PLAY YOUR WAY TO COMPLIANCE: A VALIDATION STUDY OF A PARENT-

TRAINING PROGRAM TO INCREASE COMPLIANCE RATES IN

YOUNG CHILDREN WITH AUTISM SPECTRUM DISORDER

by

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ABSTRACT

The current study evaluated the efficacy of a parent-training program, Play Your Way to Compliance, to increase compliance rates of young children with autism spectrum disorders (ASD). Play Your Way to Compliance is an evidence-based intervention package with an errorless learning approach designed to teach behavior management skills to parents to increase child compliance. The study involved four 6-year-old males with ASD and their mothers. A noncurrent multiple-baseline, multiple-probe design was used to evaluate the intervention package. Dependent variables included compliance rates, parent fidelity, externalizing problems, parenting stress, and consumer satisfaction.

Results showed significant increases in compliance rates for each of the participants. At baseline, the mean compliance rate across all participants was 28.9%. During intervention, the participants' mean compliance rate increased 90.8%. Follow-up at 3 weeks after intervention showed that participants maintained gains in compliance. Play Your Way to Compliance includes all of the materials necessary to effectively implement research-based interventions in one package. The program represents an effective and viable method for caregivers to increase compliance in young children.

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CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

Autism spectrum disorder (ASD) is a developmental disability that includes deficits in social communication and social interaction and restricted, repetitive patterns of behavior, interests, or activities (American Psychiatric Association [APA], 2013). Individuals with ASD encounter difficulties in developing and maintaining relationships, understanding nonverbal cues and using appropriate nonverbal communication, and understanding social rules and protocols. Impairments in ASD impact individuals across the lifespan with increasing social impairments and isolation through childhood and adolescence (Bauminger, Shulman, & Agam, 2003), and poor academic achievement, unemployment, and mental health concerns in adulthood (Farley et al., 2009; Howlin, Goode, Hutton, & Rutter, 2004).

Because of these impairments, individuals with ASD often have co-occurring mental health concerns. Studies have shown that children with ASD suffer from anxiety and mood disorders at a greater rate than the general population (Kim, Szatmari, Bryson, Streiner, & Wilson, 2000). In addition to core deficits, impaired understanding of verbal and nonverbal communications of others as well as impaired understanding of social rules and conventions often result in inappropriate social interactions and challenging behaviors such as aggression, temper tantrums, and noncompliance in children with ASD

(Dawson, Matson, & Cherry, 1998; Matson, Dixon, & Matson, 2005). Of 169 children ages 1.5 years to 5.9 years diagnosed with autism, Hartley, Sikora, and McCoy (2008) found that one-third of the children's scores on the Child Behavior Checklist (CBCL) fell at the Clinically Significant range for Total Problems and Externalizing Problems. Clinically significant scores were also found on symptom scales for a high percentage of children: Withdrawn (70%), Aggression (22.5%), and Emotionally Reactive (18.2%).

Researchers have found that such behavior problems in children with ASD not only exacerbate social rejection and isolation, but also significantly impact the levels of stress among parents. Studies have found that challenging behaviors are a great contributor to parent stress more so than deficits in daily living skills (Estes, Munson, Dawson, Koehler, Zhou, & Abbott, 2009; Lecavalier, Leone, & Wiltz, 2006; Schieve, Blumberg, Rice, Visser, & Boyle, 2007). Parents and caregivers frequently report noncompliance as one of the most prevalent behavior problems in children and it is considered a keystone behavior in the later development of severe conduct problems and antisocial behaviors (Forehand & McMahon, 1981; McMahon & Forehand, 2003). When a child is able to comply with requests, the child is able to actively engage in learning new skills and prosocial behaviors (Rhodes, Jenson, & Reavis, 1993). When a child demonstrates noncompliance, a coercive cycle between parent and child often occurs and interferes with the child's ability to learn new skills and behaviors and impacts the parent's ability to positively interact with their child (Patterson, 1982).

The coercive cycle posits that there are reciprocal effects between parenting practices and children's behavior. Specifically, a child's antisocial or aggressive behaviors may elicit a negative reaction from parents, which in turn, escalates the child's aggressive

behavior and the cycle repeats until one participant gives in to the other. As children learn this pattern of behavior over time within the family, it carries over into social interactions with others outside the family, resulting in conduct problems in later developmental stages (Dishion & Patterson, 2006; Shaw & Bell, 1993). According to Smith, Dishion, Shaw, Wilson, Winter and Patterson (2014), the coercive interactions between parent and child are a stronger predictor of subsequent childhood noncompliance and oppositional behaviors than the behaviors themselves that lead to the coercive cycle initially.

According to Matson, Mahan, and Matson (2009), "autism spectrum disorder is one of the most problematic and heavily studied childhood disorders" (p. 868) with social and behavioral concerns that are serious and life-long. The Centers for Disease Control and Prevention (CDC; 2014) show that 1 in 68 children in the United States has an autism spectrum disorder (ASD) and a comparison in overall prevalence rates of ASD show a 123% increase between the years of 2002 and 2010. Given the increasing prevalence rates of young children with autism and its effects throughout the lifespan, the development and implementation of effective parent-training programs is necessary. As effective parent-training programs are implemented for children with ASD, it is more likely that individuals with ASD will engage in functional activity and prosocial behaviors, decreasing the prevalence of comorbid conditions associated with ASD.

<div align="center">Parent Training</div>

Parent training has been defined as an "indirect service delivery in that the practitioner trains parents to apply treatment to children (Shriver, 2008, p. 26), a set of procedures in which "parents are trained to alter their child's behavior at home" (Kazdin,

1997, p. 35). Parent-training programs are also described as interventions in which "parents actively acquire parenting skills" (Wyatt-Kaminski et al., 2008, p. 569).

From the work of early researchers, an operant model of parent training was established with a simple focus to teach parents how to provide positive reinforcement and mild contingent consequences for deviant behaviors. A wealth of parent-training programs stemming from this operant model showed promising evidence that parents can make significant and meaningful differences in their child's deviant behaviors. The application of parent training began with research conducted by Williams (1959) and Hawkins, Peterson, Schweid, and Bijou (1966), who found that the use of operant extinction procedures could be taught to, and implemented by, parents to effectively reduce tantrums and aggression.

Additionally, the efficacy of parent-training procedures was evaluated on negativistic, noncompliant, oppositional, aggressive, autistic, and delinquent behaviors, as well as speech deficits and somatic illnesses (Bijou, 1984). In Graziano's review (1977) of parent-training techniques, it was stated, "utilizing parents may be the single most important development in the child therapy area" (p. 257). With the success of these initial studies and using parents as partners in the intervention process, research on parent-training practices increased.

Patterson and colleagues (1976) were the first to develop a manualized parent-training program. Patterson and colleagues (2010) developed behavioral parent training (BPT) centered on the idea that through modification of the parent's behavior, a change in the child's behavior would subsequently occur and reduce the coercive style of communication between parents and children often maintained by negative reinforcement.

Temper tantrums were identified as common coercive behavior demonstrated by children whereas harsh punishment, physical or psychological, was identified as coercive behaviors demonstrated by parents. An example of the coercive cycle is when a parent makes a request of their child. The child begins to whine and eventually throws a tantrum. As a result, the parent revokes the request and both the child and the parent have escaped the situation.

<center>Current Parent-Training Programs</center>

Based upon Patterson's coercion theory, various parent-training programs were developed (see Table 1.1). The *Living with Children* manual was developed and is also referred to as the Parent Management Training-Oregon (PMTO). According to Forgatch and Patterson (2010), the PMTO intervention "empowers parents in their use of positive parenting strategies and to reduce their reliance on more coercive approaches" (p. 166). There are three main goals of the PMTO program: 1) to focus on strengths, 2) to give effective directions, and 3) to teach through encouragement. The parenting program can be completed in either group or individual format. When conducted in a group format, weekly sessions only include parents and range from 60 to 90 minutes across 14 sessions. Used in an individual format, weekly sessions typically include the child and range from 60 to 90 minutes across 25 to 30 sessions, depending on the specific need of the family. Both formats incorporate homework for parents to generalize skills and midweek phone calls to troubleshoot issues and to promote the use of newly acquired skills. Since its inception, PMTO has been extensively validated as a well-established treatment for children with conduct problems (Brestan & Eyberg, 1998; Patterson & Fleischman, 1979).

Several studies have also found the treatment to be superior to control groups (Alexander & Parsons, 1973; Bernal, Klinnert, & Schultz, 1980; Firestone, Kelly, & Fike, 1980).

Subsequent parent-training programs were also highly influenced by Patterson's research. Forehand and McMahon (1981), using the tenets of the coercion theory, created a parent-training program to reduce disruptive and noncompliant behaviors. The goal of *Helping the Noncompliant Child* (HNC) is to replace the coercive cycle of negative parent-child interactions with positive interactions in which parents learn to effectively give alpha commands in order to reduce the likelihood of problem behavior and the initiation of the coercive cycle.

Parent Child Interaction Theory (PCIT) (Eyberg, 1982) also draws upon the coercion theory as a staple feature of the program; however, it departs from the previous packages as the main focus of PCIT is on the quality of parent-child interactions (Hanf, 1969). The goal of PCIT is to restructure the patterns of parent-child interactions to foster a warm relationship between parents and children. In order to achieve the goal of this program, parents are coached during in vivo play with their child by using a "bug in the ear" technique. This technique allows parents to learn both Child Directed Interaction (CDI) and Parent Directed Interaction (PDI) skills. CDI focuses on parents engaging their child in play to strengthen the relationship, whereas PDI focuses on parents using specific behavior management strategies. PCIT is considered to be an evidence-based treatment for young children with behavior disorders (Eyberg et al., 2008).

Similarly, The Incredible Years program targets parent-child interactions to decrease conduct-disordered behaviors in children. It is conducted in a group format using video models to train parents. The Incredible Years not only focuses on strengthening

parent-child interactions, but also in teaching and strengthening parenting competencies: positive communication, play skills, and limit setting. Based on several studies that reviewed the Incredible Years, both parent report and observed behaviors in the home showed decreases in deviant behavior (Spaccarelli, Cotler, & Penman, 1992; Webster-Stratton, 1984, 1990, 1994; Webster-Stratton, Kolpacoff, & Hollinsworth, 1988).

The Parent Management Training (PMT) also draws upon coercion theory and altering parent-child interactions while incorporating principles of applied behavior analysis to change both parent and child behaviors (Kazdin, 2005). PMT has an extensive literature base purporting the efficacy of the program (Kazdin & Weisz, 1998). Parents who had children with significant behavior problems participated in PMT for 9 weeks and showed a significant decrease in problem behaviors based on observational data. In addition, these results maintained at a 1-year follow-up and the findings have been replicated in a study of 101 participants (Webster-Stratton & Hammond, 1990). After participants concluded PMT, the children's deviant behaviors were reduced from clinically significant to nonclinical levels of functioning. Moreover, treatment gains have been reported to maintain at 1 to 3 years posttreatment (Kazdin, 1997).

<div align="center">Common Parent-Training Components</div>

It was estimated in 2005 that over 400 parent-training reports are in circulation, treating a myriad of behavior problems in children (Maughan, Christensen, Jenson, Olympia, & Clark 2005). Given the breadth of programs, these programs incorporate many different training components in format or delivery. Despite the differences, the components all share a common objective in teaching parent strategies to increase positive

behavioral outcomes in children and, according to Johnson et al. (2007), program objectives must ensure that parents develop certain skills in behavior management. Parent-training curricula need to focus on teaching antecedent strategies (i.e., proactive strategies to prevent problem behaviors), teaching strategies (i.e., strategies to teach new behaviors and skills), and consequence strategies (i.e., strategies for responding to problem behavior). Basic skills that parents need to develop include learning how to effectively deliver instructions, appropriately provide reinforcement, and consistently apply rules and consequences. The goals of parent training should be to provide instruction to parents about treatment strategies, to model strategies for the parents, to provide opportunities for guided practice, and to give parents feedback on their implementation.

Homework is the most common component included in evidence-based parent-training programs. Every program listed in Table 1.1 requires parents to complete homework in some fashion, whether it is to review materials or actively practice new skills. Because parents are acquiring a new skill in a setting outside of their home, having ample opportunities to practice the skill(s) taught is necessary for skill acquisition. Homework might also require parents to collect daily or weekly data and return this information to the practitioner; however, this is less common than many other forms of homework. Additionally, handouts or didactics are commonly included in parent-training programs to educate and support a newly acquired skill. Handouts are provided in many different formats such as refrigerator magnets to cue parents of program procedures (Webster-Stratton, 1994).

A common feature of parent-training programs is to begin with a psycho-educational component. It is thought that parents of children with autism need background

information to help them understand their child's diagnosis. Education is often provided as information about typical child development and the symptoms and characteristics associated to autism. Wyatt Kaminski et al. (2007) discuss that education is often provided based on the assumption that parents have inappropriate behavioral expectations of their children and therefore, instruction in child development may be sufficient to change parenting behaviors. Additionally, some programs may include education on the types of treatment programs that are available to children and families with autism and the research evidence to support their use.

Consistent with other components, feedback is commonly incorporated into programs to increase parent skill acquisition. Performance feedback is a technique to provide information on the implementation of a skill. Feedback can be provided in varying formats such as direct coaching, observations, and/or performance feedback. Programs that utilize in vivo coaching commonly use "bug in the ear" technology to guide the parent while they are in session with their child (Eyberg, 2008; Jones & Forehand, 2014). Clinicians also incorporate observations to assess mastery of parenting skills taught in programs. Observations can be used to review how the parent is utilizing skills and/or procedures outlined in a parent-training program.

Parents can receive verbal or visual feedback from a program facilitator. Verbal feedback might entail the clinician reviewing how the parent demonstrated an expected procedure or skill set. Visual feedback consists of viewing collected and graphed data on performance and is commonly used in parent-training programs to review the child's change in behaviors. Analyzing data and objective pieces of information allows the clinician to address possible strengths and weaknesses of implementation as well as to

modify any parts of a program. Video feedback consists of parents demonstrating and recording their new skills with their children. Clinicians and parents then review a video session and discuss successes or difficulties in implementing the specific procedure or skill set. Results from a recent study indicated that providing feedback to parents increased their use of positive parenting strategies (Shanley & Niec, 2010); however, it is unclear whether providing feedback to parents alone is enough to obtain parent skill acquisition.

More recently, parent-training programs have incorporated the use of technology, such as video modeling, as a component. The Incredible Years program has evaluated the use of a video format in which the videos depict parent-child interactions and discussion of behavior management principles to deliver parent-training procedures. Results of several studies provided evidence that incorporating video modeling (for parents and children) is superior to a waitlist group (Webster-Stratton, 1990, 1992; Webster-Stratton & Hammond, 1997). Meharg and Lipsker (1991) also implemented a video modeling intervention to teach parents to give clear commands and provide contingent reinforcement. Results indicated that treatment effects were not significant as moderate to small effect sizes were reported. However, treatment integrity was not well documented and may have impacted the outcomes considerably. In a later study, Kahn (2012) evaluated the effects of a video modeling intervention to increase positive parenting statements to children with ASD. Although only a slight improvement was observed in parent behavior, results indicated a decrease in parent report of child problem behaviors.

While many manualized parent-training programs exist with common objectives, they have varying degrees of success in increasing prosocial behaviors and generalizing

these behaviors to new settings. There are many overlapping components found within the programs; however, the programs also vary in methods and skills targeted. While the structure of the parent-training programs is central to the success of the program, it is also important to evaluate the additional components of efficacious parent-training programs to determine what factors may contribute to positive outcomes.

