally prompted to use an adjective in his request for a preferred item or activity by his mother modeling phrases (e.g., "I want the big dinosaur", "Open the purple Playdoh", etc.) and offering choices (e.g., "Do you want the green dinosaur or the

yellow dinosaur?", "Do you want to build a tall tower or a short tower?", etc.) To address social commenting, Andrew was encouraged to make a comment on the motivating activity in order to continue that endeavor. For example, when playing with toy cars on a track, phrases like "It's so fast!", "This is fun!", or "I won the race!" were prompted for Andrew to say in order to have the activity continued.

FBA, antecedent strategies, and replacement behaviors. Andrew's occasional disruptive behavior was evaluated by the clinician during intervention sessions via FBA. Andrew's mother Kim also received instruction on this process. The FBA involved examining what was occurring immediately prior to Andrew's disruptive behavior (the antecedent) and immediately after the disruptive behavior (the consequence). The primary functions were determined to be attempts to escape undesired tasks, obtain desired items and activities, and avoid transitions away from preferred tasks. Andrew was then taught replacement behaviors that served the same function of his previous inappropriate behaviors, specifically, phrases he could say to communicate his needs and wants to his social partners instead of engaging in undesired behaviors. For example, if it was determined that the function of his disruptive behavior was to avoid leaving a preferred activity, he was taught to say "I want to stay" or "Wait please" to appropriately avoid leaving the activity, and this request was immediately honored. When an undesired object or activity was introduced into his play session, he was taught to say "no thanks" or "I don't want it". Similarly, he was taught to communicate when he wanted an item from someone rather than grabbing it or exhibiting frustration (e.g., saying "Can I have it?", "My turn", "I want the [item]", etc.)

During her assessment interview, Kim expressed concerns about responding to Andrew's eloping behaviors. Through an FBA, the functions of Andrew's eloping behaviors

were determined to be attempts to gain attention from adults and escape undesired activities/environments. Kim was taught to identify the antecedents, or the conditions that occurred immediately prior to Andrew's eloping behavior. Antecedent conditions usually occurred when Andrew was left alone to play, such as during conversations between adults. Antecedent behaviors that Andrew often engaged in immediately prior to eloping included appearing bored with a toy then looking around his environment, standing up, looking at and/or moving towards the door, and so on. When these antecedent conditions occurred, Kim was shown how to teach Andrew replacement behaviors that served the same function as his eloping behaviors.

Since it was determined that the function of Andrew's eloping behavior was usually to gain attention from adults and/or to escape an undesired activity or environment, he was taught the appropriate language to meet this same function. For example, when he appeared bored in a clinic room and began looking towards the door or reaching for the handle, he was prompted to say "follow me", "come on", "I'm all done here", "let's go this way", etc. and the adults would immediately reinforce this request by following him. This strategy gave Andrew a variety of appropriate ways to communicate that he wanted to leave an activity while also providing him with an appropriate way to gain attention from adults.

Strategies for transitions. Kim was taught to use priming with Andrew by providing him with multiple warnings of upcoming transitions (i.e., "Andrew, in 2 minutes [1 minute/ 30 seconds/10 seconds] we are going to leave"). Kim was also instructed to set a visual timer, such as the timer on her cell phone, to five minutes and show Andrew the timer when telling him "We're going to leave in five minutes". Further, Kim was shown how to provide Andrew with a transitional object (e.g. a small, preferred toy) or incentive (e.g. a piece of

candy) when she gives him the instruction to leave in order to momentarily distract him during the change in activity and reinforce him for transitioning calmly.

Resources. In addition to direct training in intervention strategies, Kim was provided with references to autism-related resources pertaining to her concerns. A powerpoint presentation on the IEP process and document was reviewed with Kim. Two books were also shown to and briefly discussed with Kim. *The everyday advocate: Standing up for your child with autism* (Martin, 2010) includes information written in a parent-friendly manner regarding advocating for one's child with autism in the education system and navigating access to services. It also includes information about advocating to other family members, legal consultation, and strategies for avoiding isolation which were all issues that Kim touched upon in her assessment interview. *The Law and Special Education* (Yell, 2012) goes in greater depth regarding the history of special education and the specifics of Special Education laws and also includes sample court cases.

Table 3

Parent Goals and Related Intervention (Kim)

Parent Goal for Child	Intervention	Parent Goals for Self	Intervention
1. Increase conversational reciprocity	PRT	1. Learn how to respond to disruptive behavior (e.g., transitioning from preferred to less preferred activities)	Instruction in FBA and teaching antecedent strategies and replacement behaviors
2. Increase and expand social communication skills	PRT	2. Learn how to address eloping behavior	Instruction in FBA and teaching antecedent strategies and replacement behaviors
3. Transition away from preferred activities/items appropriately	Priming for transitions, using visual timer, transitioning with preferred item	3. Understand how to advocate for child with school (e.g., IEP document and meetings)	Parent provided with document outlining IEP content and meetings; resources on parent rights and advocacy

Dyad 2 - Ravi and Rohan. Ravi indicated that his goals for himself during the education program were to learn how to implement PRT, learn to implement a motivational question-asking intervention procedure, and better socially engage with his child. Ravi expressed that his goals for Rohan during the program were increasing functional language, increasing question-asking, and increasing social referencing/eye contact. To address Ravi's goals for himself and his child, Ravi was provided instruction on the following techniques: a) PRT with embedded social reinforcement (Vernon, Koegel, Dauterman, & Stolen, 2012), and b) PRT question-asking procedure based (Koegel, Bradshaw, Ashbaugh, & Koegel, 2014).

PRT with embedded social reinforcement. Within the context of PRT, when delivering the reinforcing item, Rohan's parents were instructed to engage in a fun and playful way with Rohan and the item. For example, when Rohan expressed an interest in playing with a toy truck, his parents would playfully crash their truck into Rohan's when he made a verbal attempt at saying 'crash' or 'crash trucks'. Additionally, when Rohan showed an interest in animal puppets, his parents embedded social reinforcement into the activity by playfully chasing Rohan with the puppets when he requested each one.

PRT question-asking procedure. Question-asking procedure comprised of the components of PRT (Koegel, Bradshaw, Ashbaugh, & Koegel, 2014). In order to address Rohan's initiation of 'what' questions, a variety of novel, interesting toys and items (e.g., spinning toys, light-up toys, silly putty, bubbles, etc.) were placed inside of an opaque bag. Rohan's parents were instructed to use non-verbal enticement (e.g., making noise with the toys or bag of toys, looking inside the bag and gasping, etc.) to gain Rohan's attention and provide an opportunity for him to ask a question. When Rohan expressed interest in the bag of toys, he was provided with a verbal model prompt of a phrase (e.g., "What is it?", "What's

inside?", "What's that?", etc.) in order to gain access to motivating items. When he made an attempt at repeating the model prompt, the adult pulled the motivating item out of the bag, labeled it, had Rohan repeat the label in order to gain access to the item. Rohan's parent were instructed on how to use this technique in a variety of ways, such as hiding small items inside of plastic eggs or inside of their hands.

In order to address Rohan's initiation of 'where' questions, highly preferred items were hid around the room, such as under couch cushions, in cabinets, and behind chairs. When Rohan expressed interest in the motivating item (i.e., requesting the item when it was out of sight), his parents were taught to prompt Rohan to ask "where is it?" When Rohan made an attempt at asking the 'where' question, his parent showed him where the preferred item was and then engaged in a fun play activity with Rohan and the item.

Table 4

Parent Goals and Related Intervention (Ravi)

Parent Goal for Child	Intervention	Parent Goals for Self	Intervention
1. Increase functional language	PRT	1. Learn to implement PRT	Instruction in PRT
2. Increase question-asking	Initiations/ question-asking procedure	2. Learn to implement question-asking procedure	Instruction in question-asking procedure
3. Increase social referencing/eye contact	PRT with embedded social reinforcement	3. Learn to socially engage with child	Instruction in PRT with embedded social reinforcement

Dyad 3 - Prisha and Rohan. Prisha indicated that her goals for herself during the education program were to learn how to implement PRT, learn to implement a motivational question-asking intervention procedure, and better socially engage with her child. Prisha expressed that her goals for Rohan during the program were increasing functional language, increasing question-asking, and increase social referencing/eye contact. In the same manner as her husband Ravi, Prisha was provided instruction on the following techniques with Rohan (see previous participant for details): a) PRT with embedded social reinforcement (Vernon, Koegel, Dauterman, & Stolen, 2012), and b) PRT question-asking procedure based (Koegel, Bradshaw, Ashbaugh, & Koegel, 2014).

Table 5

Parent Goals and Related Intervention (Prisha)

Parent Goal for Child	Intervention	Parent Goals for Self	Intervention
1. Increase functional language	PRT	1. Learn to implement PRT	Instruction in PRT
2. Increase question-asking	Initiations/ question-asking procedure	2. Learn to implement question-asking intervention procedure	Instruction in question-asking procedure
3. Increase social referencing/eye contact	PRT with embedded social reinforcement	3. Learn to socially engage with child	Instruction in PRT with embedded social reinforcement

Dyad 4: Cassie and Alex.

Cassie indicated that her goals for herself during the education program were to better understand autism and to learn to facilitate social interactions between Alex and typically developing peers. Cassie expressed that her goals for Alex during the program were increasing functional language, increasing eye contact, and initiating and sustaining social engagement with peers. To address Cassie's goals for herself and her child, Cassie was provided instruction on the following techniques: a) PRT (Koegel, Koegel, & Kuriakose, 2012), b) contingent reinforcement for eye contact, c) mutually reinforcing activities, cooperative arrangements, modeling, and prompting (Koegel, Werner, Vismara, & Koegel, 2005; Wong et al., 2015); and d) information and resources regarding autism characteristics, evidence-based interventions, and IEP goals.