<div style="text-align:center">Efficacy of Parent-Training Programs</div>

There has since been a proliferation in studies investigating the utility of behavioral parent-training programs (BPT) to increase skill acquisition and to reduce maladaptive behaviors in children. Serketich and Dumas (1996) conducted a meta-analysis to review the effectiveness of parent training in children who displayed antisocial behavior such as aggression, temper tantrums, or noncompliance. Based on a total of 26 studies, it was found that children whose parents participated in parent training were better adjusted than 81% of children who participated in another treatment or no treatment at all. The effects also generalized to the school setting, in which children whose parents received parent training were better adjusted than 75% of children whose parents did not. Additionally, parents were better adjusted themselves after participating in parent training and many of the included studies demonstrated maintenance of improved behavior in children with some follow-ups occurring a year posttreatment.

Maughan, Christensen, Jenson, Olympia, and Clark (2005) also evaluated the effectiveness of BPT as a treatment for children with externalizing behavior disorders. A total of 79 studies were included in the meta-analysis, which found a mean effect size of .54 for single-subject studies, .30 for between-subject studies, and .68 for within-subject

designs. Although this finding suggests that BPT is not as effective as once believed (Serketich & Dumas, 1996), the effects indicate that BPT is still an effective intervention for behavior modification and is most effective for children ages 9 to 11. The researchers also found that treatment efficacy was significantly affected by the number of treatment sessions, with shorter programs of one to five sessions having a larger effect size than longer programs using more treatment sessions.

Consistent with these findings, Wyatt Kaminski and colleagues (2008) supported the use of parent-training programs in changing parenting behavior and reducing child behavior problems through a meta-analytic review of 128 studies. Effect sizes were larger for stand-alone parent-training programs than programs part of a package of interventions or those that included supplementary services (e.g., substance abuse treatment, vocational training, stress management). Additionally, it was found that programs that directly targeted parenting skills produced better outcomes than ancillary focuses.

Wyatt Kaminski et al. (2008) also conducted a component analysis to evaluate the effectiveness of program features such as how instruction is delivered and what skills are taught to parents. Components associated to higher effect sizes were indicated for programs that provided instruction on emotional communication, provided instruction on responding consistently to problem behaviors, and required parents to practice their newly acquired skills with their child, regardless of the program content and delivery. Larger effects were found from programs that engaged parents through modeling and role-playing of specific behavior management skills: attending (positive-child interactions), positive reinforcement, planned ignoring, providing clear instructions, and using time out from reinforcement. In particular, parent training on positive parent-child interactions was

found to be predictive of behavioral outcomes for both parents and children.

Parent-Training Programs for ASD

Research on parent training to address disruptive behaviors and conduct problems are the most widely studied; however, this research base is relevant in addressing problem behaviors for children with ASD. Many parent-training programs for children with ASD share similarities in their focus on operant conditioning and use of the applied behavior analytic principles to teach positive parenting strategies (Brookman-Frazee, Vismara, Drahota, Stahmer, & Openden, 2009). In addition to these programs, parent training has also been evaluated as an intervention for children with ASD to target behaviors that vary widely from toileting behaviors (Kroeger & Sorensen, 2010) to communication (Elder, Valcante, Yarandi, White, & Elder, 2005) to anxiety (Love, Matson, & West, 1995) to social skills (Laugeson, Frankel, Gantman, Dillon, & Mogil, 2011; Radley, Jenson, Clark, & O'Neill, 2014). Across these studies, parents were trained how to work with their children using behavioral principles to address target behaviors.

Because social skills are a core deficit for children with ASD, parents have been a part of teaching social skills to their children in order to increase generalization and maintenance of new skills. The Program for the Education and Enrichment of Relational Skills (PEERS®) (Laugeson, Frankel, Gantman, Dillon, & Mogil, 2011) is a social skills intervention for adolescents with ASD that includes a parent-training component across 14 weekly sessions. Parents are taught how to assist their children in practicing and generalizing the target skills of each week's lessons such as maintaining a conversation, finding common interests with others, and having get-togethers. Research has shown that

parent-assisted training was effective in decreasing autistic mannerisms and increasing frequency of peer interactions and overall social skills. Similarly, Radley and colleagues (2014) evaluated the feasibility and efficacy of a parent-facilitated social skills program and found substantial improvement ($ES = 0.64$) in social engagement for program participants.

Noncompliant behaviors in children with ASD have also been the subject of research involving parent training. Butter (2007) implemented a parent-training program for parents of children with ASD with lessons targeting noncompliance, irritability, tantrums, aggression, and self-injury. Following intervention, a decrease in noncompliance and irritability was observed along with an increase in functional daily living skills. Marchant, Young, and West (2004) trained parents to provide effective and instructive praise and how to use corrective procedures to address noncompliance. Additionally, parents provided direct instruction to their children on the steps and behaviors that resulted in compliance and reward (e.g., look at the person, say okay, do it quickly, and finish). The study found that parents could successfully learn and implement the strategies to teach and reinforce compliance.

Ducharme (1993) developed the *Errorless Compliance Training* (ECT) program in which parents are trained to systematically deliver increasingly demanding requests and provide positive reinforcement in order to gain compliance in children with ASD. ECT stems from errorless learning, a behavior analytic strategy designed to increase a child's opportunities for success and reduce errors in responding. Parents determine the probability that their child will comply with a given request and requests are placed on a hierarchy in which they will be delivered based on the probability of compliance. Parents

begin the program by delivering requests that are easier for children before delivering more difficult requests that may lead to errors. As Barkley (2000) suggests, ECT focuses on a positive antecedent approach unlike other programs that teach parents to use aversive procedures or punishment. ECT has been shown to be effective in increasing compliance to various types of parental requests including academic, play, and adaptive tasks and behaviors (Ducharme, 1993; 1994; Ducharme & Ng, 2012; Ducharme, Popynick, Pontes, & Steele, 1993).

While the literature base has demonstrated the utility of parent training as a component in interventions for children with ASD, it is also important to consider the factors that contribute to its effectiveness. Osborne, McHugh, Saunders, and Reed (2008) evaluated parent-training programs with 72 children with ASD. Results indicated that setting limits early in training was central to success in parent training. It was also evident that instruction in behavior management was critical in helping parents reduce parenting stress and become more effective in implementing skill acquisition programs. Matson, Mahan, and Matson (2009) also highlight the importance of targeting operationally defined behaviors that are treatable, using established consequences, and maintaining consistency throughout training. The parent-training literature for children with ASD suggest that early intensive behavioral interventions, which include parent training, are highly effective in treating deficits associated with ASD.

Evidence-Based Practices

While many interventions exist to address challenging behaviors, it is critical that practices are based on empirical research. Educational, psychological, and professional

associations have emphasized the implementation of evidence-based practices in order to provide the most effective treatments for individuals with ASD.

Similar to medical guidelines for evidence-based practice, the American Psychological Association (APA) has provided guidelines to encourage improving patient outcomes through informing practicing clinicians of current research (American Psychological Association, 2006; Chambless et al., 1996). APA has defined evidence-based practice as "the integration of the best available research with clinical expertise in the context of patient characteristics, culture, and preferences" (APA, 2006, p. 1). APA delineates the goals of evidence-based practice as improving overall patient outcomes, making mental health care more cost-effective, as well as increasing the accountability of practitioners. APA also defines the types of research designs that best contribute to the development of evidence-based practice. Traditional random controlled trials and meta-analyses provide stringent measures of treatment efficacy; however, clinical observations, qualitative research, single-subject designs, case studies, and process-outcomes studies also contribute to the empirical evaluation of evidence-based practices.

Using the criteria presented by Chambless and colleagues (2006), Division 12 of APA has attempted to classify empirically evaluated practices based on the level of rigor and amount of research demonstrating positive outcomes. For a practice to be considered Well-Established, a minimum of two well-conducted group design studies, or nine well-conducted single-subject studies, that demonstrate substantial positive outcomes must be conducted by different researchers. In order to be considered a Probably Efficacious practice, positive outcomes must be demonstrated by two group design studies or at least three single-subject design studies. The guidelines provide a useful, concrete definition of

evidence-based practice against which treatments may be measured. Additionally, the guidelines provide researchers with specific directions for establishing evidence-based practices through empirical analysis.

O'Donohue and Ferguson (2006) suggest that several weaknesses exist in using APA's criteria for selecting evidence-based practices in applied settings. First, studies found to be well-established are often based on statistical significance, rather than clinical significance. Clinical significance refers to positive clinical outcome for the consumer, instead of focusing solely on observed changes due to the introduction of an independent variable. O'Donohue and Ferguson suggest that while some treatments show statistically significant outcomes, they may fail to produce meaningful results. Second, the criteria proposed by APA (2006) and Chambless et al. (1996) evaluate efficacy, the extent to which a treatment is beneficial; however, effectiveness, which is the successful translation of an efficacious treatment to a community or practice setting, is more valued in the clinical setting. Third, studies often exclude participants with comorbid conditions, which contrasts with patients who often present with more than one condition in clinical settings and which research findings may no longer be relevant or effective. Finally, O'Donohue and Ferguson criticize the bias for group design studies and inferential statistics that often eliminates single-subject studies as well as withdrawal and multiple baseline designs.

Although applied behavior analysis (ABA)-based interventions have been well-documented as a treatment program for autism (Campbell, 2003; Matson, Benavidez, Compton, Paclawskyj, & Baglio, 1996; Volkmar, Lord, Bailey, Schultz, & Klin, 2004), ABA-based interventions are often excluded from evidence-based practice (EBP) lists due to the weaknesses of EBP criteria proposed by O'Donohue and Ferguson (2006).

Notwithstanding, several ABA-based treatments have been determined to be Well-established or Probably Efficacious. Many of these treatments originate from "first generation behavior analysis" (O'Donohue & Ferguson, 2001), and a lack of current research using ABA principles is apparent when examining evidence-based practice lists using the Chambless et al. (1996) criteria. O'Donohue and Ferguson suggest that new research focus on "new-school" behavioral principles such as response deprivation, matching, and behavioral momentum as well as a focus on the use of ABA treatments for individuals other than those affected by autism or developmental disabilities in order to expand the research of ABA treatment.

The National Autism Center (NAC, 2009; 2015) has disseminated the literature base on interventions for individuals with ASD, where many ABA treatments have been found to be effective. NAC has outlined the treatments into a *National Standards Project* and has categorized the treatments into three areas: Established, Emerging, and Unestablished. Some of the criteria for Established treatments include research evidence of immediate and long-term beneficial effects and evidence that the treatment does not produce harmful effects. Although research has suggested that these treatments are effective, there is no indicator as to whether it will be effective with any given individual and professional judgment is required. Emerging treatments are those that do not have enough research to provide support for its effectiveness or lack thereof. These should be used with caution as treatment effects (positive or negative) have not been thoroughly studied and consideration of these treatments should be conducted through informed decision-making. An Unestablished treatment suggests that there is little to no evidence to support its use. Treatments may also be classified as Unestablished if they have been

found to produce harm and should not be part of a treatment plan. The *National Standards Project* provides rigorous examination of treatments and provides guidelines for determining best practices. The NAC has also included feedback from other organizations in order to factor in critical findings about treatments outside of the research setting. The NAC has identified the critical role of professional judgment, values and preferences, and treatment provider capacity in the selection of use of evidence-based practices.

Evidence-Based ABA Treatments

Within the *National Standards Project*, antecedent and behavior packages have been classified as Established treatments for children with ASD and within these packages are specific applied behavior analytic techniques that have been shown to effectively increase skill acquisition and reduce maladaptive behaviors.

Errorless Learning

The seminal work by Terrance (1963) led to the examination of errorless learning, a set of prompting and fading procedures designed to reduce incorrect responding and to increase discrimination abilities. In contrast, trial-and-error learning creates opportunities for errors to occur in which an individual learns what actions lead to particular consequences. As suggested by Mueller, Palkovic, and Maynard (2007), many studies have shown that the selection of errors can negatively impact children and lead to problem behaviors and negative emotional responses. Given that children with ASD struggle to learn discriminations even with effective prompts (Schriebman, 1975) and show stimulus

overselectivity (Lovaas, Schreibman, Koegel, & Rehm, 1971; Ploog, 2010), errorless learning therefore decreases the chances of making errors and exacerbating behaviors and increases the opportunities for reinforcement when learning new skills and behaviors.

Born-Miller (2002) evaluated the implementation of errorless learning with two children with ASD who had long histories of not being able to learn through trial-and-error teaching. The intervention was found to increase one child's response to verbal instruction and to increase the ability to expressively identify numbers in the second child. In another study, errorless learning was compared to a trial-and-error approach in learning words (Warmington, Hitch, & Gathercole, 2010). The findings suggested that children who followed the errorless learning approach were not only able to learn more words, but learned them at a faster rate. In addition to skill acquisition, errorless learning has been shown to be an effective approach in decreasing noncompliance. Ducharme (1993) implemented the intervention with four children with development disabilities who, on average, complied with parent requests 44% of the time during baseline. After an errorless compliance training, compliance rates were over 80% and maintained at a 2-month follow up. More importantly, it was found that maladaptive behavior in response to parental requests decreased from a pretreatment mean of 51% to a treatment mean of 10%.

Precision Requests

Another strategy to increase compliance and reduce maladaptive behavior is precision requests. The precision request structures an interaction with a child to be concise, predictable, and respectful, while maintaining adult authority and increasing the likelihood of child compliance (De Martini-Scully, Bray, & Kehle, 2000; Musser, Bray,

Kehle, & Jenson, 2001; Neville & Jenson, 1984). Clear and concise instructions serve as a discriminative stimulus, or a cue, of the specific environmental event or condition to which a child is expected to exhibit a behavior. After an instruction is given, the child learns that a specific consequence (reinforcement) will follow if he exhibits the appropriate behavior and a separate consequence will follow if he exhibits inappropriate behavior.

A precision request is given utilizing an imperative statement rather than a question. For example, instead of saying, "Can you…" a parent would state, "Johnny, please brush your teeth" while maintaining eye contact with their child. Precision requests are given 3 to 5 feet from the child with eye contact, use the child's name to gain their attention, and are given in a calm, neutral voice. For each precision request sequence, the child is provided with a "Please" request with the expected behavior specifically described, given 3 to 5 seconds to begin compliance of the instruction, and then given a second instruction with a "Need" request ("Johnny, I need you to…") if compliance is not observed after the "Please" request. If the child does not comply after the "Need" request, a parent must follow through with delivering a predetermined consequence for noncompliance.

Many behavior management programs incorporate the use of precision requests and have found promising results in effectively reducing noncompliance in home and school settings. In a study by Mackay, McLaughlin, Weber, and Derby (2001), a precision request intervention was implemented by the parents, sibling, and childcare provider of a 12-year- old diagnosed with intellectual disability. It was found that compliance rates increased in the home and community setting. Yeager and McLaughlin (1996) also

examined precision requests as a stand-alone intervention. The researchers evaluated three conditions (precision request alone, time-out ribbon alone, combined precision request and time-out ribbon) to increase compliance of a preschool student. Although all three conditions produced an increase in compliance the classroom, the use of precision requests alone maintained compliance by the end of the study.

Bryce and Jahromi (2013) examined the relationship between the types of commands delivered by parents and the compliance rates of children with autism. The study found that parents most often delivered indirect commands (polite request or suggestion) or unclear commands with no overt specification of an action; however, children with autism demonstrated higher rates of compliance when parents delivered direct commands that specified expected behavior. A possible explanation of this finding is that due to the inherent social deficits associated with autism, there may be interference in the child's ability to accurately infer a parent's instructions that are not explicitly stated. This finding supports the need for clear and concise instructions, such as those within the precision request sequence, when trying to obtain compliance from children with ASD.