PRT. To address Cassie's goal of increasing Alex's functional communication, she was taught to implement PRT. When Alex expressed an interest in an item or activity, Cassie was instructed to prompt him to use phrases such as "My turn", "Can I have it?", "I want the [toy]", etc. to get his needs met. Cassie was taught how to offer a variety of language opportunities when Alex was motivated for an item or activity, such as modeling phrases, giving choices, asking questions, and using time delays, which involves holding up the preferred item and waiting for Alex to spontaneously verbally request.

Contingent Reinforcement for Eye Contact. Within the framework of PRT, Cassie was taught to remain contingent on verbals attempts that were accompanied by eye contact from Alex. Cassie was taught to keep the preferred item or wait to begin the preferred activity until Alex looked at her during his verbal request. She was also shown how to use nonverbal prompting (i.e., pointing towards the communicative partner) and verbal

prompting (i.e., telling to him to "look at the person") to encourage Alex to make eye contact.

Mutually reinforcing activities, cooperative arrangements, modeling, and prompting. Cassie was taught to set up interactions between Alex and his peers that facilitated shared enjoyment of an activity. This often involved interacting with children at mutually reinforcing locations, such as local playgrounds, and setting up games such as chase, follow the leader, races, and ball play. Cassie was shown how to set up cooperative arrangements between children in which materials were divided so that each child needed to communicate and exchange items in order to complete the activity. For example, when building sandcastles at the park, one child was given the buckets and the other the shovels so that they had to work together to build a castle. Cassie was also taught to model and prompt language that Alex could use during social play with peers, including requests (i.e., "you could tell your friend 'it's my turn now'', "ask him for the red train", etc.), questions (i.e., ask your friend "do you want a train track?", ask "what are you playing?", etc.), and directions (i.e., "you could tell your friend 'put it here' or 'build it higher'", etc.)

Resources. In addition to direct training in intervention strategies, Cassie was provided with information and resources pertaining to autism characteristics, evidence-based interventions, and IEP goals. The article *Evidence-based practices in interventions for children and youth with autism spectrum disorders* (Odom, Collet-Klingenberg, Rogers, & Hatton, 2010) was given to and briefly reviewed with Cassie. The clinician also reviewed a current copy of Alex's IEP goals with Cassie and helped her to refine the goals to be more concisely written, observable and measurable.

Table 6

Parent Goals and Related Intervention (Cassie)

Parent Goal for Child	Intervention	Parent Goals for Self	Intervention
1. Increase functional language	PRT	1. Better understand autism	Discussion and resources related to autism characteristics, IEPs, interventions, etc.
2. Increase eye contact	Contingent reinforcement	2. Learn to facilitate social interactions with peers	Mutually reinforcing activities, cooperative arrangements, modeling, prompting
3. Initiate and maintain social engagement with peers	Mutually reinforcing activities, cooperative arrangements, modeling, prompting		

Video Probes. For the purpose of data analysis, a 5-minute video probe was collected towards the end of the first session each day of the treatment program. For the video, parents were instructed to play with their child as they normally would while trying to get their child to communicate using the PRT strategies they learned. Parents were also informed that the clinician would not be providing feedback until the end of the video. During the video probes, the clinician made a note of intervention components the parent was implementing well and strategies that the parent needed additional support with in order to provide encouragement and guide treatment programming.

Dependent Measures

Observed Parent Stress. Using an interval recording system, each 30-second interval of a video was assigned a number on a 5-point Likert scale that corresponded to the observed levels of parent stress. "Stress" was defined as parent affect and behavior that reflects frustration or tension. The five minute videos of parent-child interactions collected during the intervention program were analyzed. All intervals for 'stress' were averaged for an overall stress score per video. The measures of stress were based on the scales reported by Brookman-Frazee and Koegel (2004).

Observed Parent Confidence. Using an interval recording system, each 30-second interval of a video was assigned a number on a 5-point Likert scale that corresponded to the observed levels of parent confidence. "Confidence" was defined as a parent's certainty in interacting with their child and the occurrence of shared control in those interactions. All intervals for 'confidence' were averaged to get an overall confidence score per video. The measures of confidence were developed based on the scales reported by Brookman-Frazee and Koegel (2004).

Early Intervention Parenting Self-Efficacy Scale (EIPSES). The EIPSES was used to assess the impact of the PRT parent education program on parents' self-reported self-efficacy, or their competence and confidence in parenting (Guimond, Wilcox, & Lamorey, 2008). Research has suggested that parenting behaviors are mediated by parents' perceived self-efficacy, meaning self-efficacy is an important construct to examine in early intervention parent education programs (Dunst, Trivette, & Hamby, 2007; Karst & Van Hecke, 2012). This scale was developed to provide a measure of parent's belief in their ability to promote positive developmental outcomes for their child, making it an ideal measure for the proposed study.

This scale was provided on paper to parents and was administered at two points in time: the first day of the education program prior to beginning and at the very end of the 20-hour parent training. Scale items were rated by parents on a 7-point Likert scale (e.g., 1: Strongly disagree, 2: Disagree, 3: Somewhat disagree, 4: Neutral, 5: Somewhat agree, 6: Agree, 7: Strongly agree). Consistent with what is suggested in the literature, nine scale items were reverse-scored, and all scale items were summed to yield a composite score. Mean scores were computed by finding the average of all scale items.

Autism Parenting Stress Index (APSI). Research on parent stress and autism suggests that parents of children with autism experience significantly greater stress than parents of typically developing children (Davis & Carter, 2008). Thus, it is a highly socially valid construct to include as an outcome measure for parent education interventions. The APSI was "designed for clinical use to identify areas where parents need support with parenting skills, and to assess the effect of intervention on parenting stress", making it an ideal measure for this particular study (Silva & Schalock, 2012). This scale was administered to parents at two

points in time: the first day of the education program prior to beginning and at the very end of the 20-hour parent training. Scale items were scored on a 5-point Likert scale (e.g., 1: Not stressful, 2: Sometimes creates stress, 3: Often creates stress, 4: Very stressful on a daily basis, 5: So stressful that sometimes we feel we cannot cope). Mean scores were computed by averaging all scale items.

Hope Scale. The Hope Scale (Snyder et al., 1991) defines hope as a combination of goal-directed determination (i.e., agency) and planning way to pursue these goals (i.e., pathways). This scale was administered to parents at two points in time: the first day of the education program prior to beginning and at the very end of the 20-hour parent training. The 12 scale items were scored on a four point Likert-scale (e.g., 1: Definitely false, 2: Mostly false, 3: Mostly true, 4: Definitely true). Consistent with the literature, four filler questions were omitted during scoring. Items 1, 4, 6, and 8 were summed to yield each parents Pathways score and items 2, 9, 10, and 12 were summed to yield each parents Agency score. Then, the Pathways and Agency scores were summed to yield a total Hope Scale score.

Child's Verbal Initiations. Although the focus of this study was on parent behavior, a child measure was included to determine the relevance of the intervention to child outcomes. Consistent with previous research (i.e., Vernon, Koegel, Dauterman, & Stolen, 2012), data were collected on the child's independent verbal initiations to their parent. The definition of an appropriate verbal initiation has been adapted from previous research and includes verbal utterances that were functional, independently produced, and directed towards the parent. This did not include children's verbal responses to language opportunities provided by parents, such as responses to questions or model prompts, or self-stimulatory verbalizations. Data were collected on the frequency of child verbal initiations during a five minute video

probe. Rate of functional verbal initiations per minute was calculated by dividing the frequency of verbal initiations by five minutes (the length of the videos).

Table 7

Observation Rating of Parent Stress

Observation Rating of Parent Stress	
Category Rating	Description
Low Stress (0-1)	Parent affect reflects relaxation or calm while interacting with and teaching his or her child. Behaviors include using normal or enthusiastic tones of voice, laughing, smiling, playfulness, exhibiting patience with their child, or making positive statements (i.e., "great job!", "this is fun") etc.
Neutral Stress (2-3)	Parent affect does not seem to be particularly relaxed or stressed. Parent statements to clinician are not characterized by either stress or relaxation.
High Stress (4-5)	Parent affect reflects frustration, agitation, tension, or exasperation. Behaviors include exhibiting little patience with his or her child, frowning, furrowing the brow, tensing the jaw, using a loud tone of voice, fidgeting, or slumping shoulders. Might make statements characterized by feelings of stress, fatigue, or anxiety.

Note. Scale adapted from Brookman-Frazee, 2004

Table 8

Observation Rating of Parent Confidence

Observation Rating of Parent Confidence	
Category Rating	Description
Low Confidence (0-1)	Parent appears unsure of how to interact with and teach their child. Parent might hesitate to interact, try ways of engaging the child with little/no success, look to the clinician for help, or provide few teaching opportunities. Parent statements reflect doubt in their perceived ability to impact their child.
Neutral Confidence (2-3)	Parent exhibits neutral behaviors in which he or she does not appear uncertain or particularly certain during interactions. Parent statements are neutral.
High Confidence (4-5)	Parent appears certain of how to teach his or her child. Parent makes deliberate choices of target behaviors or activities, seeks teaching opportunities, or gives instructions. Parent appears to have shared control in the interaction with child. Parent statements reflect perceived ability to have a positive impact on child and/or knowledge of child (i.e., "I know he likes this toy", "This works every time!", etc.)

Note. Scale adapted from Brookman-Frazee, 2004

Supplementary Measures

Qualitative Interview

In order to establish a more comprehensive understanding of the outcomes of this program, quantitative data were supplemented by brief interviews with parent participants following the completion of the intervention. These interviews lasted approximately 10 minutes to maximize the amount of time focused on direct training and implementation of intervention. It has been suggested that in order to best support families of children with disabilities, "we need to know both what is important to families and the degree of satisfaction that they have in their ability to meet priority objectives" (Turnbull, 1988). The social validity of a more in-depth evaluation of early parent experiences in education programs is considerable, as families with a recent diagnosis of autism may be in need of specialized services and support (Wainer, Hepburn, & Griffith, 2017).

Combining quantitative and qualitative data collection can enhance interpretations and better contextualize findings (Frels & Onwuegbuzie, 2013). For this particular study, the justification for combining qualitative and quantitative methodology included triangulation, complementarity, process, and explanation (Bryman, 2006; Greene, Caracelli, & Graham, 1989). Triangulation involves corroboration between results from different methods and can be considered an important factor for validity, as it indicates that multiple measures suggest a similar trend. In the current study, triangulation was established by confirming behavioral observation data through standardized self-report measures and semi-structured interviews. Complementarity involves gaining additional insights into the specific details of participants' experiences. In the current study, qualitative data were used to augment and enhance quantitative data by elaborating on the results on the standardized assessments. Clarification

of the process is another common justification for combining qualitative and quantitative data. The current study sought to gain insight into what the process of being taught intervention strategies is like for parents and how that might be related to well-being. Additional rationale for examining both qualitative and quantitative data includes explanation, wherein the findings of one data set help to explain those of the other data set.

Reliability

For behavioral measures, two undergraduate research assistants majoring in psychology independently recorded data. Research assistants were blind to experimental conditions and hypotheses to account for experimenter bias. Research assistants completed approximately two hours of training together, during which they met as a group with the author of this study to discuss definitions of the observational dependent variables. During this training, coders were also shown video probes of parent/child interactions from the pilot study and practiced scoring these videos together for parent stress and parent confidence. Following the completion of this training, the coders began scoring the videos for the current study. The primary coder scored all videos, while the reliability coder independently scored approximately 30% of videos. All videos were assigned numbers using an online random number generator. Videos were then randomly selected across participants and from each phase of the study (i.e., baseline, intervention, follow-up) to score for reliability . It has been suggested that 80% is an acceptable rate for reliability (Kazdin, 2011).

Observed Parent Stress. An agreement was defined as both observers recording a stress rating within one point of one another during the same observation interval. A disagreement was defined as observers recording scores that were two or more points

different from one another. The average percent agreement for observed parent stress was 96, with a range of 80 to 100.

Observed Parent Confidence. An agreement was defined as both observers recording a confidence rating within one point of one another during the same observation interval. A disagreement was defined as observers recording scores that were two or more points different from one another. The average percent agreement for observed parent confidence was 87.3, with a range from 70 to 100.

Child Verbal Initiations. The percent of interobserver agreement was calculated using the interval-by-interval method (Cooper, Heron, & Howard, 2007). Agreement was defined as the two observers independently recording an instance of a child initiation during the same observation interval. A disagreement was defined as one observer coding an instance of an initiation while the other coder did not code an instance of an initiation during that interval. Interobserver agreement was calculated using the following formula: [#Agreements/(#Agreements + #Disagreements)] x 100. The average percent agreement for initiations was 94.3, with a range of 80 to 100.

Effect Size

Statistical analysis of effect size is advantageous over visual inspection alone, as it provides precise, objective, and dependable evidence for determining intervention success (Kromrey & Foster-Johnson, 1996; Parker & Hagan-Burke, 2007). Effect size is easy to calculate and interpret and contributes to the credibility of the study, as it is recognized to be a standard by the scientific community. Further, effect size can be used in the analysis of single-subject research to detect clinically significant change (Kromrey & Foster-Johnson, 1996). Due to the small sample size in the current study, Hedge's g was selected to analyze

effect size (Durlak, 2009). To calculate effect size, the mean of the baseline phase was subtracted from the mean of the intervention phase, and that value was divided by the pooled and weighted standard deviation of the baseline phase. The effect sizes are reported as small at 0.2, medium at 0.5, or large at 0.8 (Cohen, 1988).

Fidelity of Implementation

In order to reduce potential threats to internal validity, fidelity of PRT implementation was assessed. Because education in PRT was the main purpose of the PBS intervention program, data were collected on parent implementation of the components of PRT. Fifty percent of videos were randomly selected from each phase of the study (baseline, intervention, follow-up) for each parent/child and coded for PRT fidelity by the author of the current study. Procedural fidelity of PRT implementation was scored using whole-interval recording of 30-second intervals (Cooper, Heron, & Heward, 2007). Each 30-second interval was scored for the following PRT components: child attention, clear opportunity, child choice, contingent reinforcement, natural reinforcement, and reinforcing attempts (Koegel & Koegel, 2006). Presence of the component was indicated by a plus sign and absence of the component was indicated by a minus sign. If a parent received a minus in any of the PRT components, the parent received a minus for the entire 30-second interval and did not meet fidelity criteria for that interval. To meet criteria for fidelity of PRT implementation, PRT must have been correctly implemented for at least 80% of intervals.

During baseline, fidelity of implementation ranged from 0-10% (M = 4, SD = 5). During intervention, fidelity of implementation ranged from 40-90% (M = 67, SD = 17). For three of the four participants, the average fidelity of implementation during intervention met

or exceeded the 80% criterion cutoff at some point during the program. During follow-up, fidelity of implementation ranged from 70-80% (M = 75, SD = 7).

To assess interobserver reliability for PRT fidelity, approximately 30% of the videos that were scored for PRT fidelity were randomly selected and scored by an undergraduate research assistant with extensive experience implementing PRT. Agreement was defined as the the primary author and reliability coder independently recording the same mark (i.e., plus/minus) during the same 30-second observation interval. A disagreement was defined as observers recording different marks during the same observation interval. Interobserver agreement was calculated using the following formula: [#Agreements/(#Agreements + #Disagreements)] x 100. Reliability for fidelity of PRT implementation ranged from 70-100% (M = 85, SD = 9.7).

Results

Observed Parent Stress

Kim. At baseline, Kim's observed stress ranged from low to neutral stress, with an average in the low stress range (M = 1.3). During intervention, Kim's observed stress remained in the low to neutral stress range, with an average in the neutral range (M = 1.6).

Ravi. At baseline, Ravi's observed stress was in the neutral range (M = 2.6) with an increasing trend prior to intervention. During intervention, Ravi's observed stress decreased to the neutral/low range, with an average in the neutral range (M = 1.8). At two months follow-up, Ravi's observed stress was in the low range (M = 1.1).

Prisha. At baseline, Prisha's observed stress ranged from low to neutral stress, with an average in the neutral range (M = 2.4). During intervention, Prisha's observed stress decreased to the neutral/low range, with an average in the low range (M = 1.2) At two

months follow-up, Prisha's observed stress ranged from neutral to low with an average in the low range (M = 1.4).

Cassie. At baseline, Cassie's observed stress ranged from low to neutral stress, with an average in the neutral range (M = 1.7). During intervention, Cassie's observed stress decreased to the neutral/low range, with an average in the low range (M = 1.2)

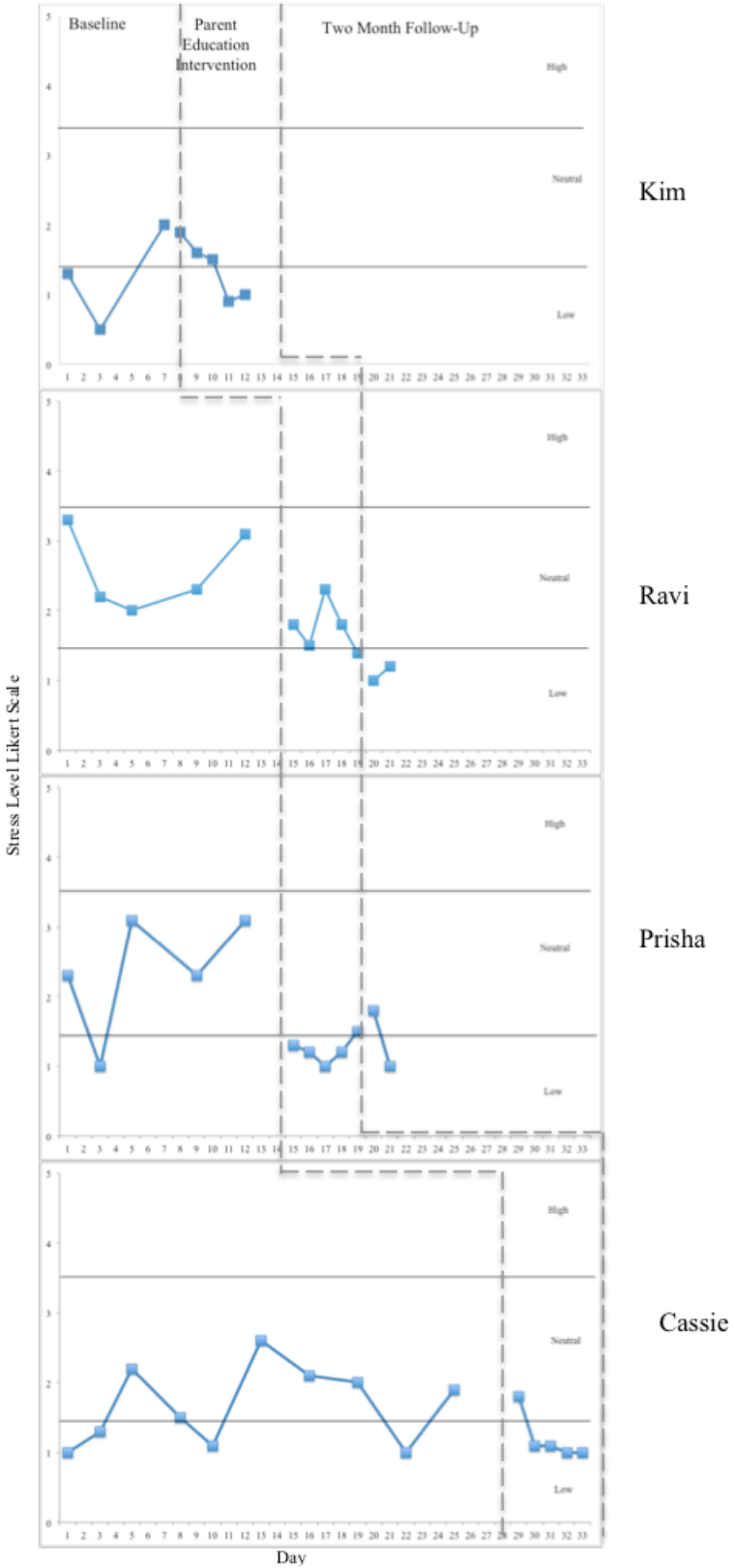

Figure 1. Observed parent stress, pre-, during, and post-intervention.