Behavioral Momentum

Based on Newton's law of motion and the parallels between a behavior's resistance to change and the momentum of objects in motion, Mace et al. (1988) proposed an intervention called the "high-probability command sequence" to address noncompliance. The procedure "indirectly manipulates rate of reinforcement to establish what appears to be a 'momentum' of compliant behavior that may persist when subjects are asked to perform a task with a low-probability of compliance" (p. 124). This

antecedent-based strategy requires parents and teachers to deliver a series of requests that a child is highly likely to comply with before delivering a difficult request that the child typically does not respond to.

Research has found that behavioral momentum can be used across behaviors, settings, and disabilities (Davis & Brady, 1994; Davis & Reichle, 1996; Jung, Sainato, & Davis, 2008; Oliver & Skinner, 2003; Wehby & Hollahan, 2000). Wehby and Hollahan (2000) examined the use of behavioral momentum with a school-age child with learning disabilities who exhibited noncompliance when instructed to complete a math assignment. Although results of the study found that the procedures did not increase overall task engagement, the intervention was able to reduce the latency to compliance. In another study, Banda and Kubina (2006) used behavioral momentum and delivered two to three high-probability requests to help an adolescent with ASD to transition in the classroom. In addition to an increase in compliance, the intervention reduced the time to complete the transition as well as reducing the frequency of prompts given by the teacher. In a study by Davis, Brady, Williams, and Hamilton (1992), the authors found that young children with behavior disorders showed increases in compliance when behavioral momentum was used. More importantly, the study found that the children were able to generalize with other adults who had never implemented behavioral momentum strategies before.

Positive Reinforcement

The majority of behavior modification programs include reinforcement procedures in order to change behavior in children. Based on the principles of operant conditioning, positive reinforcement occurs when a stimulus is presented as a consequence of a behavior

and leads to an increase in that behavior. Positive reinforcement occurs in many forms from delivering a tangible item to a praise statement and its effectiveness depends on the level of value an individual places on the specific reinforcer. The use of positive reinforcement has been shown to be effective in addressing a range of childhood behaviors from toileting (Cicero & Pfadt, 2002; Rinald & Mirenda, 2012), to food selectivity (Knox, Rue, Wildenger, Lamb, & Liuselli, 2012), to play skills (Conner, Kelly-Vance, Ryalls, & Friehe, 2014), to on-task and academic behaviors (Dolezal, Weber, Evavold, Wylie, & McLaughlin, 2007).

Although Wyatt-Kaminski et al. (2007) did not find that teaching parents to provide positive reinforcement was predictive of program effects, all parent-training programs incorporate reinforcement procedures as a necessary component of the curriculum. The ability to deliver effective reinforcement, as verbal praise or as a tangible reward, is a critical skill for parents to learn and implement in order to effectively respond to their child's engagement in appropriate behaviors. Positive reinforcement is used to help the child associate positive behaviors with rewards and increase their engagement in such behaviors in addition to breaking the coercive patterns of parent-child interactions.

Planned Ignoring

When children are engaging in inappropriate behaviors, attention can sometimes reinforce and maintain the problem behavior and contribute to the cycle of coercion. Thus, it is recommended that parents ignore problem behaviors as long as the behaviors are not severe enough to put the child or others at risk for harm. Planned ignoring is a form of extinction designed to weaken, decrease, or eliminate a behavior. The

underlying assumption is that by withholding reinforcement, children will cease to engage in problem behaviors as they learn that these behaviors are no longer producing the same desired outcome (Alberto & Troutman, 2009).

Hester, Hendrickson, and Gable (2009) described planned ignoring as an effective strategy provided that adults ensure basic principles of immediacy, contingency, consistency, and specificity. Parents must immediately use planned ignoring contingent on the inappropriate behavior, be consistent in using the strategy, and specify the appropriate behavior when challenging behavior ceases and attention is provided. Because some behaviors can be tough to ignore, Rhode, Jenson, and Hepworth (2010) recommend breaking eye contact, showing no emotion, and engaging in another activity or moving to another setting when children are engaging in challenging behaviors. These procedures were effectively used to address sleep problems in young children and an adult with developmental disabilities, who exhibited challenging behaviors when settling into bed or during nighttime awakenings (Didden, Curfs, van Driel, & de Moor, 2002). The amount of nighttime disruption was significantly reduced from an average of 30 to 45 minutes to 1 to 3 minutes.

<div align="center">Video Modeling</div>

Video modeling is the process of watching a video of a peer successfully demonstrating steps to a skill and the appropriate use of the skill or behavior. A child reviews the video over repeated sessions and is provided an opportunity to exhibit the behavior. The concept is based upon social learning theory (Bandura, 1977) that denotes that behavior is learned from the environment through observational learning. Learning

occurs as individuals observe models engaging in a particular behavior that elicits reinforcement. Although many children naturally learn by observing and imitating the behaviors of others in their environment, children with ASD often struggle to do so. Because children with ASD may be focusing on extraneous details in the natural environment, video-modeling interventions cue children to focus on the important steps and details to engage in a behavior.

Research has found video modeling is more effective than in-vivo modeling and it is also a cost-effective alternative to other forms of training (Bellini & Akullian, 2007; Miller, 2006). Bellini and Akullian (2007) conducted a meta-analysis of video modeling and video self-modeling interventions for children with ASD, in which participants observed another individual or themselves successfully demonstrating a social skill to be acquired. The meta-analysis included a total of 23 studies and overall, a PND of 80% was observed across all studies and suggested a moderate intervention effect. Additional studies found increased interaction time and generalization of play skills to new toys, settings, and teachers for children with ASD after viewing video-models of typically developing peers (Green et al., 2013; Nikopoulos, 2007; Nikopoulos, Canavan, & Nikopoulos-Smyrni, 2009).

Similarly, Charlop-Christy and Danshevar (2003) found video modeling to be a fast and effective method to teach perspective-taking that also resulted in stimulus and response generalization. Buggey (2005) also found positive results in using a video modeling procedure to teach young children with ASD to appropriately engage in social interactions. In addition to social behaviors, Buggey examined the effects of video modeling on challenging behaviors (e.g., tantrums, physical aggression). Results indicated

that the intervention was effective across all behaviors and across all participants in the study.

<div align="center">Generalization</div>

Parent-training programs take place in a variety of settings. Often, in an attempt to minimize the cost of parent-training programs, they are conducted in hospital, clinic, outpatient, and community settings. Thus, the importance of skill generalization is imperative as parents are required to use a newly acquired skill in their home environment. When children are incorporated into the parent-training program, addressing generalization is also an important factor to consider. Therefore, making a skill more easily to utilize for both parents and children is an important element of generalization and is evident in the idea referred to as "stickiness."

Malcolm Gladwell (2001), author of *The Tipping Point*, popularized the concept of "stickiness." In the book, Gladwell explains what makes certain television programs and advertisements memorable for their target audience. Gladwell claims that through close attention to structure and format, the stickiness of a message may be enhanced (p. 110). The idea of stickiness is directly applicable to parent training in its efforts to enhance generalization of learned skills for both parents and children.

Gladwell presents the idea that repetition is central to enhancing the stickiness of a message. As a message is repeated to parents or children, they are better able to recall the information at a later point in time. Gladwell also proposes that the content should be creative, in that it grabs the attention of the target audience. As the presentation of the material becomes more appealing, stickiness of the message improves.

In order to create a program that appeals to parents and children, elements must be

incorporated to make the message stick. As the information becomes stickier, the more likely that information may be recalled at a later date. This finding is especially applicable to parent training for adults and children; in order for a new skill to be retained in memory, elements of stickiness must be incorporated into the lesson.

Heath and Heath (2009) have also examined the concept of stickiness and how stickiness of messages may be enhanced. *Made to Stick* provides a framework for enhancing the stickiness of a message using what they label SUCCESS: a simple unexpected concrete credentialed emotional story. Simple suggests that the information presented must be simple, yet profound. Unexpectedness in the information helps to maintain interest in the information being presented. Concrete messages help to make the information easier to remember. In order for individuals to test the information for themselves, the information must come from a credible source.

While the concept of "stickiness" is one that has been popularized outside of the scientific community, it can be linked to empirical research on generalization. Stokes and Baer (1977) suggested that while generalization is often approached as a passive phenomenon, attention to programming details would enhance the generalizability of newly acquired skills. Generalization-promotion is attempted through several strategies, all of which aim to promote generalization and "stickiness" of the skill across time and new situations. Through implementation of strategies that enhance generalization, such as those previously discussed, learned skills can be generalized across time and new settings, effectively increasing the "stickiness" of the learned skill.

Through simply incorporating elements of stickiness into a message, the content may be made more memorable. Some programs have aimed to enhance the stickiness and

generalizability of their message through incorporating elements that have been found to enhance stickiness. The Incredible Years (Webster-Stratton, 1984) is a popular social skills program that has utilized many factors that have been found to enhance stickiness, and has subsequently been found to produce positive changes in prosocial behaviors in participants (Taylor, Schmidt, Pepler, & Hodgins, 1998; Webster-Stratton, Reid, & Hammond, 2004). The Incredible Years program included elements of stickiness such as watching videos multiple times to feature repetition, having group discussions about videos to foster interactivity, and using high-interest material. Overall, The Incredible Years has successfully incorporated elements of stickiness in order to enhance parent-training programs as well as to teach social skills to children.

<center>Play Your Way to Compliance</center>

Play Your Way to Compliance is intended for young children with autism spectrum disorders who exhibit noncompliance. It has been designed to address the shortcomings of other parent-training programs for children and employs a number of evidence-based practices in order to increase compliance including errorless learning, behavior momentum, and video modeling. Play Your Way to Compliance addresses key skills in parenting behaviors and the inclusion of videos, a jingle, and a game make the program of high interest to parents and children while incorporating evidence-based practices that have been shown to aid in the acquisition, maintenance, and generalization of new skills and behaviors.

Play Your Way to Compliance has been designed to address noncompliance with treatment strategies that meet the criteria of evidence-based practice. Several of the

components in Play Your Way to Compliance are classified as Established treatments based on the evidence-based standards provided by the National Autism Center (NAC, 2009). The analysis completed by the NAC for determining treatment evidence included the following: research design to suggest the degree of experimental control; measurement of the dependent variable to indicate accuracy and reliability of the data; measurement of the independent variable to express the extent of treatment fidelity; participant ascertainment, or correct inclusion and eligibility of the participants; and generalization to demonstrate the success of treatment effects across time, settings, people, and stimuli.

The NAC has categorized errorless learning as an Established treatment and as previously discussed, errorless learning has been found to be effective in increasing skill acquisition in individuals with ASD (Mueller, Palkovic, & Maynard, 2007). Additionally, the premise of errorless learning is incorporated into errorless compliance training (Ducharme, 1993), which has influenced the development of the Play Your Way to Compliance program. Also listed as Established treatments by NAC, behavioral momentum, positive reinforcement, and planned ignoring (i.e., extinction) are integral components of the Play Your Way to Compliance program.

Play Your Way to Compliance also emphasizes the importance of teaching compliance in the child's natural setting. NAC has identified Naturalistic Teaching Strategies as an Established treatment, highlighting the strength of interventions that are implemented in natural settings that include the child's home and parents. In 32 studies reviewed by NAC, teaching skills in the natural environment was associated to increased communication, interpersonal skills, learning readiness, and play skills for children aged 0 to 9 with autism spectrum disorders. Furthermore, Play Your Way to Compliance

incorporates Direct Instruction, a strategy designed to increase the rate of learning while promoting generalization of learned skills (Adams & Carnine, 2003; Marchand-Martella, Slocum, & Martella, 2004). Direct Instruction has been found to produce large effect sizes between .84 and .90, suggesting it to produce better outcomes than other instructional strategies (Adams & Engelmann, 1996; Forness, Kavale, Blum, & Lloyd, 1997). Modeling, guided practice, and independent practice are central instructional procedures in Direct Instruction that are also central to the Play Your Way to Compliance program and are implemented throughout the program.

Overall, the Play Your Way to Compliance program includes many components that meet criteria as an evidence-based practice. Additionally, NAC has determined that these components qualify as Established treatments for autism spectrum disorders, having proven their effectiveness across studies. Play Your Way to Compliance also employs instructional strategies found to increasing the rate of acquisition and generalization of novel skills. Moreover, meta-analyses of behavioral parent-training programs have suggested that parents are able to learn and implement these evidence-based practices with their children, while improving both parent and child outcomes.

Although there is a breadth of efficacious treatments for autism, research has found that treatments are rarely used due to barriers such as complexity, compatibility, and relative advantage. Research has suggested that innovative treatments that readily provide and utilize multiple evidence-based practices are more likely to be implemented in their natural settings (Dingfelder & Mandell, 2011; Boardman et al., 2005). "Interventions that are most readily transported into community settings address a broad range of needs, with program materials and clear procedural guidelines (Dingfelder & Mandell, 2011, p. 175).

Of 10 comprehensive programs for children with autism, Lord (2005) indicated that only

four programs are commercially packaged or have manuals readily available to the public

for use. The Play Your Way to Compliance program addresses these concerns by

providing a ready-made and available package with multiple evidence-based practices and

clear instructions on implementation.

<u>Summary</u>

Noncompliance is one of the most prevalent behavior problems in children

frequently reported by parents and caregivers and is considered a keystone behavior in the

development of severe conduct problems and antisocial behaviors (Forehand &

McMahon, 1981; McMahon & Forehand, 2003). Because a child's ability to comply with

requests is related to their ability to learn new skills and prosocial behaviors (Rhodes,

Jenson, & Reavis, 1993), the development of quality research-based interventions to

address noncompliance is imperative.

Treatment of noncompliance have been developed and evaluated and are most

notably behavioral treatment strategies often employed within parent-training programs

(Ducharme, Popynick, Pontes, & Steele, 1996; Forehand & McMahon, 1981; Forehand &

McMahon, 2003; Webster-Stratton, 1990). A common factor among parent-training

programs is the use of effective strategies such as behavioral rehearsal, modeling,

coaching, and reinforcement. Although these interventions have been shown to be

effective procedures for decreasing noncompliance, many parent-training programs

include a punitive component in which parents learn time-out procedures to respond to

challenging behaviors. Additionally, parent-training programs can be costly and time

consuming for families and for professionals who implement them, further impacting the issue of attrition rates of families in parent-training programs (Barkley, 2000). Therefore, it is essential that interventions are not only effective in addressing noncompliance, but are positive and efficient in costs and time.

Purpose of the Study

The Play Your Way to Compliance program saves time and effort by providing parents with a complete package of all the necessary instructions and materials needed in order to effectively run the program independently. The program uses intervention strategies that have been proven to be effective in increasing compliance rates in young children. Moreover, the strategies are proven, practical, and positive and do not employ aversive procedures. However, the effectiveness and acceptability of the Play Your Way to Compliance program has yet to be studied. Therefore, the purpose of this study is to evaluate the acceptability and effectiveness of the Play Your Way to Compliance Program for increasing rates of compliance in young children with autism spectrum disorders.