Observed Parent Confidence

Kim. At baseline, Kim's observed confidence ranged from high to neutral confidence, with an average in the neutral range (M = 3.2) and a decreasing trend prior to intervention. During intervention, Kim's observed confidence ranged from high to neutral with an average in the neutral range (M = 3.4) and an increasing trend.

Ravi. At baseline, Ravi's observed confidence ranged from low to neutral confidence, with an average in the neutral range (M = 1.8) and a stable trend prior to intervention. During intervention, Ravi's observed confidence ranged from low to neutral, with an average in the neutral range (M = 2.6). At two months follow-up, Ravi's observed confidence was in the high confidence range (M = 3.9) with a slightly decreasing trend.

Prisha. At baseline, Prisha's observed confidence was in the neutral range (M = 2.4). During intervention, Prisha's observed confidence ranged from neutral to high, with an average in the high range (M = 3.5). At two months follow-up, Prisha's observed confidence was in the neutral range (M = 2.9).

Cassie. At baseline, Cassie's observed confidence was in the neutral range (M = 2.9). During intervention, Cassie's observed confidence ranged from neutral to high, with an average in the high range (M = 3.5).

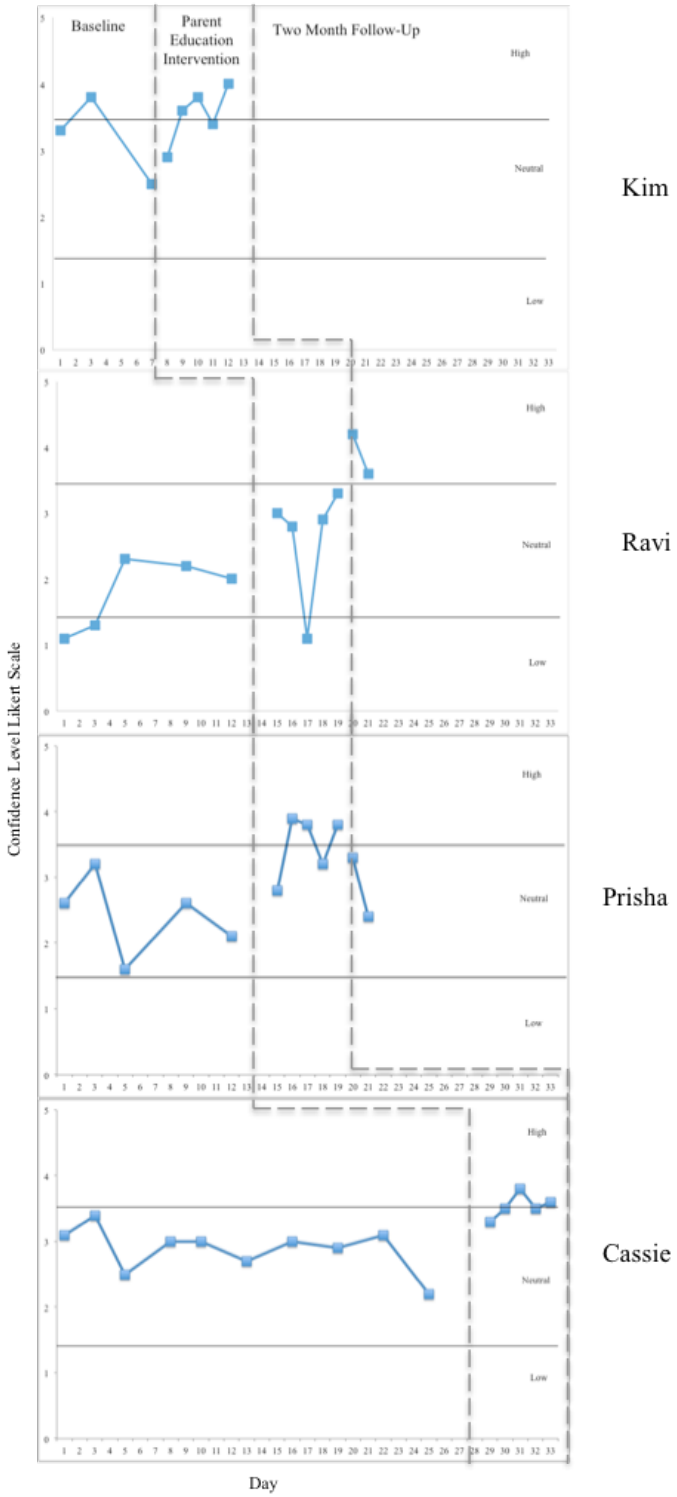

Figure 2. Observed parent confidence pre-, during, and post-intervention.

Early Intervention Parenting Self-Efficacy Scale (EIPSES)

Kim. At baseline, Kim had an average score of 4.5 (out of 7) on the EIPSES. Following intervention, Kim had an average score of 5.4, indicative of an increase in self-efficacy scores.

Ravi. At baseline, Ravi had an average score of 5.3 (out of 7) on the EIPSES. Following intervention, Ravi had an average score of 6, indicative of an increase in self-efficacy scores.

Prisha. At baseline, Prisha had an average score of 4.6 (out of 7) on the EIPSES. Following intervention, Prisha had an average score of 5.3, indicative of an increase in self-efficacy scores.

Cassie. At baseline, Cassie had an average score of 5.4 (out of 7) on the EIPSES. Following intervention, Cassie had an average score of 5.8, indicative of an increase in self-efficacy scores.

All parents increased in average self-efficacy scores from pre- to post-intervention. Statistical analysis indicated a large overall effect size following intervention (g = 1.47) (see Table 9).

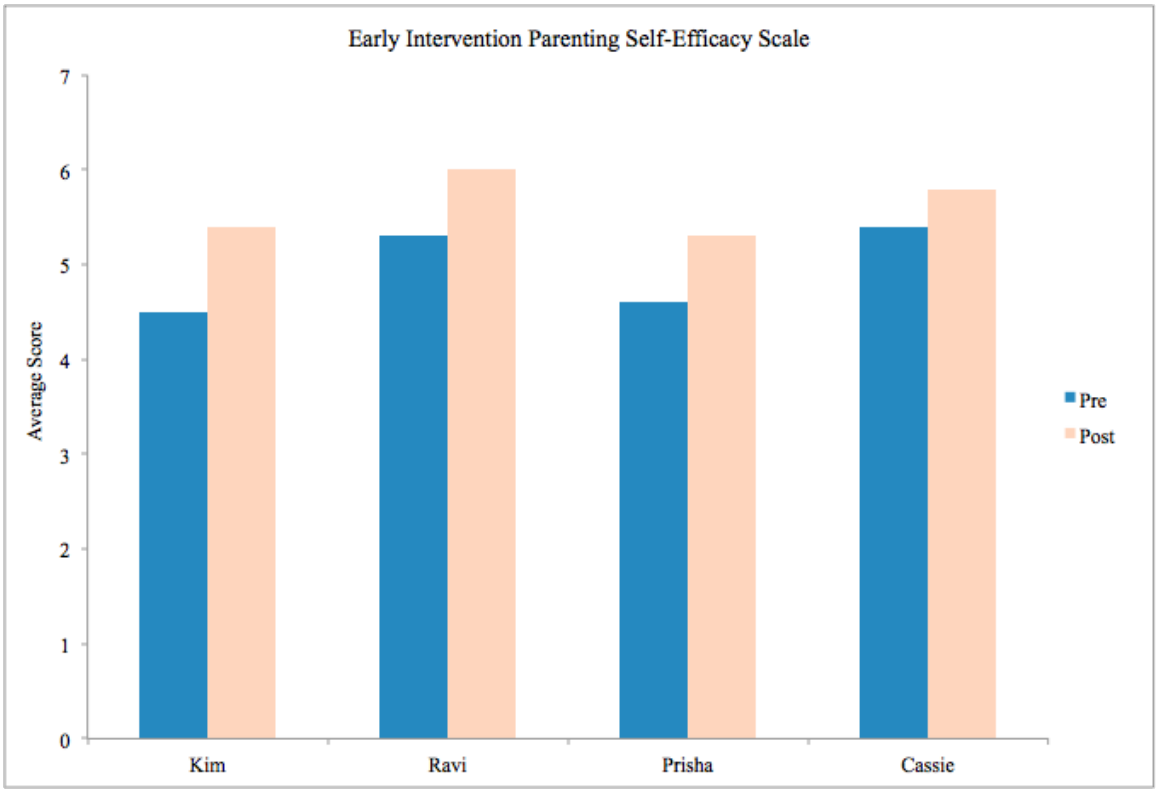

Figure 3. Parent pre- and post-intervention scores on the Early Intervention Parenting Self-Efficacy Scale ($g = 1.47$)

Autism Parenting Stress Index (APSI).

Kim. At baseline, Kim had an average score of 1.5 (out of 5) on the APSI. Following intervention, Kim had an average score of 1.1, indicative of a decrease in stress scores.

Ravi. At baseline, Ravi had an average score of 2.1 (out of 5) on the APSI. Following intervention, Ravi had an average score of 1.2, indicative of a decrease in stress scores.

Prisha. At baseline, Prisha had an average score of 1.5 (out of 5) on the APSI. Following intervention, Prisha had an average score of 1.6, indicative of a slight increase in stress scores.

Cassie. At baseline, Cassie had an average score of 1.8 (out of 5) on the APSI. Following intervention, Cassie had an average score of 1.5, indicative of a decrease in stress scores.

Three out of four parents decreased in average stress scores from pre- to post-intervention. Statistical analysis indicated a large overall effect size following intervention (g = 1.24) (see Table 9).

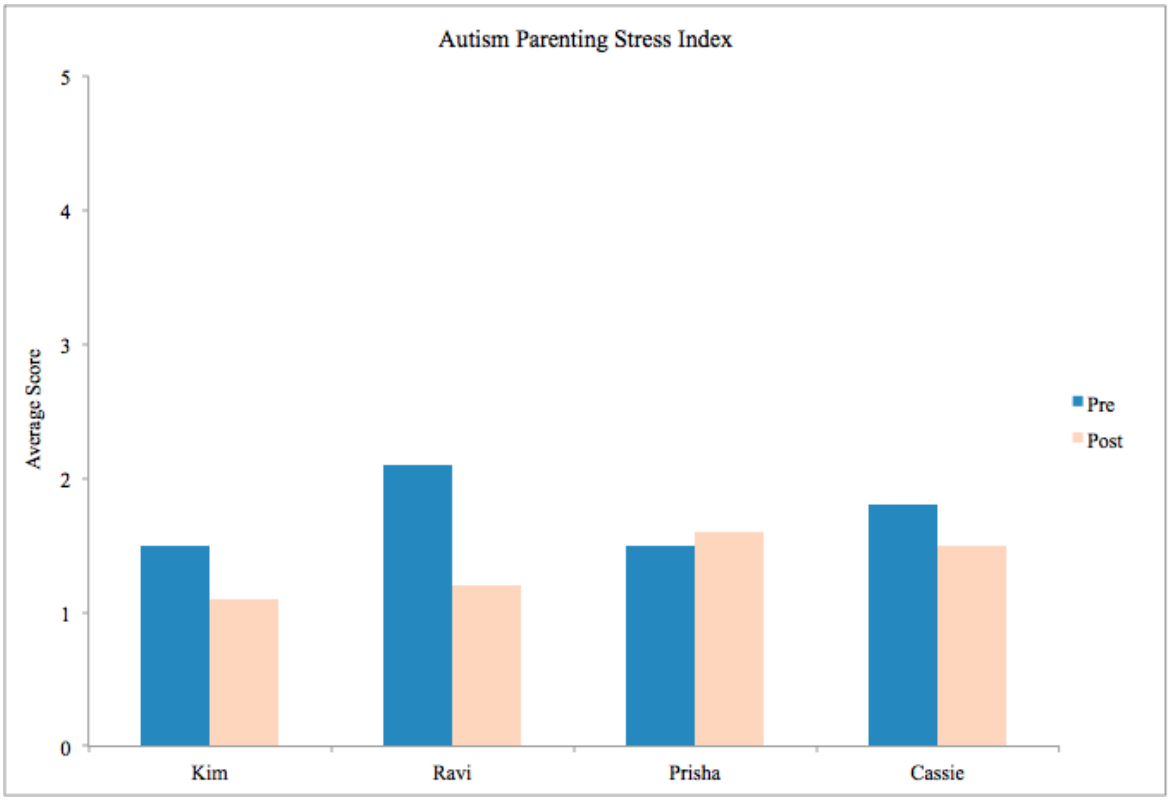

Figure 4. Parent pre- and post-intervention scores on the Autism Parenting Stress Index (g = 1.24)

Hope Scale

Kim. At baseline, Kim had an average score of 1.9 (out of 4) on the Hope Scale. Following intervention, Kim had an average score of 2.3, indicative of an increase in hope scores.

Ravi. At baseline, Ravi had an average score of 1.7 (out of 4) on the Hope Scale. Following intervention, Ravi had an average score of 1.9, indicative of an increase in hope scores.

Prisha. At baseline, Prisha had an average score of 2.1 (out of 4) on the Hope Scale. Following intervention, Prisha had an average score of 2.1, indicative of no change in hope scores.

Cassie. At baseline, Cassie had an average score of 2.4 (out of 4) on the Hope Scale. Following intervention, Cassie had an average score of 3.3, indicative of an increase in hope scores.

Three out of four parents increased in average hope scores from pre- to post-intervention. Statistical analysis indicated a medium overall effect size following intervention (g = .66) (see Table 9).

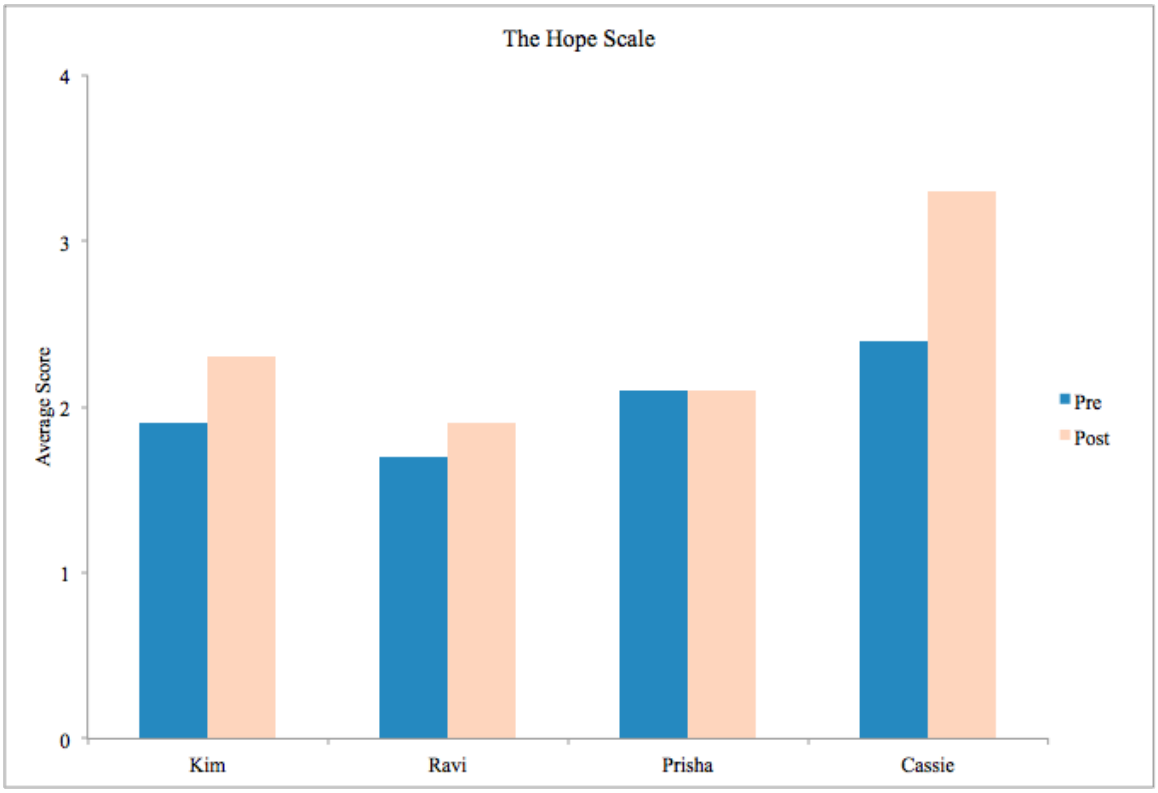

Figure 5. Parent pre- and post-intervention scores on the Hope Scale (g = .66)

Table 9

Pre- and Post Intervention Differences on Standardized Measures

	Pre Intervention		Post Intervention		Hedge's g	95% Confidence Interval	
	M	SD	M	SD		Lower	Upper
EIPSES	4.95	0.47	5.63	0.33	1.47	1.74	1.18
APSI	1.73	0.29	1.35	0.24	1.24	1.06	1.43
Hope	2.03	0.3	2.4	0.62	0.66	1	0.32

Child Verbal Initiations

Parent/Child Dyad 1: Kim and Andrew. During baseline video probes with his mother Kim, Andrew verbally initiated at a low rate ranging from 0 to .8 initiations per minute (M = .3). During intervention, the rate was stable and slightly higher than in baseline and ranged from .8 to 5.4 initiations per minute (M = 2).

Parent/Child Dyad 2: Ravi and Rohan. During baseline video probes with his father Ravi, Rohan verbally initiated at a low, stable rate ranging from 0 to .5 initiations per minute (M = .3). During intervention, this rate steadily increased and ranged from .4 to 2 initiations per minute (M = 1.1). At two months follow-up, the rate decreased slightly to .9 initiations per minute but still remained above baseline levels.

Parent/Child Dyad 3: Prisha and Rohan. During baseline video probes with his mother Prisha, Rohan verbally initiated at a variable rate ranging from 0 to 2.4 initiations per minute (M = 1). During intervention, this rate also appeared variable and ranged from .7 to 2 initiations per minute (M = 1.2). At two months follow-up, the rate remained at levels similar to those during intervention, ranging from 1.4 to 2 initiations per minute (M = 1.7).

Parent/Child Dyad 4: Cassie and Alex. During baseline video probes with his mother Cassie, Alex verbally initiated at a low variable rate ranging from 0 to 1.6 initiations per minute (M = .8). During intervention, the rate was also low with slightly less variability than baseline and ranged from .6 to 1.2 initiations per minute (M = 1).