Research Questions

1. Will child compliance rates be higher than baseline compliance rates after receiving the Play Your Way to Compliance program as measured by direct observation?

    a. Compliance Data Sheets

    b. Compliance and Generalization Sheets

2. Will child compliance rates to *low-probability (red; less than 25%)* requests increase across the duration of the study?

a. Compliance and Generalization Sheets

3. Will parents be able to implement the Play Your Way to Compliance program with fidelity (i.e., number of steps accurately completed)?

a. Fidelity Checklist

4. Will parenting stress decrease after receiving the intervention as measured by scores on the Parenting Stress Index?

a. Parent Stress Index (PSI)

5. Will parents report a decrease in scores on the Externalizing Problems scale on the Child Behavior Checklist (CBCL; Achenbach) after receiving the intervention?

a. Child Behavior Checklist, Externalizing Problems (CBCL)

6. Will child participants maintain gains in their rates of compliance at follow-up 3 weeks after completing the Play Your Way to Compliance Program as measured by direct observation?

a. Compliance Data Sheets

7. Will parents maintain fidelity of implementation at follow-up 3 weeks after completing the Play Your Way to Compliance Program?

a. Fidelity Checklist

8. Will parents report positive ratings on the Intervention Rating Scale regarding participation in the intervention as measured by mean responses on a six-point Likert scale?

a. Modified Behavior Intervention Rating Scale (BIRS)

9. Will child participants report positive ratings on the Children's Intervention Rating Scale regarding participation in the intervention as measured by mean responses on a four-point Likert scale?

a. Children's Intervention Rating Scale

Table 1.1 Common Parent-Training Programs

	Living with Children (Patterson, 1976)	Helping the Noncompliant Child (Forehand & McMahon, 1981)	Parent Child Interaction Therapy (Eyeberg, 1982)	The Incredible Years (Webster-Stratton, 1984)	Parent Management Training (Kazdin, 1995)	The Tough Kid Parent Book (Jenson, Rhodes, Neville, 2001)
Age Range	3 – 14 years	3 – 8 years	2 – 8 years	2 – 8 years	2 – 14 years	3 – 13 years
Target Behaviors	Social Aggression	Noncompliance	Conduct Problems	Conduct Problems	Conduct Problems	Noncompliance
Duration of Program	5 – 12 weeks	12 weeks	12 weeks	10 – 14 weeks	12 – 16 weeks	N/A
Frequency of Sessions	N/A	2x/week	N/A	1x/week	1x/week	N/A
Duration of Sessions	60 – 90 minutes	75 – 90 minutes	60 – 90 minutes	120 minutes	45 – 60 minutes	N/A
Child Present During Training	No	Yes	Yes	No	No	N/A
Inclusion of Manual	Yes	Yes	Yes	Yes	Yes	Yes
Training Required	No	No	Yes	Yes	No	No
Cost	$13.92	$34.20 – 65.83	$3000 - 4000	$895 - 1395	$33.20	$14.95

Table 1.2 Common Training Components for Parent-Training Programs

	Living with Children (Patterson, 1976)	Helping the Noncompliant Child (Forehand & McMahon, 1981)	Parent Child Interaction Therapy (Eyeberg, 1982)	The Incredible Years (Webster-Stratton, 1984)	Parent Management Training (Kazdin, 1995)	The Tough Kid Parent Book (Jenson, Rhodes, Neville, 2001)
Format (Group/Individual)	Group Individual	Individual	Individual	Group Individual	Individual	Group Individual
Didactic Training	No	Yes	Yes	Yes	Yes	Yes
Group Discussions	No	Yes	Yes	Yes	No	Yes
Video-based Training	No	No	No	Yes	No	No
Observations	Yes	Yes	Yes	No	Yes	No
Intake/Pre-assessments	Yes	Yes	Yes	No	Yes	No
Training Handouts	No	Yes	No	Yes	Yes	Yes
Homework	Yes	Yes	Yes	Yes	Yes	Yes
Performance Feedback	No	Yes	Yes	No	Yes	No
Data Collection	Yes	No	No	No	Yes	No

CHAPTER 2

METHODS

Participants

The study consisted of a total of four child participants, with two participants selected from each of the participating sites. The participant pool consisted of four 6-year-old males with diagnoses of autism and their mothers. For the purposes of this study, the participants will be referred to as Participants A through D. Participants A and B were recruited from a waitlist for a school for autism in the Intermountain West and Participants C and D were recruited from a university medical center in the Midwest.

Participant A was a 6-year-old Russian male diagnosed with ASD, anxiety disorder, and sensory integration disorder. Participant A received diagnoses from a licensed psychologist at the state Department of Health and based on the diagnostic report, Participant A earned a Full-Scale score of 118 on the Wechsler Intelligence Scale for Children – Fourth Edition (WISC-IV). He was a bilingual-speaking child and communicated in full phrases. Participant B did not attend traditional school, was home-schooled by his mother, and was not receiving additional services. His parents indicated he was not taking any medications at the time of the study. His 43-year-old mother participated in the study. *Parent A* was a married, stay-at-home mother with a master's degree in education and Participant A was her only child.

Participant B was a 6-year-old Caucasian male diagnosed with ASD, attention-deficit/hyperactivity disorder (ADHD), and anxiety disorder. Participant B previously received diagnoses from a community-based licensed psychologist. Based on a psychoeducational evaluation, a trained school psychologist administered the Stanford-Binet Intelligence Scales, Fifth Edition (SB-5) and Participant B obtained a Full-Scale Score of 74. He communicated in 3 to 4 word phrases and engaged in echolalia and vocal stereotypy. Participant B attended public school and received special education services. His parents reported he was taking Zoloft at the time of the study. His 30-year-old mother participated in the study. *Parent B* was a married, stay-at-home mother of two children, who maintained a part-time hair salon within her home.

Participant C was a 6-year-old Middle Eastern male diagnosed with ASD, ADHD, and a pediatric feeding disorder. Participant C received diagnoses by a community-based licensed psychologist. Based on a previous evaluation, Participant C earned a Full-Scale score of 97 on the WISC-V. He communicated in full phrases and attended public school where he received special education services. Additionally, Participant C received weekly outpatient therapy services to address pediatric feeding concerns. His caregivers reported he was taking Adderall at the time of the study. His 41-year-old mother participated in the study. *Parent C* was a married, stay-at-home mother of three with an undergraduate degree.

Participant D was a 6-year-old Middle Eastern male diagnosed with ASD and a pediatric feeding disorder. Participant D received diagnoses by a licensed psychologist at an autism diagnostic clinic and based on a previous evaluation, Participant D obtained a Full-Scale score of 102 on the SB-5. He communicated in 4 to 5 word phrases; however, he primarily engaged in vocal stereotypy. Participant D attended public school where he

received special education services. He also received weekly outpatient therapy services to address pediatric feeding concerns. His parents indicated he was not taking any medications at the time of the study. His 37-year-old mother participated in the study. *Parent D* was a married, stay-at-home mother of two children with developmental disabilities.

<div align="center">Setting</div>

All phases of the study (baseline, treatment, and follow-up) included one parent-child dyad and were conducted in the participants' home environment. During the treatment phase of the study, parents delivered requests in a variety of rooms in the house such as the bedroom, dining room, living room, toy room, kitchen, and backyard. Each treatment session began in a designated room of the house (i.e., living room) to watch the adult peer-modeling videos as well as the fasthands animation video for the child participants. Only the parent and child occupied the established room or quiet space while viewing their videos with the researcher and all other children or adults remained in other locations in the house. The designated room did not have electronic equipment in use such as a television, radio, or any other device that causes background noise.

The parent participants conducted at least two sessions during the week and were only required to use one location in the house. During one of the two required sessions, the researcher was present to observe the participants during the treatment phase. The researcher prompted the parent to complete compliance requests in different locations in the home, as long as the request was suitable for multiple locations. For example, if the request was to "put in a puzzle piece," the request was completed in the living room, then

again in a toy room or in an office den. Generalization probes as well as follow-up procedures were also collected in the home setting via a secure HIPPA-compliant telehealth platform.

<div align="center">Research Design</div>

A nonconcurrent multiple-baseline multiple design (Cuvo, 1979; Horner & Baer, 1978) was used to evaluate the effectiveness of the Play Your Way to Compliance program for participants involved in the study (see Figure 2.1). A multiple probe design allows the researcher to use intermittent probes to assess the effectiveness of an intervention when continuous data measurement proves impractical or unnecessary (Horner & Baer, 1978). Additionally, use of a multiple probe technique helps to control for threats to internal validity (Horner & Baer, 1978).

At the beginning of the study, three baseline probes were completed for each child participant across several days. Remaining compliance probes were collected weekly during each intervention phase using a previously determined observation schedule. Each observation was conducted in the participants' respective homes when they are engaged in an activity with the parent. Throughout the remainder of the study, generalization probes were taken at the end of each week via a secure HIPPA-compliant telehealth platform (i.e., FaceTime or Vidyo). The exact number of probes conducted for each participant during baseline and intervention will be explained further in this chapter.

<center>Dependent Measures</center>

Multiple measures were used to assess the effectiveness of the Play Your Way to Compliance program. The primary dependent measure was overall compliance rates for each child participant. In addition, compliance probes of low-probability requests were collected and analyzed to evaluate the impact of the intervention. Secondary measures of parental stress were collected to determine improvements associated with compliance training. Consumer satisfaction feedback concerning the intervention was also obtained through questionnaires from each participating parent and child.

<center>Compliance</center>

Compliance was defined as overt child initiation to a parent request within 5 seconds of the instruction being presented and completion of the request. Compliance rates were calculated for overall compliance of instructions across all requests and for compliance of low-probability instructions (e.g., requests children are less likely to comply with) in each session. Low-probability requests were the main focus of the study. Percent of compliance was calculated by dividing the number of times the child complied by the total number of instructions presented and multiplying by 100. Compliance data were gathered using Compliance Data Sheets (Appendix C) via direct observations in the participants' homes and electronically via a telehealth platform.

<center>Behavioral/Emotional Symptoms</center>

Parents completed the Child Behavior Checklist preschool form for ages 6 to 18 years (CBCL; Achenbach & Rescorla, 2001), a questionnaire designed to assess

children's behavioral and emotional competencies and deficits. The CBCL contains seven syndrome scales (Emotionally Reactive, Anxious/Depressed, Somatic Complaints, Withdrawn, Sleep Problems, Attention Problems, and Aggressive Behavior) and five DSM-Oriented Scales (Affective, Anxiety, Pervasive Developmental, Attention Deficit/Hyperactivity, and Oppositional Defiant Problems). Additionally, the CBCL has Internalizing, Externalizing, Total Problems, and a Stress Problems scales. The questionnaire was completed before and after treatment to assess change in the behavioral or emotional symptoms of child participants. Specifically, the Externalizing Problems scale was used to assess pre and posttreatment change.

Parenting Stress

The Parenting Stress Index (PSI; Abidin) was used to assess parent-reported stress and was administered to parents before and after treatment. The PSI is a questionnaire designed to evaluate the amount of stress within a parent-child relationship. The questionnaire comprises two scales, Child and Parent, which form the Total Stress Scale. The Child Scale consists of six subscales (Distractibility/Hyperactivity, Adaptability, Reinforces Parent, Demandingness, Mood, and Acceptability) and the Parent Scale consists of seven subscales (Competence, Isolation, Attachment, Health, Role Restriction, Depression, and Spouse/Parenting Partner Relationship).

Treatment Integrity

To assist in maintaining treatment integrity, a data sheet based on steps for effective delivery and reinforcement of instructions was used throughout the study

(Appendix D). The researcher created and provided the checklist form in which the researcher and graduate research assistants marked off steps as the parents completed them during observation sessions in the home. Additionally, the researcher provided parents with a separate fidelity checklist of implementation steps as a reference sheet to ensure treatment integrity when the researcher was not present (Appendix D).

Consumer Satisfaction

Parent Questionnaire

Social validity of the intervention was assessed using a modified Behavior Intervention Rating Scale (BIRS; Elliot & Trueting, 1991). The parent questionnaire (Appendix E) allows for evaluation of parent perceptions of the utility and acceptability of treatment components and consists of 22 statements with ratings on a six-point Likert scale ranging from "strongly agree" to "strongly disagree." The questionnaire also contains four open-ended questions created by the researcher to allow parents to more specifically describe their thoughts about the intervention. Parents completed the questionnaire during the postintervention phase.

Child Questionnaire

A child version of the BIRS, constructed by the researcher, was used to evaluate child perceptions of the intervention (Appendix E). The Child Intervention Rating Scale contains four statements, which are rated on a four-point Likert scale that range from "strongly agree" to "strongly disagree." The rating scale corresponds to a range of smiley faces from happy (strongly agree) to angry (strongly disagree) to make it easier for

younger children to understand. The questionnaire also contains two open-ended questions for child participants to more specifically indicate their thoughts about the intervention. In order to accommodate a younger population and to ensure that the child participants fully understand each statement, the questionnaire was given on a one-on-one basis to each child participant by the researcher on the last day of the intervention phase.

Materials

Observation Training Videos

The researcher created three observation-training videos, which were used for the purpose of establishing interrater reliability. The three videos are approximately 15 minutes in length and designed to resemble a parent-child interaction. Each video demonstrated parents providing effective and ineffective delivery of instruction, effective and ineffective reinforcement procedures, and children exhibiting compliance or noncompliance.

Electronic Equipment

The researcher used an Apple iPad during direct observation sessions to record compliance sessions and to view multimedia files from the Play Your Way to Compliance program. In addition to the iPads, personal iPhones were used for communication between the participating parents and the researcher. Specifically, iPads and iPhones offer free downloadable HIPPA-compliant video chat software systems, FaceTime and Vidyo, used to check in with parents and to conduct generalization probes at the end of each week. Parents were provided with a tutorial and assistance on how to access and use FaceTime and Vidyo during the initial home sessions.

Materials Included in the Play Your Way to Compliance Program

The Play Your Way to Compliance intervention package includes an instructional manual detailing how to implement and troubleshoot the program. The program outlines specific steps and strategies for parents, caregivers, or teachers to effectively deliver instructions and provide positive reinforcement to gain child compliance. A CD-ROM with printable probability checklists, reinforcer checklists, and data collection forms, which will be described later in the section, are included along with the following components.

Fasthands Animation and Child Peer-Modeling Videos

Fasthands Video

The program includes fasthands animation video files in order to instruct child participants how to follow directions. Fasthands animation teaches concepts through a recording of two hands drawing the definition of a concept and instructional steps along with animated characters and then speeding up the video feed. Specifically, the program uses a character named Scooter from the *Superheroes Social Skills* program. Scooter is an animated robot enrolled in Jet Pack School who teaches and learns about social skills, such as following directions, with his superhero friends. The use of fasthands animation and appealing characters is to engage students in learning skill concepts and applying those skills outside of the training environment (Block, 2012; Hood, 2011; Radley, Ford, Battaglia, & McHugh, 2014).

Child Peer-Modeling Video

In addition to the fasthands animation videos, the package includes videos of child peer models displaying appropriate behavior. Each video file will explicitly teach the child participants the steps to following directions and will teach them to

1. Look at the person

2. Listen to the person when an instruction is being delivered,

3. Nod their head and say "okay", and

4. Do the instruction right away.

The video will outline the steps and depict a child peer engaging in the separate behaviors when an instruction is being delivered in various situations and settings. Each video will last approximately 2 to 3 minutes and will include the following jingle embedded within the animation.

(To the tune of "Mama Said")

Scooter says, please do as I say
Please do as I say, Scooter says
(Scooter says, Scooter says)
Scooter I will do as you say
I'll say ok and do what Scooter says.
When Scooter says, please look at me,
I look, listen, and say… okay, and then I will start
To do just what Scooter says

After observing the video, the parent repeated the jingle by singing it to their child. The purpose of the parent singing the jingle was to create a priming signal that the child will now be expected to transition to the "Scooter Says" game (e.g., compliance session) where parents will deliver requests to initiate child compliance.

Adult Peer-Modeling Videos

The Play Your Way to Compliance program uses adult peer-modeling videos of parents interacting with children as part of the intervention package. The videos are meant to teach program users with adult peer models who effectively deliver precision requests, ignore inappropriate behaviors, and reinforce compliance. To help parents discriminate when and how to use these skills, adult peer-modeling videos also include nonexamples of parents who ineffectively deliver precision requests, do not ignore inappropriate behaviors, and use incorrect reinforcement procedures.