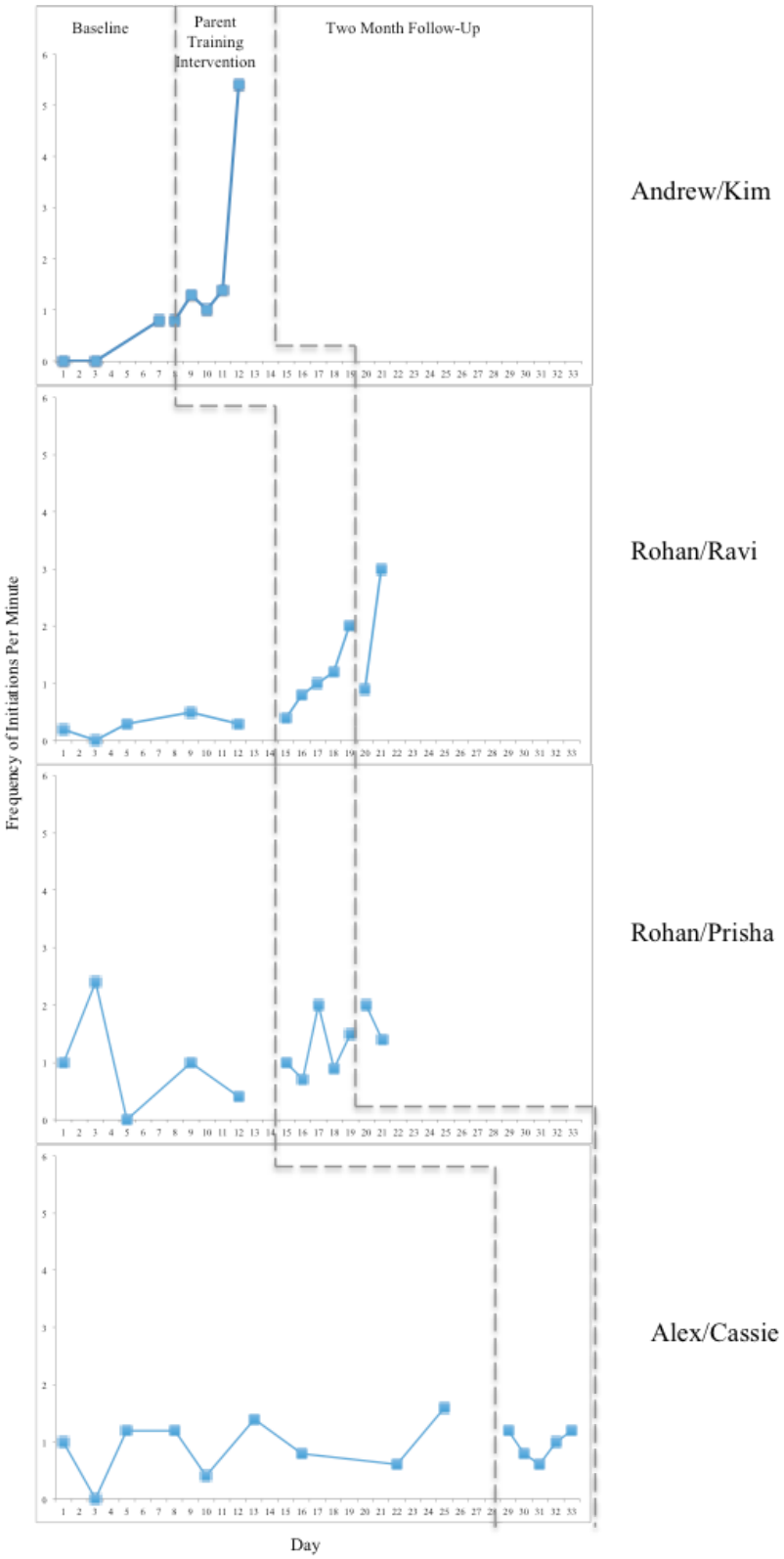

Figure 6. Child verbal initiations to parents pre-, during, and post-intervention.

Qualitative Interview

In order to establish a more comprehensive understanding of outcomes of this program, quantitative data were supplemented by brief interviews with parent participants following the completion of the intervention (Frels & Onwuegbuzie, 2013). Interviews with parents occurred following the final session of the program for approximately ten minutes. Interviews were audiotaped using an iPod and uploaded to Box, an online HIPAA-compliant platform.

The interviews were comprised of a standardized, open-ended approach combined with an interview guide approach, a common combination in interviewing research (Gall, Gall, & Borg, 2003; Patton, 2002). Strengths of combining a standardized approach with an interview guide approach include promoting consistency and replicability while still allowing for flexibility (Patton, 2002). A standardized approach is focused and time-efficient, which was important given that the parent education program was brief and time needed to be focused on implementation of intervention. A more open-ended interview guide is considered an appropriate approach for studying people's perceptions and opinions, as it allows for participants to share additional details and insight (Kallio, Pietila, Johnson, & Docent, 2016).

A standardized interview was implemented by determining the questions and how they were worded prior to the interview, contributing to consistency and replicability (Turner, 2010). A less structured interview guide approach was utilized by having flexibility in the order of presentation of the questions and allowing parents to pursue topics of interest to them to provide more in-depth information (DiCicco-Bloom & Crabtree, 2006; Patton, 2002).

Interviews were transcribed by an undergraduate research assistant majoring in psychology with prior exposure to interview transcription. Consistent with recommendations from the literature, the transcriber typed the interviews into a word processor verbatim, noting pauses, overlapping speech, garbled or unclear speech, and emphasis placed on words or phrases (Poland, 2002). This was done in order to get a more comprehensive understanding of how the conversation unfolded and the manner in which parents were conveying their responses. Transcriptions were then checked by the first author against the original recordings to ensure accuracy (McLellan, MacQueen, & Neidig, 2003)

Thematic Analysis of Qualitative Data

Thematic analysis is commonly used in qualitative research and can be considered a robust foundational method in analyzing qualitative data (Braun & Clarke, 2006; Vaismoradi, Turunen, & Bondas, 2013). It is a means of identifying common themes and patterns within qualitative data without losing the rich complexity of details. Thematic analysis has many reported benefits, including its accessibility and flexibility (Braun & Clarke, 2006). Because it does not require extensive technological knowledge as other qualitative analysis approaches, it's considered to be a more accessible method for qualitative researchers early in their careers (Braun & Clarke, 2006). It provides a systematic structure for analysis while allowing for the researchers to make connections and interpretations (Vaismoradi, Turunen, & Bondas, 2013). Further, the flexibility of thematic analysis allows for it be used within a variety of theoretical frameworks.

In the current study, a theme was defined as a "coherent integration of the disparate pieces of data that constitute the findings" (Sandelowski & Leeman, 2012). Thus, a theme identified some element of the data that was a patterned response and was related in some

way to the research questions (Braun & Clarke, 2006). It is important to note that themes were not defined by quantifiable measures, such as the frequency of a certain word or phrase, but rather that those words or phrases captured something important in regards to the research questions.

To analyze qualitative interview data using thematic analysis, a six phase process was used (Braun & Clarke, 2006):

1) Becoming familiar with data: This involved immersion in the data by reading and rereading transcriptions while making initial notes on interesting points.

2) Generating initial codes: This involved breaking down notes into more discrete segments and concepts and identifying elements that pertained to the underlying theoretical foundation. Part of this process involved highlighting words and phrases with a positive connotation (i.e., confidence, improvement, strength, gains, success, etc.), statements that reflected strengths and deficits, both in reference to the child and the parent themself (i.e., failed, difficult, etc.), and statements that indicated technical knowledge, such as descriptions of intervention procedures, rationale for procedures, etc.

3) Searching for themes: This involved looking at connections between concepts by looking for similarities and differences. While reading through data and highlighting phrases, a list of patterns was generated based on what the phrases seemed to be referring to.

4) Reviewing themes: This involved checking to determine how well the emergent themes worked in regards to the individual data and overall data set. While thematic analysis does not require a inter-observer reliability, emerging themes were discussed between the first author and transcriber for more comprehensive analysis. Original transcriptions were

reviewed to check that themes were representative of what parents were reporting. Connections were also made to pre-intervention intake interviews.

5) Defining and naming themes: This involved giving names to themes and developing clear definitions of these categories. This process also involved grouping themes that were similar and developing subthemes.

6) Producing the report: This involved synthesizing the analysis so that themes were coherent and concise and including examples that may be particularly compelling.

General Themes

Through thematic analysis of interview data, five main themes seemed to emerge for all participants: 1) increase in self-efficacy, 2) effectiveness of approaches, 3) ease of implementation, 4) reduction (but not amelioration) of stress, and 5) minimal changes to the program.

Increase in Self-Efficacy

Self-efficacy has been described in the literature as an individual exhibiting confidence and competence (Bandura, 1997). In post-intervention interviews, all parents referred to feelings of increased confidence and competence after completing the program.

All parents made statements referring to their increased competence, or their understanding of intervention approaches. This included statements that accurately described specific and/or technical components of intervention techniques in addition to general statements pertaining to how to successfully interact with one's child. Parents often referred to the specific PRT component of following child lead, though other specifics were also mentioned. Kim referred to an understanding of the behavioral framework of PRT: "If the behavior that I'm looking for is for him to talk, then I can create a situation in which the A

[antecedent] and C [consequence] of it work towards that communication". Ravi claimed that he felt "more confident administering the PRT technique, especially following child lead", which is a critical component of PRT. Similarly, Prisha expressed an increased understanding of how to follow her child's lead ("The main thing is to let him lead wherever he wants to go rather than make him do what you want him to do") as did Cassie ("I always used to think 'oh now we need to do something different' but really it's like, if you follow their lead they could keep doing the same thing over and over again and be happy with you").

All participants made statements referring to an improved sense of confidence related to interacting with and/or teaching their child. Prisha stated, "Now I feel much more confident that I should be able to make him say more words just by playing with him, not forcing him to do things". Similarly, during the post-intervention interview Ravi expressed feeling "much more confident than four days back". He went on to say: "earlier we were sitting and wondering what to do, and now we know we need to go to him and get some PRT done", which alludes to a positive change in Ravi's confidence in knowing how to interact with his child. Kim echoed a similar sentiment regarding her confidence following the program: "My hope improved and also a feeling of empowerment that I am in control of his future more than anybody else with things like PRT". Cassie expressed confidence in regards to her skills with facilitating Alex's play with peers: "I feel a lot more confident after being shown and kind of having a repository of what to say to other kids without creeping them or their parents out...I think what it is was building more awareness for myself of what's going on with the play dynamics between kids".