For this study, the researcher created a video per intervention phase for a total of four videos. Each video included an adult peer model providing at least four commands from respective compliance probabilities in different household locations (e.g., kitchen, living room, family room, etc.). Each video clip is approximately 2 to 3 minutes long and divided into three segments. Part One depicts a parent correctly implementing a precision request sequence and gaining child compliance. Part Two shows a parent appropriately delivering a precision request sequence and responding to noncompliance, while Part Three outlines strategies for delivering positive reinforcement. Each video segment outlines the steps for a precision request sequence and introduces each step one at a time. After each step is introduced, a brief video clip displays a parent performing the specific strategy. Once all steps have been introduced, a final video clip exhibits the entire sequence of steps being performed by a parent.

Compliance Probability Checklist

A Compliance Probability Checklist is derived from those used in previous errorless compliance-training studies and involves a list of parent instructions (Ducharme & Drain, 2004; Ducharme & Popynick, 1993; Ducharme, Sanjuan, & Drain, 2007; see Appendix B). Parent instructions are organized into domains that include tasks and activities during playtime, clean up, self-care routines, meal times, and bed times. For each instruction, parents indicated the likelihood, or probability, of their child complying with the specific request. The rating scale options include "almost always" (76-100%), "usually" (51-75%), "occasionally" (26-50%), and "rarely" (0-25%). Probabilities were arranged as color categories in a hierarchal order with high-probability instructions (76-100%) considered as "green" requests, suggesting that children do not have difficulty complying to the instructions, to medium-probability instructions (51-75%) as "yellow" requests, to low-probability instructions (26-50%) as "orange" requests, and to extremely low-probability instructions (0-25%) as "red" requests.

Compliance Data Sheets

During each compliance session, parent participants and trained observers recorded data on their child's compliance to each request (Appendix C). Each Compliance Data Sheet is color-coded for the specific request color based on level of probability (e.g., red for 0-25% probability; orange for 26-50%, etc.) and allows for eight requests to be listed. The researcher selected these requests from completed Compliance Probability Checklists and each request had three opportunities to be delivered and recorded on the data sheet. Each color-coded data sheet provides one session of data collection and also included a list of predetermined reinforcers from the Reinforcer

Checklist, mentioned below. The data sheets included social praise statements and edible

reinforcers and were available for parents to easily access as a reminder of potential

reinforcers to use and to vary in delivery. Each data sheet varied on the types of

reinforcement listed in order to maximize child motivation. Each color-coded data sheet

indicated when the parent delivered the edible reinforcer in addition to the social praise

statement.

Reinforcer Checklist

The checklist contains a list of potential edible reinforcers, ranging from candies

to snacks, with room for parents to include child-specific reinforcers. Edibles were used

primarily for their immediate delivery and quick consumption. The Reinforcer Checklist

assisted parents in selecting and ranking edible reinforcers to identify what their child

may be motivated to earn. In addition to the list of edibles, a list of positive praise

statements was provided for parents to use alone and when delivering edible

reinforcements.

Procedures

Initial permission to conduct the study was obtained from the universities'

Institutional Review Board. Once I obtained a list of candidates, I sent a form to the

parents or guardians of each child that provided basic information about the study

(Appendix A). The form also asked for parental consent to observe compliance rates of

the child in order to determine inclusion in the study.

After parents provided consent, I conducted three home observations for each

candidate and observed the child's response to parent requests as they were naturally

given in their home. A child was considered a good candidate for the study if his or her compliance rate was observed to be approximately 60% or less across the three observations. Five out of the six children who were observed qualified to participate in the study. The parents of the child who did not qualify were contacted and informed that the child had not been selected for the study. The parents were provided with several resources to increase compliance in the home.

Following the observations, I sent a parent consent form for inclusion in the study to the parent or guardian of each child meeting criteria as a good candidate for the study. The consent form included further information and procedures about the study. The parents of each of the five qualified candidates gave permission for inclusion in the study; however, one parent-child dyad opted out of the study prior to the intervention phase of the study.

Observer Training and Interrater Reliability

I enlisted the help of graduate research assistants, training in doctoral-level school psychology and masters-level applied behavior analysis programs, to conduct observations and probes throughout the study. In order to ensure interrater agreement, an observation-training session conducted. I reviewed the definitions of compliance and coding instructions with the graduate research assistants. Three observation-training videos were used to practice conducting the observations. Practice observations were repeated until a minimum of 0.80 interrater reliability was achieved on each video. Cohen's Kappa, which corrects for chance agreement, will be used to calculate interrater reliability. The formula for Cohen's Kappa is:

$$k = (Po - Pc) / (1 - Pc)$$

where, Po = the proportion of agreement between observers of occurrence and nonoccurrence of behavior, and Pc = the proportion of expected agreement based on chance.

In addition, to estimate the accuracy of coding of the researcher and graduate assistant, point-by-point agreement was calculated to account for disagreements (Yoder & Symons, 2010). According to Yoder and Symons (2010), the formula for Total Percentage Agreement considers observers' agreements on occurrence and nonoccurrence of behaviors, as well as disagreements. The formula is:

$$[(A + B)/N] \ X \ 100$$

where, A = the instances of agreement between observers of occurrence, B = the instances of agreement of nonoccurrence of behavior, and N = the sum of A + B, plus the instances in which one observer coded a behavior while the other did not (disagreements). In other words, the point-by-point formula to calculate the total percentage of agreements is the sum of coders' agreements of occurrence and non-occurrence of behaviors divided by the total number of agreements and disagreements multiplied by 100.

In order to ensure that interrater reliability was maintained throughout the study, two observers collected observation data for each participant concurrently for at least 33% of the observations conducted throughout the study. These observations occurred once during the baseline and follow-up phases and three times during the intervention phase for each study participant and data were collected using the Compliance Data Sheets.

Introductory Orientation

The researcher completed the orientation meeting with each parent in the home environment. During this session, parents learned about the cycle of coercion and the importance of compliance training. Parents became acquainted with the requirements as well as the components of the Play Your Way to Compliance program. Each parent participant completed the Compliance Probability Checklist and the Reinforcer Checklist from the program. Parents also completed the CBCL and PSI rating scales.

Agenda for Introductory Session

1. Researcher explained program requirements

2. Researcher explained PYWTC program procedures

3. Parents completed Compliance Probability Checklist

4. Parents completed Reinforcer Checklist

5. Parents completed CBCL and PSI

<u>Baseline</u>

Three baseline data probes were collected for each participant using a frequency-recording format. Baseline data were collected in three consecutive sessions for Participant A. Three baseline data probes spread across 4 days were collected for Participant B. Three baseline probes spread across 7 days were acquired for Participants C and D. After collecting the third baseline data probe, Participant A entered the first intervention phase. After Participant A entered the intervention phase, baseline data collection continued for Participant B, C, and D before Participant B entered the

intervention phase. This pattern of baseline data collection continued until Participant D entered the intervention phase.

During baseline, the researcher conducted direct observations of parent-child interactions in the participants' homes and all sessions were recorded. Parents were instructed to deliver requests generated from the Compliance Data Sheet. Although the Compliance data sheet determined the specific requests, parents delivered the requests as they would naturally with no direct instruction on how to effectively make the requests and how to effectively respond to compliant or noncompliant behaviors. The parent and researcher predetermined four specific requests from the Compliance Probability Checklists for each probability level (e.g., 0-25%; 26-50%, etc.) and selected an additional eight requests from the red probability level (i.e., 0-25%) to be used later as generalization probes. Parents delivered each request three times for a total of 24 trials and the researcher calculated the compliance rate for each baseline session onto the data sheet.

Treatment

Parent-Training Session: In-Home Compliance Training

The parent training was conducted in one session and was divided into two training formats (Figure 2.2): Part One, focused on the researcher providing direct instruction; and Part Two, focused on the parents practicing the skills.

Part One – Direct Instruction of Precision Requests

The first portion of training focused on direct instruction of effective delivery of precision commands and effective reinforcement. I trained parents in their respective

home environments utilizing the materials (e.g., adult peer-modeling videos) from the Play Your Way to Compliance program. For Participant B, a graduate assistant was also present to provide childcare for the child participant and his sibling during this training session. The session reviewed definitions for compliance and effective delivery. Parents were taught the following procedures: 1) how to deliver a precision request sequence, 2) how to respond to child compliance with positive reinforcement and, 3) how to ignore noncompliance.

Parents were taught the following steps to a precision request sequence (see Figure 2.3):

1. *Gain the child's attention.* Be within 3-5 feet. Say the child's name. Use a neutral voice.

2. *Deliver an appropriate "please" request.* State the behavior you want. Keep instructions simple. Use a neutral voice.

3. *Allow time for the child to respond.* Give the child 3 to 5 seconds to initiate compliant behavior.

4. *If child is noncompliant, ignore behavior and deliver an appropriate "need" request.* State the behavior you want. Keep instructions simple. Use a neutral voice.

   a. *Allow time for child to respond.* Give the child 3 to 5 seconds to initiate compliant behavior.

   b. *Provide reinforcement if child complies or, ignore behavior if child does not comply.* Deliver three green requests.

Parents also observed an adult peer-modeling video in which an adult peer delivered effective and ineffective requests. The video outlined each step of the precision request sequence and lasted approximately 2 minutes.

Part One – Direct Instruction of Reinforcement

For effective delivery of reinforcement, parents were taught to use a procedure called IFEED-AV as described below. Parents learned the following IFEED-AV strategies for reinforcement (Rhode, Jenson, & Hepworth-Neville, 2010):

I - *Immediate.* Provide reinforcement immediately.

F - *Frequent.* Provide reinforcement frequently.

E - *Enthusiasm.* Be enthusiastic when delivering praise and reinforcement.

E - *Eye Contact.* Make eye contact with the child.

D - *Describe.* Describe the appropriate and positive behavior.

A - *Anticipation*. Create anticipation and excitement to motivate the child.

V - *Variety.* Vary reinforcers to maintain motivation.

Parents received the steps for IFEED-AV along with a list of potential edible reinforcers and praise statements. The reinforcement list was provided directly on the Compliance Data Sheet.

During each treatment phase, parents were instructed to deliver reinforcement and praise statements at differing schedules. During Phases 1 and 2, parents provided edible reinforcement and social praise statements on a continuous, one-to-one schedule. For example, after each request that the child complied with, the parent delivered both an edible reinforcer and a social praise statement. During Treatment Phases 3 and 4, parents

continued to deliver a social praise statement on a continuous schedule (i.e., after each request); however, a variable ratio schedule of reinforcement was used to deliver edibles. For example, edible reinforcement was only provided, on average, after three requests for compliance. A parent provided social praise statements alone for three initial requests if the child complied. In addition to the praise statement, an edible reinforcer was delivered if the child complied with the fourth request.

Parents also observed an adult peer-modeling video in which an adult peer was shown to deliver effective and ineffective reinforcement. The video outlined each IFEED-AV strategy and lasted approximately 2 minutes.

Part One – Direct Instruction of Extinction

Parents were taught to use extinction procedures when their child engaged in noncompliant behavior. Extinction procedures are used to weaken previously learned associations between noncompliance and reinforcement and to teach children that challenging behaviors are less effective in earning reinforcement. Specifically, parents were instructed to ignore their child if he or she engaged in behaviors such as whining, crying, screaming, or talking back after the delivery of an instruction.

The parents learned the following steps to ignore behavior (Jenson, Rhode & Hepworth, 2010, p. 45):

1. *Break eye contact.* Turn your head, turn around, or leave the room if necessary.

2. *Show no emotion.* Use stony silence.

3. *Ignore by engaging in another activity or paying attention to someone else.*

4. *Do not give in!* Remember to expect the behavior to worsen before it gets

   better. If you give in, your child might learn that when he acts bad enough for

   long enough you will relent.

5. *Beware of bootleg reinforcement!* If the response you are ignoring is

   not decreasing, others might maintain it.

6. *Resist the urge to nag.* For most children, nagging will actually strengthen the

   undesirable behavior.

Parents also observed an adult peer-modeling video in which an adult peer

effectively and ineffectively used extinction procedures. The video outlined each step to

ignoring problem behaviors and lasted approximately 2 minutes.

Part Two – Parent Practice

The purpose of Part Two of the in-home parent-training session was to focus on

parents rehearsing and applying the skills from Part One with research assistants and me.

The parent also demonstrated the procedures required to complete a compliance session

using me as the practice subject rather than the child participant. In order for parents to

practice the procedures, the facilitators used modeling, role-playing, behavioral coaching,

and feedback. The facilitators practiced and modeled each procedural step and allowed

each parent to practice with feedback. Facilitators continued to provide instruction until

parent participants demonstrated at least 80% of the steps independently.

The remainder of the session reviewed procedural steps and instructions for

parents to play the fasthands animation for their child and to view modeling videos before

beginning a training session with their child. The "Scooter Says" jingle was taught to

parents to use as a priming tool with their children. Parents were instructed on strategies to initiate a simple and fun game of "Scooter Says" (i.e., a game of "Simon Says") to engage their child before beginning a compliance session with more difficult requests. Specifically, parents were advised to deliver fun and playful requests such as making funny faces, making goofy noises, or acting like silly animals. Parents were then instructed to begin delivering requests as selected from the Compliance Probability Checklist. Instructions were given for parents to avoid delivering requests with lower compliance probabilities and to complete such requests themselves in order to maintain the errorless approach. To conclude the session, parents were instructed on data collection procedures and how to appropriately record responses onto the data sheet. Parents were shown several video clip examples of a parent-child interaction and practiced collecting data until they were able to independently record data with up to 80% reliability with the facilitators.

Treatment: In-Home Compliance Sessions

After the completion of parent training, parents began treatment sessions with their child. These sessions were held in the same predetermined room in the home that meets criteria for an optimal learning environment (i.e., TV turned off, separation from siblings, etc.). The compliance sessions were divided into two formats in which parents conducted the compliance training sessions independently or with the researcher present. Parents were expected to run at least two sessions per week independently (Figure 2.4).

Researcher Present-Sessions

The researcher was present for one session each week throughout the study to provide support and feedback (Figure 2.5). During these sessions, generalization probes were conducted for two red requests to check for changes in compliance. In addition, the researcher asked the parent to hold the session in a different room or location within the home in order to generalize the instructions to a different setting, if feasible. The researcher also recorded each session. The video recordings were used to collect inter-rater reliability for child compliance and parent fidelity.

When the researcher was present, parents were instructed to watch the adult peer-modeling videos before initiating the compliance session with their child. The parents had the opportunity to review implementation steps for the compliance sessions and observe successful implementation of the precision request sequence. After the adult peer-modeling video, the child's parents provided a prompt to watch the fasthands animation video. The parent then watched the video along with their child. To initiate all sessions, parents hummed or sang the jingle played in the fasthands animation video and engaged in a game of "Scooter Says" and provided fun opportunities for child compliance (e.g., "Dance like a chicken"; "Make a silly face") before delivering requests.

Parents referenced their Compliance Data Sheets for the requests to be given during the session. After each delivery of a request, the parent recorded all child responses on the Compliance Data Sheet and the researcher simultaneously collected data when present. Once parents delivered all instructions, the researcher provide support and feedback on their delivery of the precision request sequence, delivery of positive reinforcement for child compliance, and ignoring of inappropriate behaviors during

noncompliance.

Treatment Phase 1: Compliance Sessions

During Phase 1 of compliance sessions, parents delivered only green requests that were expected to elicit high rates of child compliance. Requests were predetermined from the Compliance Probability Checklist and a total of eight green requests were delivered during each treatment session. Parents provided each request three times in one session; however, the same request was not repeated in a row. Session times varied depending on child compliance or behaviors. Once the child demonstrated 80% compliance across three consecutive sessions for the green requests, the participants entered the following treatment phase and moved on to delivering yellow requests.