Effectiveness of Intervention Approaches

All parents expressed the effectiveness of the intervention approaches they were taught, which was often characterized by statements referring to the success of the child and/or the approach. For example, in regards to learning to implement PRT, Ravi stated that "now we have a more clear strategy of how to get words out of him" and "we are actually seeing a lot more language out of him in the last four days". Prisa stated "it has helped immensely" in reference to following Rohan's lead as a main component of PRT.

In regards to learning how to address disruptive behavior such as eloping out in the community, Kim stated that "preparation, for one, is kind of hugely what I now understand, which I kind of picked up on before but it was strengthened this week by seeing how successful it was". Kim goes on to say, "what I gained just in the week was being able to see just how easily he can be, for lack of a better word, controlled and guided towards excellence". She added, "I have seen some things that are very, very successful", which seemed to convey that Kim viewed the intervention strategies to be effective for helping her child.

Cassie refers to the effect she sees the program having on Andrew's confidence with social interactions and communication: "He's so comfortable playing with us and asking us to watch him. Before he wouldn't really be comfortable enough for us to watch him so intently like 'don't look at me' or something like that. He wasn't that confident about what he was doing". She also mentions this in regards to social interactions with peers by stating "he's more confident, like I'm seeing the other kids happy with what he is doing, with what they are doing". Cassie goes on say that her husband, who was not able to attend the program, said that he noticed Andrew was talking more and "focusing his eyes" on him during their video chats at the end of the program.

Ease of Implementation

All participants expressed satisfaction with learning to implement PRT and related strategies, which was often characterized by statements referring to the ease of implementation. In regards to ease of implementation, Kim's statement seems to summarize well the experiences of the parent participants in this program: "Changing your approach to an autistic child is not that hard, it's not like you have to completely think differently, you just have to change your approach a little bit". When Kim was reflecting on her experience learning to implement PRT, she said: "I felt like forcing him to do something because that's what he's supposed to do and creating a negative impression on him is not worthwhile...I'm totally fine with him leading me on everything and doing something or not doing something". Kim continued: "I really like it [PRT]. I think it's going to be relatively simplistic to show my family members who are going to be spending a lot of time with him as well". Kim also stated that she liked that PRT allowed room for flexibility. These positive statements reflect Kim's satisfaction and compatibility with the PRT approach and the ease of implementing it.

Prisha expressed a similar sentiment regarding the ease of learning to implement PRT with her child: "Learning this has not been stressful". Prisha mentioned that she felt she could just play with Rohan to get him to communicate now rather than feel like she is forcing him to do something. Ravi agreed with Prisha claiming "same is the case with me". In regards to learning to implement strategies during the program, Cassie said, "I got a lot of things out of it. I didn't feel like I was being pulled in any direction".

Reduction (but not amelioration) of Stress.

All parent participants made statements implying a reduction, but not complete amelioration, of stress following the completion of the program. When parents made statements about stress symptoms they tended to attribute their reduction of stress to two factors: feeling hopeful about knowing what to do to help their child and witnessing the effectiveness of intervention strategies for their child. When asked about how the program affected her stress levels, Kim stated:

> Just in general I'm positive and hopeful...which I think for a lot of parents of autistic children feeling helpless and not hopeful is probably one of the bigger stress factors. Just that thing where you just kind of constantly think about it like this is my life now, is it going to suck or is it not going to suck? And just having this feeling that it's not going to suck can alleviate a lot of stress.

When specifically asked about the effect of the program on his stress, Ravi stated "I think it has given us some direction on what to do, not just sit and worry". Similarly, Kim expressed the following:

> Maybe the stress has shifted as well as diminished a little bit because now it's shifting less from 'what do I do?' to 'okay now I know what to do, but now I have to accomplish these things and I have to advocate and I have to make sure people understand' but that feels like a much more manageable stress.

Cassie mentioned that in the short-term, the program helped her to feel prepared and re-evaluate the skills Alex currently had in a positive way. However, Cassie also mentioned feeling a "different kind of stress" following the program and referred to long-term stressors regarding his education and concerns about "when the demands outpace his abilities". When asked about how the program impacted her stress, Cassie stated:

> To feel more prepared when the time comes I guess is a good type of stress, like yes I am stressing out about it, but it's not like I don't feel like there's resources now to help manage it when we

> really cross the bridge, instead of thinking about it more reactively. But what happens when we transition to elementary school or after high school where his supports drop off, almost like a cliff?

Statements were also made supporting the notion that the effectiveness of intervention strategies for the child contributed to decreases in parents stress. For example, Kim stated that her son had "done so good this week and that also alleviates a lot of stress because the proof is in the pudding". Prisha compared PRT to the more discrete trial-based ABA therapy Rohan received back in Texas and mentioned that when Rohan was doing "ABA, they make him sit and do (flash)cards. He's not really interested in those so it was a little more stressful" for her and Rohan.

Minimal changes to program.

Parents reported that they would make minimal and relatively superficial changes to the program. When asked what they might change about the program, Ravi and Prisha both mentioned that they had hoped for more opportunities for social interactions with other children in the community. While some sessions were conducted with this family in community settings such as local parks in order to address socialization goals, it was not guaranteed that Rohan would have an opportunity to interact with other children in these settings. Kim reported that she would not change anything about the program itself, she just wished that her family lived geographically closer to the treatment center. Cassie recommended that the program be marketed more as a "vacation", mentioning that families might have difficulty taking a week off to participate in the program. She stated, "something that I would change, not the program itself, but how it's being sold to parents because I think that it's worthwhile" and followed with "I think it would be a hard sell for parents who just don't know much about it".

Individual Themes

In addition to the general themes that appeared throughout interviews with all participants, each parent brought up points that seemed to be unique to that parent/child dyad. The following section outlines additional themes that arose for individual parents rather than the whole sample.

Parent 1: Kim

In her post-intervention interview, Kim frequently referred to an increase in her advocacy skills and confidence. She made multiple statements describing how she might advocate for her child within the context of the larger family and the community. Kim expressed the following:

> The thing that always kind of was a mental barrier for me was worrying about how I would be able to advocate for him...Now I'm just thinking what I could do locally or nationally even, even if it's just fundraising or whatever, to make sure autism is better understood by people. It [the program] definitely gives me more confidence to be that stronger advocate for him and not maybe take the word from somebody saying 'no, we can't do that' when I know what's right.

This is a notable change considering that during the intake assessment interview, Kim expressed uncertainty and embarrassment with how to talk about her child to others in the community:

> He's autistic and I don't want to tell every single person in the world he's autistic to explain that he acts differently than every other child. So I feel like because of the way that [Andrew] and I experience social activities, things outside of the home, I do worry that I give up too soon or I take the easy way out.

However, during the post-intervention interview, Kim seems to express a positive change in her confidence and competence with talking about her child to others. This included more frequent comments about her desire to advocate for Andrew in addition to statements of what she would say to someone who doesn't know Andrew, for example:

> I don’t need you to treat him like he’s an idiot. I don't need you to treat him like he’s sick. I don’t need you to treat him like there’s something wrong with him. I just need you to understand that you need to change your approach.

Another theme that seemed to be present in Kim’s interview was the value she placed on receiving intervention within the context of the greater community - “it’s valuable for him...there’s the clinical setting, where you are testing him and then there’s out in the real world and then there’s also day to day chilling at home and he behaves differently in all of those venues. And so if you really want to understand him then you kind of need to understand him in all of those areas”

Parent 2: Ravi

While the majority of Ravi’s responses to post-intervention interview questions indicated positive changes, Ravi also expressed uncertainty about Rohan’s future. When asked what effect participating in the program has had on his hope, Ravi stated that it was too early for him to tell after just five days. “Ultimately the goal is that people should not even think he was autistic. So it’s too early to tell about his future right now”, Ravi stated. While Ravi did not go into detail with this response, he appeared to be the only parent participant that mentioned this potential doubt regarding how others viewed his son.

Parent 3: Prisha

Prisha’s responses to interview questions often referred to how the learning experience has different from intervention techniques they had previously endured. During the post-intervention interview, Prisha mentions that Rohan’s “staring has reduced, and part of that is he is enjoying all of this stuff and he is not having that much stress put on him”. At a later point in the interview, Prisha states that when Rohan was doing “ABA, they make him sit and do (flash)cards. He’s not really interested in those so it was a little more stressful”.

Prisha talks about Rohan's first experience with therapy and refers to feeling unsure of how to engage Rohan during this time, compared to her experience in the current program: "When he was just starting [ABA], it was really hard and he would turn away and we just didn't know what to do. But now I think we can find somehow to manage to engage him when he is really not interested".

Parent 4: Cassie

Cassie often referred to feeling a chronic lack of energy which contributed to her ability to interact with Alex. During the initial assessment interview, Cassie said that she often feels tired and stated that "finding the energy to be on top of his [Alex's] development" was one of her main goals. She mentioned that although she felt more confident verbally interacting with Alex after completing the program, this was still affected by feeling tired:

> In terms of, I guess speaking of confidence, I'm more comfortable being more verbal with him. But that kind of goes hand in hand with my energy, like sometimes I'll sit there with him and follow his train of thought or follow his lead and sometimes I'm like, "I'll just sit here and veg"

Cassie appeared to be the only parent who referred to experiencing chronic fatigue that she felt impacted her ability to interact with her son.

Discussion

Summary of Findings

Stress, Confidence, Self-Efficacy, Hope

Following the individualized intervention program, there was an overall decrease in parent stress, which was consistent across observational data and standardized self-report measures. For observed stress, the majority of parents (3 out of 4) decreased average stress from baseline to the final day of intervention. The majority of parents also decreased average standardized stress scores following intervention, with a large effect size. Further, all parents

reported at least some reduction in stress during post-intervention interviews. This outcome is significant for the autism community because past research has demonstrated that parents of children with autism have extremely high stress levels and experience even higher levels of stress than parents of children with other disorders (Brie, Schwarz, & Klein-Tasman, 2015). It appears that an individualized PRT parent education program could be beneficial for ameliorating some of the stress that parents initially experience when their child receives a diagnosis of autism.

While measures and interviews suggested a decrease in average parent stress, all parents reported that stress was not ameliorated entirely, as they anticipated future stressful events. This is consistent with literature conceptualizing the stress of being a caretaker to a child with a disability "as a process of ongoing adaptation and adjustment to change" (McGrew & Keyes, 2014). In the post-intervention interviews parents specifically reflected on long-term stressors, such as transitions in education. Thus, it seems that a brief parent education program may be helpful immediately following a diagnosis, but more comprehensive intervention and support might need to be ongoing in order to address the various stressors that might come up for families throughout their child's lifespan.

The increase in parent confidence and the maintenance for two parents at the two month follow-up point confirmed what was expected based on previous research. For observed confidence in interacting with their child, all parents increased from baseline to the final day. In terms of standardized measures, all parents demonstrated increases in self-efficacy, with a large overall effect size. As an additional measure of parent well-being, the majority of parents (3 out of 4) increased average scores on the Hope Scale with a medium to large overall effect size.

Parent confidence has been demonstrated to increase after exposure to similar parent education programs, though these programs were longer than the current study (Brookman-Frazee, 2004; Gengoux et al., 2015). The current study is significant in that it found meaningful changes in parent confidence and self-efficacy after a comparatively brief program. This means that it is possible to quickly empower parents in caring for their child after an autism diagnosis is received. This is notable because parents who perceive themselves as empowered are more effective in teaching their children skills and actively seeking out services for their children (Minjarez, Mercier, Williams, & Harden, 2012).

In most cases, PRT instruction needed simple additions and/or modifications in order to address parent goals. For example, while implementing PRT, a parent was taught to remain contingent on verbal attempts that were paired with eye contact in order to address her goal of increasing her child's eye contact. This versatility and efficiency of PRT education might be particularly important considering the brief time span of the program. Additionally, because many parent goals were easily incorporated into the framework of PRT, maximum intervention time could be focused on PRT instruction.

Child Verbal Initiations

Following the individualized parent education program, two children out of the four child/parent dyads demonstrated increases in verbal initiations during intervention. The children that were part of the other two child/parent dyads did not differ substantially in rate of initiations from baseline to intervention. Interestingly, Rohan demonstrated increases in initiations during intervention with his father (Ravi) and not with his mother (Prisha), and these findings maintained at two months follow-up. This could potentially be related to Prisha not meeting fidelity of PRT implementation during the program. Rohan's rate of

initiations at baseline was also more variable with Prisha than with Ravi so there was more overlap between baseline and intervention data for initiations to Prisha.

Triangulation, Complementarity, Process, and Explanation

To enhance the validity of the current study, qualitative and quantitative measures were combined. Behavioral observation data were confirmed through standardized self-report measures and semi-structured interviews for purposes of triangulation, complementarity, process, and explanation (Bryman, 2006; Greene, Caracelli, & Graham, 1989). Triangulation, or confirmation of trends in data from multiple sources, appeared to be established in the current study, as decreases in parent stress and the increases in parent confidence following intervention were consistent across types of dependent measures.

Complementarity, or the process of gaining details to augment and elaborate on results, occurred by determining specific factors or anecdotes that contributed to parent feelings of increased confidence and decreased stress. For the current study, it appears that the effectiveness of intervention strategies and ease of implementation were factors that were related to parent confidence and stress, as all parents referred to these themes during post-intervention interviews.

Clarification of the process occurred when parents identified aspects of the intervention program that they found helpful or reflected on the ease of learning to implement PRT. For example, one parent discussed how having a clinician model intervention strategies for her helped her feel more confident implementing these techniques. Parents also reported feeling as though participating in this program was a positive experience and that intervention strategies were not stressful for themselves or their child.

Further rationale for comparing qualitative and quantitative data included explanation, wherein the findings of one data set helped to explain those of the other data set. For the current study, post-intervention interviews served to provide more detailed explanation of factors that might have contributed to changes in measures of parent well-being after the program. One could speculate from parent responses that increases in confidence and competence and decreases in stress could potentially be explained by their positive experiences in the program. For example, parent responses to interview questions alluded to the ease of implementation, which might be related to low levels of parent stress during the program. One could also speculate from parent responses that being taught a discrete set of skills contributed to parent competence and confidence.

Limitations and Future Directions

The majority of parents met fidelity of PRT implementation at some point during the program, suggesting that the PRT curriculum was not diluted by incorporating additional evidence-based treatment strategies. However, there was one parent who did not meet PRT fidelity (Prisha). During their intake interview, this family reported both parents to be the primary caregivers and stated that they found it important that they both receive training. As such, they were both included in the current study, meaning that both parents received education and training during the 20 hour program. While the father met fidelity during the program and improved on all standardized measures, it may be that the current study did not provide enough hours of training to each parent individually for the Prisha to meet fidelity. Past research has shown that parents are able to reach PRT fidelity within a 25-hour PRT education program (Symon, 2005), so Prisha's fidelity of implementation might have been affected by splitting training time between the two parents. This brings up the compelling

question of how to balance the priorities and goals of the family without compromising the integrity of the treatment program.

Interestingly, Prisha also made the smallest improvements in standardized measures of self-efficacy and hope, and her raw score for the stress scale increased by one point. This lack of change was predictable considering that Prisha did not meet fidelity of implementation criteria for PRT. Prisha's results seem consistent with literature showing that reports of psychological functioning tend to differ between mothers and fathers, with mothers reporting greater levels of depression (Davis, & Carter, 2008; Hastings et al., 2005). It may be important to examine how mothers and fathers differentially respond to similar parent education programs. Our current understanding of parenting a child with autism has been defined primarily by those experiences of mothers, so it would be beneficial to explore in greater depth the experiences of fathers in parent education programs.

The focus of intervention was to teach parents to implement PRT while providing exposure and preliminary training in additional related strategies. Fidelity of implementation data were not collected on parents' use of other components of the PBS plan, such as conducting an FBA and/or teaching replacement behaviors. Future research of similar PRT education programs might examine the extent to which parents meet fidelity of implementation for other components of the multicomponent support plan when the focus is primarily on PRT education. Similarly, it is likely important to examine how much time should be devoted to PRT education and how much should be supplemental training and information in order for parents to be meeting fidelity.

It appears that there is some potential for this type of program to have an impact on child initiations, though this trend was not demonstrated with all participants. Future research

could examine potential factors that contribute to an increase in independent verbal communication from the child during this program, such as individual differences between participants in terms of parent-child interactions. For example, frequency of language opportunities presented by parents was not controlled for, and it could be that children who were spontaneously using more language also had parents that were providing more frequent language opportunities. Further, there may be other child behaviors that are affected by the parent education intervention, such as joint attention. Future research could examine the extent to which a similar parent education program has an effect on collateral child behaviors.

An additional limitation is the relatively brief nature of the intake and post-intervention interviews. In order to maximize the time spent on direct training with intervention strategies, interviews only occurred for approximately ten minutes. This process was imperative for treatment planning and analyzing parent reported outcomes but provided relatively limited insight into the overall experiences of parents with a child newly diagnosed with autism. Future research might explore parent experiences with education programs in further depth by asking more questions and including more probes during interviews. Ann Turnbull (1988) stated that "families desperately need to have their emotions listened to and validated and they need to know how to channel their emotional energy into constructive outcomes". More extensive interviews might not necessarily change the effectiveness of the treatment program, but would still provide meaningful insight on parent experiences.

Conclusion

The current study addresses an important issue in early intervention by analyzing outcomes of a program aimed at supporting families whose child has recently received an

autism diagnosis. It appears that a short-term parent education program in PRT individualized to reflect parent goals can promote well-being and reduce stress for families with a recent autism diagnosis. This study also provides detailed evidence that parents find this type of program to be helpful for improving their self-efficacy and empowering them to support their child. Further, there is some evidence that for some children, such a parent education program could have collateral positive effects on social communication.

There are broad clinical implications for the findings of the current study. There is currently limited empirical evidence for the potential effect of PRT education on the well-being of parents whose child was recently diagnosed with autism.Very few studies have examined the impact of PRT education in both a quantitative and qualitative manner. Further, providing PRT education to parents within the context of a PBS plan appears to be a novel contribution to the literature. Future research on the durability of these findings is warranted, as the current study was limited regarding the extent of follow-up data. It would also be beneficial to replicate this study on a larger scale. Regardless, it seems that the current study is a meaningful contribution to current clinical research and practice.

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APPENDICES

Appendix A

Functional Behavior Assessment Data Collection Sheet

Functional Behavior Assessment Data Collection Sheet

Observer Initials:										
Date:										
Time:										
Antecedent:										
Told no										
Preferred item removed/blocked										
Demand placed										
Alone										
Transition from preferred item/activity										
Interrupted										
Behavior:										
Runs away										
Screaming/yelling										
Crying										
Gets out of seat										
Climbs on furniture										
Spits										
Consequence:										
Verbal attention										
Given visual attention										
Verbally and Physically Ignored										
Given an item										
Demand removed										
Possible "Why":										
Get out of demand/task										
To obtain item/activity										
To gain attention										
Avoid demand/task										
Rigidity/Self Stimulatory										

Appendix B

Post-Intervention Interview Questions

"One of your goals was (brief summary of goal). How has participating in this program affected that goal?" (for each goal)

"How do you feel implementing PRT with your child?"

"How has this program affected your confidence in interacting with your child?"

"How has this program affected your stress levels?"

"How has this program affected your hope for your child?"

"What would you change about this program?"