Treatment Phases 2, 3, and 4

Intervention procedures for Phases 2, 3, and 4 were identical to Phase 1 with the exception of the specific requests and the schedule of reinforcement. To begin Phase 2, parents introduced only two yellow requests at a time as determined by the Compliance Probability Sheet in addition to the eight previously targeted green requests, for a total of 10 requests. If the child struggled to demonstrate 80% compliance with the set of yellow requests after two consecutive sessions, parents delivered a new set of two yellow requests and reintroduced the previous set at a later time. Once the child demonstrated 80% compliance with a set of yellow requests across two sessions, parents delivered an additional set of two yellow requests to replace green requests until four sets of yellow requests were delivered (eight yellow requests in total). After eight yellow requests have

met criterion, parents started Phase 3 to deliver orange requests (Figure 2.6).

In Phase 3, parents focused on delivering orange requests in addition to the eight yellow requests previously presented. Orange requests replaced yellow requests and were introduced two at a time until criterion was met with each set for a total of eight orange requests. If a set of orange requests failed to meet criterion after two consecutive sessions, parents selected two new orange requests from the Compliance Probability Sheet. Once a total of eight orange requests reached 80% compliance, parents moved on to Phase 4 to deliver red requests.

During Phase 4, parents delivered predetermined red requests in addition to the eight orange requests previously targeted. Each set of two red requests reached 80% compliance for two consecutive sessions before an additional set of red requests were delivered. Red requests during this phase were novel and were not the same requests as used during generalization probes. After all red requests met criterion, parents used a variable schedule of edible reinforcement with their child until the child reached 80% compliance for two consecutive sessions. The Compliance Data Sheet included a random schedule of reinforcement denoted by an asterisk next to the trial for the parent to deliver an edible reinforcement following child compliance. Parents continued to provide continuous rates of verbal praise statements for compliance.

<div align="center">Generalization Probes</div>

Because children show the least compliance with red requests, the researcher can observe any changes in the rates of compliance with more difficult requests across the course of the study (i.e., during each treatment phase). Parents had two opportunities each

week to conduct generalization probes. When present, the researcher provided parents with two red requests to deliver and check for compliance. During the weekly telemedicine conference, the researcher prompted parents to deliver another set of red requests (Appendix F). The researcher provided immediate performance feedback to parents in their delivery of the precision request sequence. The researcher recorded compliance data on generalization probes using a Compliance Data sheet (Appendix C).

Postintervention

On the last day of Phase 4, the researcher obtained feedback from the child participants on their perceptions of this study. The researcher worked one-on-one with each child participant to complete the Child Intervention Rating Scale in order to determine acceptability of the intervention while the program was still current and relevant in the child's memory. The researcher provided a Parent Intervention Rating Scale to parents to complete independently. Parents had the opportunity to discuss any concerns with the study, what components they liked or disliked, and how the program could be improved. At the end of the session, the researcher provided parents with the CBCL and the PSI to complete and the researcher collected all questionnaires during the follow-up appointment.

Follow-Up

Three weeks after each participant completed treatment, a follow-up session was conducted and video recorded. During this visit, the researcher obtained data on the parent's delivery of requests as well as the rate of compliance the child demonstrated

using the Fidelity Checklist and Compliance Data Sheet. Data were collected on the fidelity of parent implementation to determine if parents were able to maintain the new skills of delivering effective requests and reinforcement and using extinction acquired from the Play Your Way to Compliance program.

Child compliance rates were collected for red probability requests during the follow-up session. Because red requests elicited the lowest compliance rates from the child at the outset of the study, parent participants delivered only red requests in order to evaluate the effectiveness of the program. Parents delivered a total of eight red requests. Each request was delivered at least three times, but was not provided consecutively. If compliance rates dropped significantly, the researcher provided feedback and reviewed essential skills of the parent-training program.

Data Analysis

Compliance Rates

Compliance rates were collected via systematic direct observation in the participant's home and via a secure, HIPPA-compliant platform. Percent of compliance was calculated by dividing the number of times the child complied by the total number of instructions presented and multiplying by 100. Data were plotted to allow visual analysis of any patterns in the difference between each participant's baseline compliance rates and their compliance rates during the intervention and follow up phases.

Effect Size

The "no assumptions" approach by Busk and Serlin (1992) was used to calculate an effect size for each participant. Using this model, a separate effect size was obtained

for each participant during the intervention, by dividing the difference in means during baseline and intervention by the baseline standard deviation. The formula used is as follows:

$$\frac{(\text{Mean of Intervention Phase} - \text{Mean of Baseline Phase})}{\text{Standard Deviation of Baseline Phase}}$$

Cohen (1998) defined the conventional standards for interpreting effect size in which an effect size of 0.2 would be considered a small treatment effect, 0.5 would be a medium effect, and an effect size of 0.8 or above would be considered a large treatment effect.

Percentage of Nonoverlapping Data

Percentage of nonoverlapping data (PND) scores was calculated for each child participant in order to provide further information concerning the effectiveness of the intervention. Olive and Smith (2005) described a method for calculating PND scores for studies that focus on increasing target behaviors. The first step is to identify the highest data point within the baseline phase. Next, the number of data points observed to be above this baseline data point is calculated. Finally, the total number of data points divides the number of data points above the highest baseline data point. PND scores below 50 are regarded as ineffective treatments, scores of 50 to 70 are considered questionable, and PND scores over 70 are deemed as very effective (Scruggs & Mastropieri, 1998).

Nonoverlap of All Pairs

Nonoverlap of All Pairs (NAP) scores was also calculated for each child participant in order to provide additional information regarding the effectiveness of the intervention. Parker and Vannest (2009) described the method for calculating NAP scores for studies that focus on increasing target behaviors. NAP is defined as "the probability that a score drawn at random from a treatment phase will exceed (overlap) that of a score drawn at random from a baseline phase" (p. 359). NAP has been shown to be superior external validation against visual analyst judgment and computational efficiency and accuracy when compared to other overlap-based effect size measures in single-case research such as "Percent of all Nonoverlapping Data" (PAND), "Percent of Overlapping Data" (PND), and "Percent of Data Points Exceeding the Median" (PEM) (Parker & Vannest, 2009).

The first step is to identify all overlapping pairs between the baseline and intervention phases. The total possible pairs is the number of data points in the baseline phase multiplied by the number of data points in the intervention phase. An overlap between a baseline and intervention point counts as one point and a tie counts as half a point. All overlapping baseline points are compared to all intervention points to achieve a total score. This score is subtracted from the total possible pairs. To achieve a probability score, the total possible pairs then divide the resulting number. Parker and Vannest (2009) suggest that scores in the ranges of .93 - 1.0 suggests strong intervention effects. A score between .32 - .84 suggests medium intervention effects and 0 -.31 suggests weak intervention effects.

Externalizing Problems

The researcher analyzed pre- and postintervention scores on the Externalizing Problems scale of the CBCL. The scores are reported as standard scores and the mean difference between pre- and posttest scores were analyzed for each child participant and for total child participants to determine treatment effects.

Parenting Stress

The researcher analyzed pre- and postintervention scores on the Parenting Stress Index to determine the effectiveness of the intervention on parent stress. The scores are reported as standard scores and the mean difference between pre- and posttest scores were analyzed for each parent participant.

Consumer Satisfaction

The information gathered from the consumer satisfaction questionnaires are presented in a table format for parent and child participants. The questions are listed along with the responses that were given by each participant. Open-ended information is reported in a narrative form.
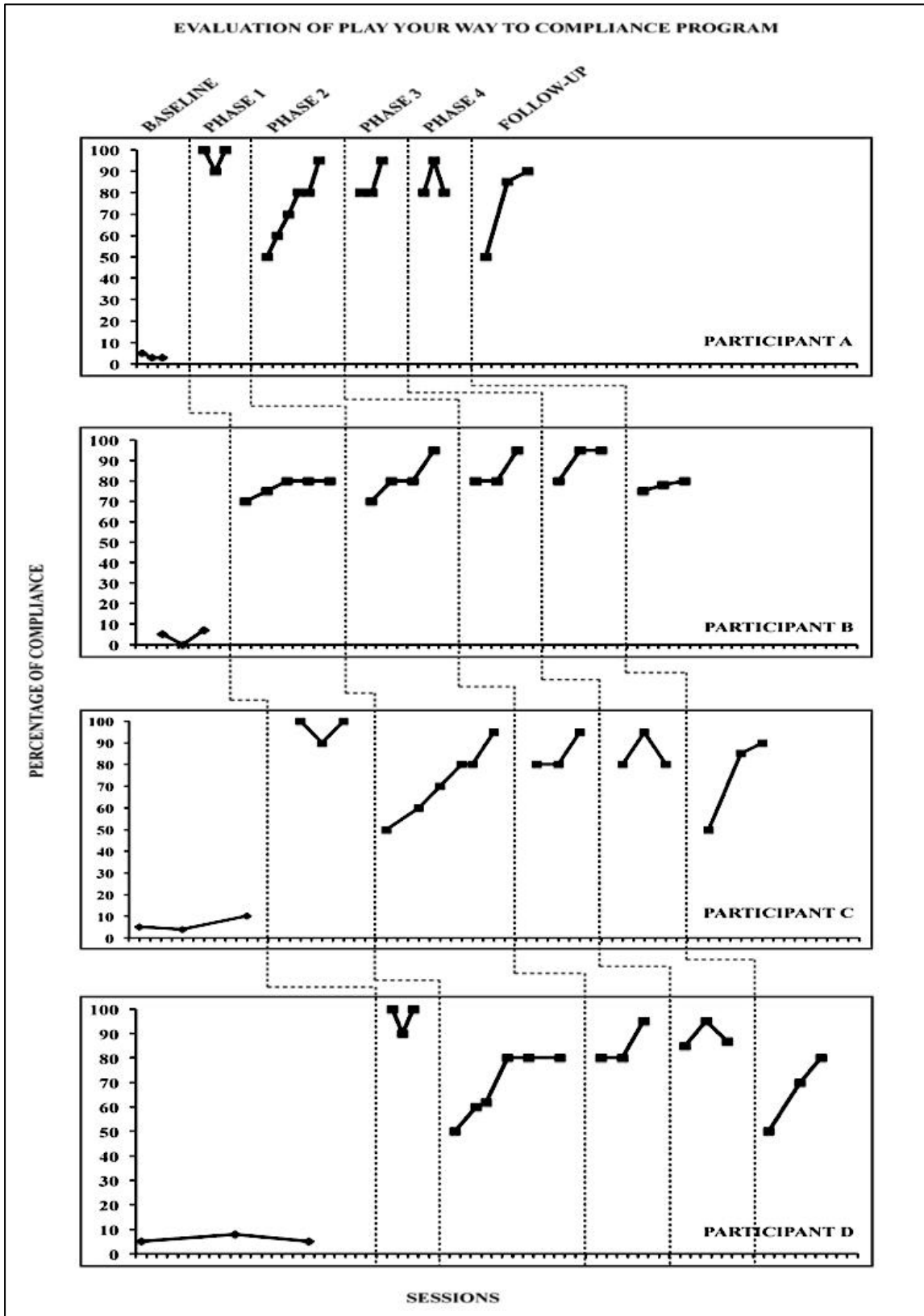
Figure 2.1: Example of Multiple Baseline Data
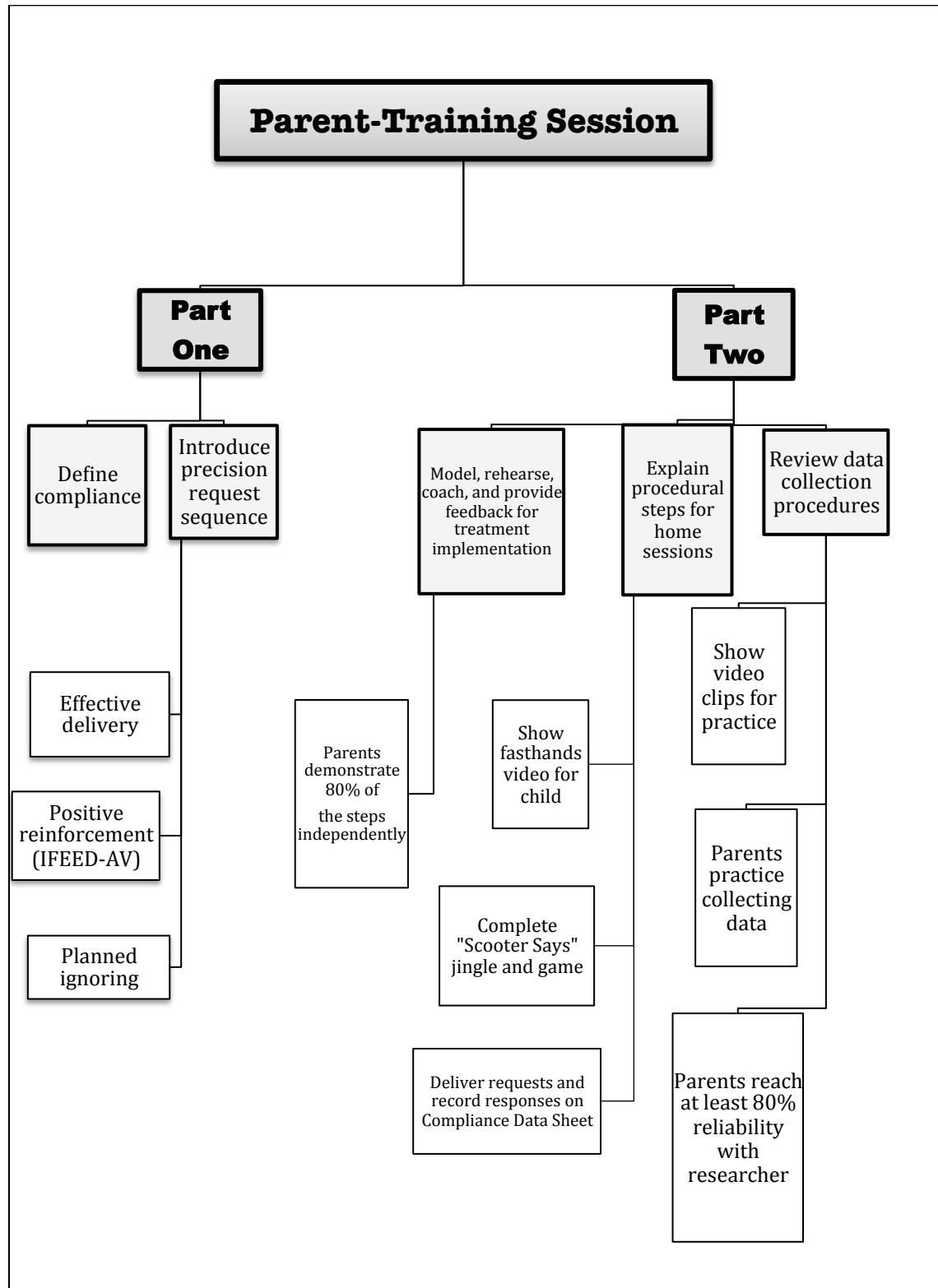
Figure 2.2: Outline of Parent-Training Sessions
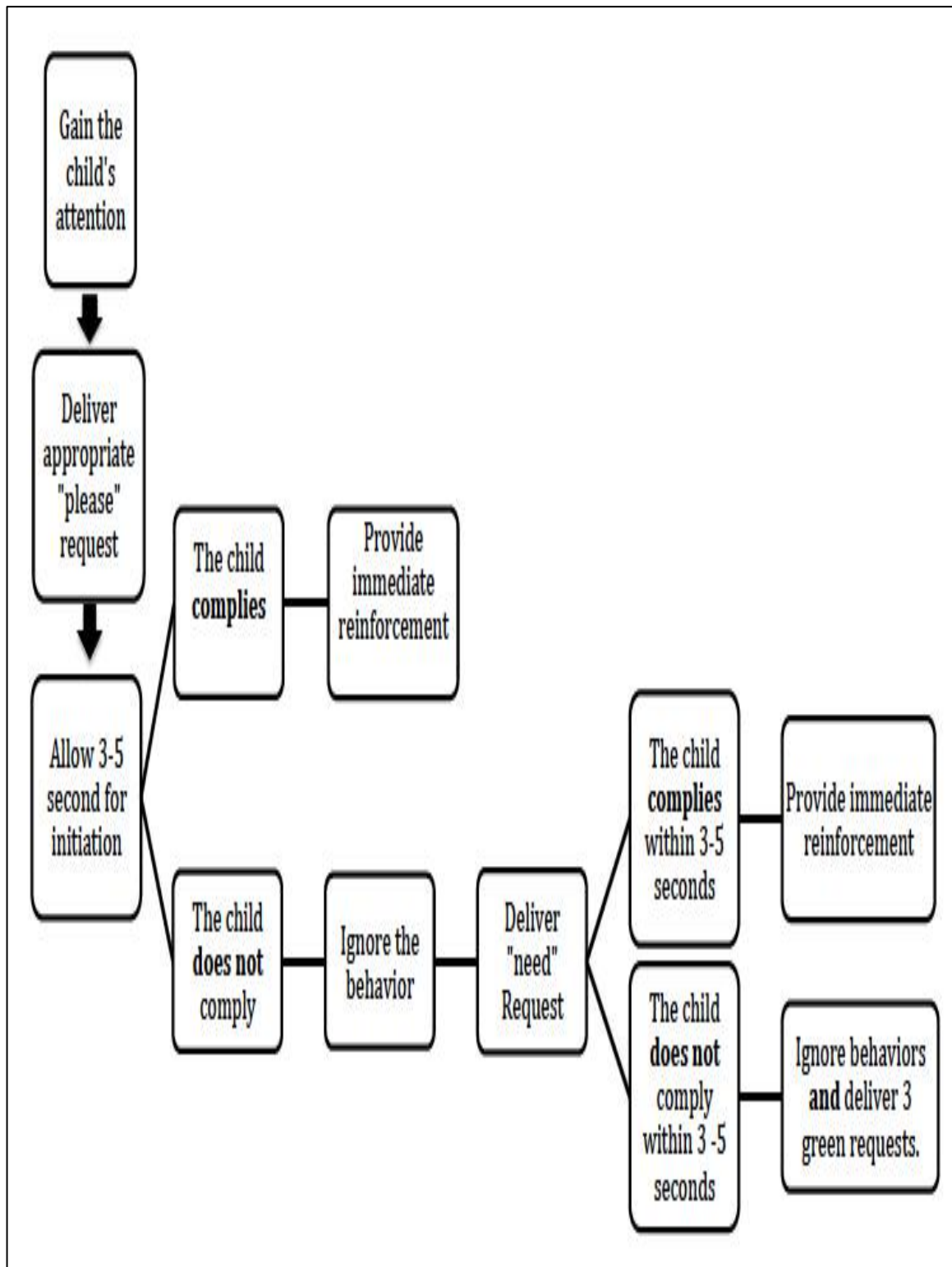
Figure 2.3: Steps to a Precision Request Sequence

Parent sets up electronic equipment

Parent delivers requests and records child's responses

Parent organizes reinforcers

Parent and child play "Scooter Says" game

Parent reviews Compliance Data Sheet

Parent sings "Scooter Says"
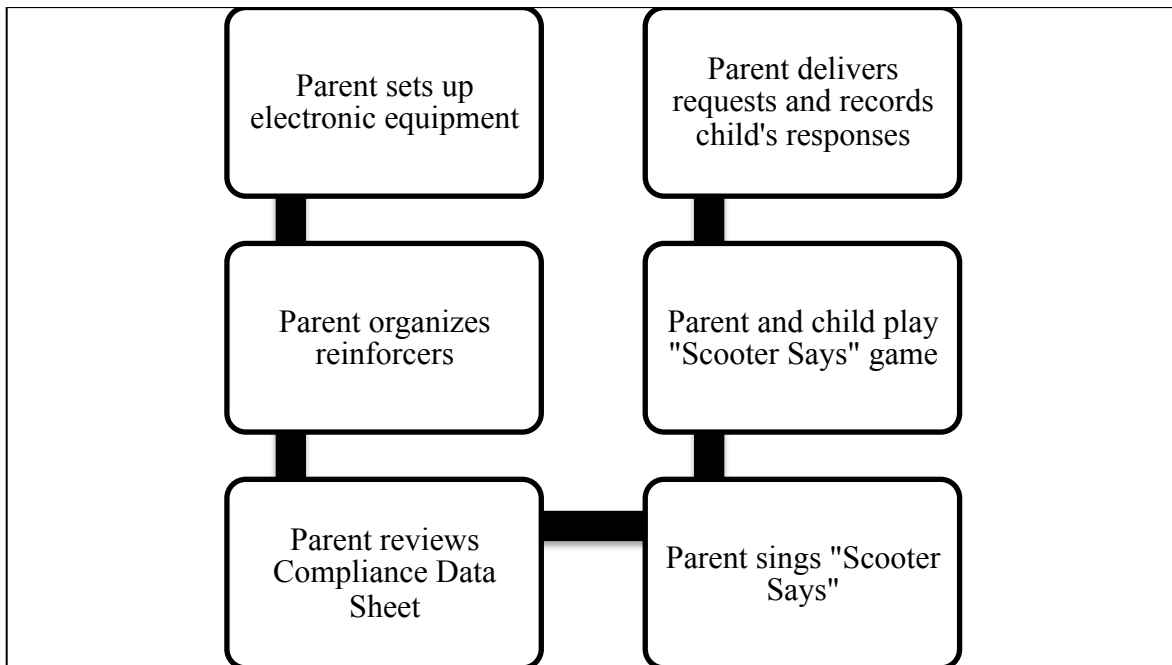
Figure 2.4: Independent Parent Compliance Sessions

Researcher sets up electronic equipment

Parent sings "Scooter Says"

Parent and child play "Scooter Says" game

Researcher organizes reinforcers

Researcher prompts the child to view the fasthands animation

Parent delivers requests and records child's responses

Researcher and parent review Compliance Data Sheet and questions from previous week

Parent watches adult peer modeling video

Researcher provides feedback on treatment integrity

Figure 2.5: Researcher Present Compliance Sessions
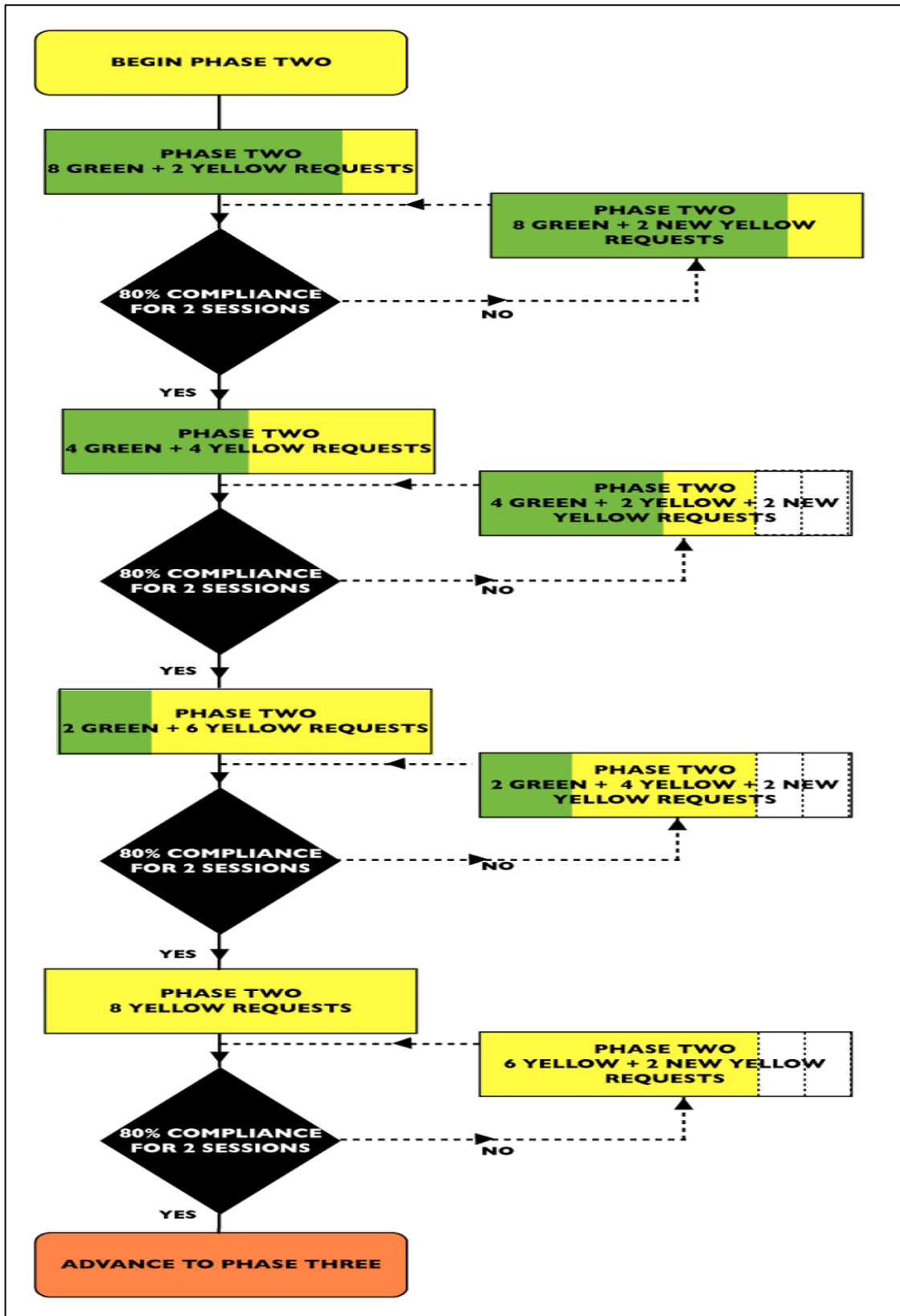
Figure 2.6: Phase Change Procedure

CHAPTER 3

RESULTS

The goal of this study was to evaluate the efficacy of an errorless learning-based

parent-training program designed to increase compliance of young school-aged children

with ASD. The program included empirically supported interventions including errorless

learning, behavioral momentum, and positive reinforcement to increase child compliance

and incorporated empirically validated parent-training strategies such as video-modeling,

direct instruction, and coaching to increase behavior management skills. The

effectiveness of the program was determined by the change in child compliance rates and

completion of checklists including the CBCL, PSI, and parent and child satisfaction

questionnaires.

Research Question 1

Will child compliance rates be higher than baseline compliance rates after

receiving the Play Your Way to Compliance program as measured by direct

observation?

The data collected during the baseline phase of this study showed significantly

low rates of compliance and a substantial increase during the treatment phase across all

participants. Participants complied with parent instructions an average of 28.9% of the

time during baseline and an average of 90.8% of the time during treatment (Table 3.1).

Using Cohen's metric for judging effect sizes, a large positive effect size was observed in

compliance rates for the group ($ES = 24.80$). For all participants, percentage of

nonoverlapping data points was calculated at 100% and nonoverlap of all pairs was

calculated at 1.00. Data points throughout each participant's treatment phase remained at

high levels compared to the baseline phase. The results indicate that the mean compliance

rate did increase during intervention as compared to baseline and satisfies the research

question. Figures 3.1 to 3.4 show total compliance rates for each participant.

Participant A complied with parent instructions for 36.1% of the time during

baseline. Participant A and his caregiver completed training sessions across 9 continuous

weeks and during treatment, Participant A complied 97.9% of the time. Using Cohen's

metric for judging effect sizes, a large positive effect was observed in compliance rates

($ES = 31.20$). Percentage of nonoverlapping data points was calculated at 100%.

Nonoverlap of all pairs was calculated at 1.00.

The mean compliance rate for Participant B during baseline was observed at

41.7%. Participant B and his caregiver completed training sessions intermittently across

15 weeks. During treatment, Participant B's mean rate of compliance increased to 88.7%.

For participant B, a large effect size was observed in compliance rates ($ES = 15.96$).

Percentage of nonoverlapping data points was calculated at 100%. Nonoverlap of all

pairs was calculated at 1.00.

At baseline, the mean rate of compliance for Participant C was 18.8%. Participant

C and his caregiver completed training sessions across 6 continuous weeks. During

treatment, Participant C's mean compliance rate increased to 91% and suggested a large

effect of the parent-training program (*ES* = 45.91). Percentage of nonoverlapping data points was calculated at 100%. Nonoverlap of all pairs was calculated at 1.00.

The mean compliance rate for Participant D during baseline was observed at 18.8% Participant D and his caregiver completed training sessions across 7 continuous weeks. The mean compliance for Participant D increased during treatment to 85.4%. For Participant D, a large effect size was observed in compliance rates (*ES* = 5.94). Percentage of nonoverlapping data points was calculated at 100%. Nonoverlap of all pairs was calculated at 1.00.

Research Question 2

Will child compliance rates to low-probability (red; less than 25%) requests increase across the duration of the study?

Because children show the least compliance with low-probability (i.e., red) requests, generalization probes were conducted to observe any changes in compliance. Parents had two opportunities each week to deliver novel red requests as generalization probes. The researcher was present at each opportunity and provided parents with the novel red requests.

Participants complied with novel, low-probability requests an average of 8.7% of the time during baseline and an average of 56.8% of the time during treatment (Table 3.2). Using Cohen's metric for judging effect sizes, a large positive effect size was observed in compliance rates for the group (ES = 5.80). For all participants, percentage of nonoverlapping data points was calculated at a mean of 75.6% and nonoverlap of all pairs was calculated at 0.94 to suggest the intervention as an

effective treatment. Data points throughout each participant's treatment phase remained at high levels compared to the baseline phase. Figures 3.5 to 3.8 show total compliance rates for each participant.

At baseline, the mean rate of compliance to low-probability requests for Participant A was 5.6%. During treatment, Participant A's mean compliance rate to low-probability requests increased to 84.7% and suggested a large positive effect of the parent-training program (ES = 10.07). Percentage of nonoverlapping data points was calculated at 100%. Nonoverlap of all pairs was calculated at 1.00.

The mean rate of compliance to low-probability requests for Participant B was 8.3%. During treatment, Participant B's mean compliance rate to low-probability requests increased to 26.3% and suggested a positive effect of the parent-training program (ES = 2.14). Percentage of nonoverlapping data points was calculated at 43% to suggest an ineffective treatment to increase compliance of low-probability requests. Nonoverlap of all pairs was calculated at 0.88 and suggested a moderate intervention effect.

At baseline, the mean rate of compliance to low-probability requests for Participant C was 16.7%. During treatment, Participant C's mean compliance rate to low-probability requests increased to 51.7% and suggested a large positive effect of the parent-training program (ES = 2.57). Percentage of nonoverlapping data points was calculated at 60% to suggest a questionable treatment to increase compliance to low-probability requests. Nonoverlap of all pairs was calculated at 0.87 and suggested a moderate intervention effect.

The mean rate of compliance to low-probability requests for Participant D was 4.2%. During treatment, Participant B's mean compliance rate to low-probability requests

increased to 64.5% and suggested a positive effect of the parent-training program (*ES* = 8.43). Percentage of nonoverlapping data points was calculated at 100%. Nonoverlap of all pairs was calculated at 1.00.

Based on the data analysis for individual participants, there were positive results on the compliance rates to low-probability, red requests across the duration of the study. All participants demonstrated large positive effects and showed an increase in compliance to novel red requests. The data collected in this study satisfy the research question.

<div align="center">Research Question 3</div>

Will parents be able to implement the Play Your Way to Compliance program with fidelity (i.e., number of steps accurately completed)?

Recorded compliance training sessions were analyzed to evaluate treatment integrity when parents implemented the intervention. The number of steps parents completed during observation sessions in the home determined treatment integrity. On average, parent participants demonstrated 95% integrity during the treatment phase (Table 3.3).

Treatment integrity for Parent A was found to complete 100% of steps with integrity for all compliance training sessions. Parent A did not have to be prompted to include any components of the intervention and did not utilize the fidelity cheat sheet during compliance training sessions. Conversely, Parent B required regular feedback and demonstrated 89.1% integrity of implementation. Specifically, Parent B received prompts to deliver clear and concise prompts and to ignore challenging behaviors.

Parent C demonstrated 94.3% integrity throughout the treatment phase. Parent C occasionally required feedback to provide the child with 3 to 5 seconds to respond before delivering the need request. Parent D demonstrated 97.8% integrity of implementation and received minimal feedback to immediately deliver reinforcement following compliance from a need request.

In general, it was found that trained and coached parents could deliver the Play Your Way to Compliance intervention with relatively high levels of treatment integrity. Based on the data collected in this study, this research question was satisfied.

Research Question 4

Will parenting stress decrease after receiving the intervention as measured by scores on the Parenting Stress Index?

Mean pretest measures of Total Stress among parent participants reported a *T*-score of 64 (Table 3.4, *T*-score mean = 50, standard deviation = 10), or over one standard deviation above the mean. Life Stress, such as change of employment and loss of family members, reported a score of 56. Upon completion of intervention, Total Stress averaged a score of 56. Similarly, Life Stress demonstrated a decrease with a score of 52.

Average parent ratings prior to intervention in the Total Child Domain indicated a *T*-score of 72, suggesting child-related stress of more than two standard deviations above the mean. Within this domain, all subscales with the exception of Reinforces Parents were between one and one-half to two standard deviations above the mean. Following intervention, average ratings on the Total Child Domain indicated a score of 61, suggesting a decrease of one standard deviation in child-related stress. Decreases were

observed on all subscales; however, increases were observed on the Health, Role Restriction, and Spouse subscales.

Prior to intervention, average parent ratings on the Total Parent Domain indicated a *T*-score of 52, suggesting typical measures of stress related to parent characteristics. Following intervention, average parent ratings on the Total Parent Domain decreased to a score of 50, indicating marginal improvement in parent-related stress.

Pretest measures of Total Stress, as endorsed by Parent A, indicated a *T*-score of 77, or nearly three standard deviations above the mean (Table 3.5). Life Stress, such as change of employment and loss of family members, reported a score of 53. Upon completion of intervention, Total Stress decreased to a score of 55 and within one standard deviation above the mean. Similarly, Life Stress demonstrated a decrease to a score of 42, or within one standard deviation below the mean.

Prior to intervention, Parent A endorsed ratings on the Total Child Domain to obtain a score of 73, or more than two standard deviations above the mean. Within this domain, all subscale scores, with the exception of Reinforces Parent, ranged between one and one-half to three standard deviations above the mean. Following intervention, Parent A endorsed ratings on the Total Child Domain with a score of 60, suggesting measurable improvement in stress caused through parent-child interaction. Prior to intervention, Parent A obtained a score of 54 on the Total Parent Domain, suggesting average parent-related stress. Following intervention, Parent A endorsed ratings on the Total Parent Domain that remained relatively stable with a score of 51. Specifically, subscale scores in Competence, Isolation, and Spouse showed an increase in scores to suggest an increase in perceived stress in these areas.

Pretest measures of Total Stress, as endorsed by Parent B, indicated a *T*-score of 55, suggesting minimal levels of total stress. Life Stress, such as change of employment and loss of family members, was reported with a score of 63, or over one standard deviation above the mean. Upon completion of intervention, Total Stress demonstrated no change and Life Stress demonstrated a nominal increase.

Prior to intervention, Parent B endorsed ratings on the Total Child Domain to obtain a score of 69, or nearly two standard deviations above the mean. Within this domain, the Demandingness and Mood subscale scores fell at or beyond two standard deviations above the mean, suggesting the parent may "experience the child as placing too many demands" on her and exhibits high dysfunctions in mood (Abidin, 2012, p. 17). Following intervention, Parent B obtained a score of 60 on the Total Child Domain, suggesting improvement in stress caused through parent-child interaction. Specifically, the Demandingness subscale indicated a significant decrease to a score of 53, falling within the average range of stress related to child demands.

Prior to intervention, Parent B endorsed ratings on the Total Parent Domain to obtain a score of 44, suggesting the parent perceived little stress to be related to parent-functioning. All subscales fell within one standard deviation of the mean with the exception of Competence, scoring one standard deviation above the mean. Following intervention, there were no significant changes demonstrated in the scores on the Total Parent Domain and its subscales.

On pretest measures of Total Stress, Parent C obtained a *T*-score of 65, or one and one-half standard deviations above of the mean. Life Stress was also reported at a score of 55. Upon completion of intervention, Total Stress was reported to decrease to a score

of 58, or within one standard deviation of the mean. Life Stress demonstrated little change following intervention.

Prior to intervention, Parent C endorsed ratings on the Total Child Domain to obtain a score of 75, or two and one-half standard deviations above the mean. Within this domain, the Reinforces Parent subscale scored within one standard deviation of the mean, whereas the Adaptability subscale scored within two standard deviations from the mean. The remaining subscales scored more than two standard deviations above the mean. Following intervention, a substantial change was observed on the Total Child Domain with a score of 59, falling within one standard deviation of the mean. The Reinforces Parent and Adaptability subscales demonstrated little change; however, the remaining subscales decreased to scores within two standard deviations from the mean.

Prior to intervention, Parent C scored within one standard deviation of the mean (*T*-score = 56) on the Total Parent Domain. Within this domain, the Competence and Isolation subscales scored above one standard deviation of the mean while the remaining subscale scores were within one standard deviation. Following intervention, scores on the Total Parent Domain and its subscales did not demonstrate substantial changes between pretest and posttest measures.

On pretest measures of Total Stress and Life Stress, Parent D obtained scores of 59 and 54, respectively, that fell within a standard deviation from the mean. Upon completion of intervention, Total Stress and Life Stress demonstrated minimal change.

Prior to intervention, Parent D endorsed ratings on the Total Child Domain to obtain a score of 64, or over one standard deviation above the mean. Similarly, all subscales fell within this range with the exception of Reinforces Parent, which fell within

a standard deviation of the mean. Following intervention, the scores on the Total Child Domain and several subscales fell within a standard deviation of the mean, suggesting some perceived improvement in the overall parent-child interaction. The Adaptability and Mood subscales decreased to a one standard deviation above the mean.

Prior to intervention, Parent D endorsed ratings on the Total Parent Domain to score within a standard deviation from the mean (*T*-score = 55). Within the Parent Domain, subscale scores of Competence and Isolation were at or above one standard deviation from the mean. The remaining subscales fell within a standard deviation from the mean. Following intervention, the Total Parent Domain and subscale scores did not demonstrate a significant change. The subscale score of Competence decreased and fell within a standard deviation from the mean.

In general, it was found that parental reports of Total Stress demonstrated substantial pretest and posttest differences among two of four parent participants. Specifically, scores within the Total Child Domain demonstrated a decrease between pre- and posttest measures to suggest perceived improvement in parent-child interactions. Data collected through the PSI provide sufficient information to satisfy the research question.

Research Question 5

Will parents report a decrease in scores on the Externalizing Problems scale of the Child Behavior Checklist (CBCL; Achenbach) after receiving the intervention?

Parent ratings on the Externalizing Problems scale of the CBCL decreased

slightly from pre- to posttest (Table 3.6) to indicate some improvement in externalizing problems such as breaking rules, arguing, disobeying at home or school, or engaging in temper tantrums. The average score at pretest was 78 and the average score at posttest was 70, with a mean difference for participants of 8.25 points.

Parent ratings from Parent A indicated some improvement following intervention on the Externalizing Problems Scale. Parent A rated Participant A with a pretest score of 79 and a posttest score of 71, indicating a decrease of 8 points in externalizing problems. However, the decrease in points did not affect the diagnostic category and the posttest score remained in the clinical range. Similarly, Parent B showed improvement and rated Participant B with a pretest score of 73 and a posttest score of 64, indicating a decrease in 9 points. The change in score also demonstrated a change from the clinical to normal range.

Parent ratings from Parent C demonstrated the least improvement following intervention on the Externalizing Problems Scale. Parent C rated Participant C with a pretest score of 87 and a posttest score of 83, indicating a 4-point decrease and no change in diagnostic category (i.e., clinical range). Conversely, parent ratings from Parent D demonstrated the most substantial improvement and rated Participant D with a pretest score of 74 and a posttest score of 62. The 12-point decrease also demonstrated a change in diagnostic category from the clinical to normal range.

In general, scores for each participant on the Externalizing Problems scale decreased from pretest to posttest. However, substantial changes were only observed for Participants B and D whose scores demonstrated a change in diagnostic category from the clinical to normal range. The results of the CBCL provide sufficient data to satisfy the

research question.

<div align="center">Research Question 6</div>

Will child participants maintain gains in their rates of compliance at follow-up 3 weeks after completing the Play Your Way to Compliance Program?

One follow-up observation was conducted for each participant approximately 3 weeks after the intervention phase was completed. The mean total compliance rate to all requests (i.e., green to red requests) for all participants at a 3-week follow-up without intervention was approximately 98%. The mean rate of compliance displayed by the participants at a 3-week follow-up was slightly higher than their mean rate of compliance of 93% during the intervention phase and substantially higher than their mean rate of compliance of 32% during baseline.

Table 3.7 compares the mean of total compliance rate and for all participants during baseline, intervention, and at 3-week follow-up. Participants A, B, and D demonstrated a slight increase since intervention with 100% compliance at follow-up. Participant C demonstrated no significant change in compliance since intervention, but demonstrated maintenance of intervention gains.

During follow-up, parents conducted generalization probes to check compliance to novel low-probability requests (i.e., red requests only). The mean compliance rate to low-probability requests for all participants at follow-up was approximately 79.8% and demonstrated an increase from baseline and intervention. Table 3.8 compares the mean of compliance rates to low-probability requests for all participants during baseline, intervention, and at follow-up. While all participants demonstrated an increase in

compliance at follow-up, Participant D demonstrated a marginal increase.

Overall, the data collected in the study demonstrate that compliance rates continued to increase and were maintained across participants at 3 weeks follow-up. Results indicated an increase in total compliance rates to all requests (i.e., green to red) and to novel low-probability requests (i.e., red requests). Based on the data collected from this study, this research question is satisfied.

<u>Research Question 7</u>

Will parents maintain fidelity of implementation at follow-up 3 weeks after completing the Play Your Way to Compliance Program?

One follow-up observation was conducted for each participant approximately 3 weeks after the intervention phase was completed. Parent participants demonstrated a mean of 96.4% integrity at a 3-week follow-up, suggesting maintenance of skills learned during parent training (Table 3.9). Parents A, C, and D implemented the follow-up compliance training session with 100% integrity. Parent B showed a slight decrease with 85.7% integrity of implementation at follow-up. Data collected from this study meets and satisfy the research question.

<u>Research Question 8</u>

Will parents report positive ratings on the Intervention Rating Scale regarding participation in the intervention as measured by mean responses on a six-point Likert scale?

After the final treatment session, all of the participants' parents were asked to complete the modified Behavior Intervention Rating Scale (BIRS). The modified BIRS

has 23 items on which the parents rate the effectiveness of the intervention on a six-point

likert scale (1=strongly disagree, 2=disagree, 3=slightly disagree, 4=slightly agree,

5=agree, 6=strongly agree). Overall, parents rated the program as being favorable ($M =$

5.58) and viewed participation in the intervention positively.

In general, parents found the intervention to be acceptable ($M = 6$) and beneficial

($M = 6$) to address their children's behaviors. Parents also endorsed that the intervention

did not result in negative side effects for their children ($M = 6$). The item with least

agreement indicated that parents did not perceive their child's behavior more similar to a

well-behavior peer after intervention ($M = 4.25$). Response means for each item are

presented in Table 3.10. Based on the data collected in this study, the results of the

modified BIRS provide sufficient data to satisfy this research question.

The questionnaires also included open-ended questions concerning what parents

liked and disliked about the intervention package. Although a few negatives were

indicated, in general, each parent's comments concerning participation in the intervention

package were positive overall.

Parent A indicated she liked the intervention package because it was "systematic

and provided opportunities for success." She also reportedly favored the coaching and

immediate feedback from the research team. Parent A indicated her least favorite

component of the program was the use of edibles as part of reinforcement.

Parent B indicated she liked the intervention package because it was "simple" and

did not indicate a favorite component of the intervention. Additionally, Parent B did not

indicate any dislikes of the program.

Parent C reported she liked the intervention package because of its emphasis on positive reinforcement. She indicated coaching and modeling of skills from the research team as her favorite components of the intervention. Parent C reported planned ignoring as her least favorite component because "it is hard!"

Parent D indicated she liked the intervention package and in particular, that "steps are outlined and can be applied to each child." Parent D indicated her least favorite component of the program was collecting data.

<p align="center">Research Question 9</p>

Will child participants report positive ratings on the Children's Intervention Rating Scale regarding participation in the intervention as measured by mean responses on a four-point Likert scale?

Additional social validity data were collected from the child participants. Participants were verbally administered items from the Children's Intervention Rating Scale by trained research assistants. Responses were converted to numerical scores (1=strongly disagree, 2=disagree, 3=slightly disagree, 4=agree, 5=strongly agree). The Play Your Way to Compliance program was perceived as being very favorable. Overall, participants agreed with all statements ($M = 4.5$), indicating high satisfaction with the program. Mean scores for each item are reported in Table 3.11.

Participant A had a rating of 5 across all items, suggesting strong agreement with all questionnaire items. Participant B had a mean rating of 3.5, ranging between slight disagreements to agreement with questionnaire items. Specifically, Participant B indicated some dislike for the "Scooter Says" song and game. Participants C and D

showed similar ratings with a mean of 4.75. Participants C and D demonstrated

agreement about singing the "Scooter Says" game and demonstrated strong agreement on

all other items.

The questionnaires also included open-ended questions concerning what child

participants liked and disliked about the intervention package. Participant B did not

report specific likes or dislikes about the program in response to the open-ended

questions. Participants A, C, and D reported "food," "candy," and "Skittles,"

respectively, to highlight edible reinforcements as their favorite component of the

intervention. Participant A reported "working" as his least favorite component and

Participants C and D did not report any dislikes.

Overall, the majority of child participants rated the Play Your Way to Compliance

program favorably with the exception of slight disagreements from one child participant.

The data available from the Children's Intervention Rating Scale are sufficient to satisfy

this research question.

<div align="center">Reliability</div>

The filmed compliance sessions served as a means to measure interrater

reliability. In order to ensure that interrater agreement was maintained throughout the

study, two observers collected data for each participant simultaneously during at least

33% of the observation probes conducted throughout the study. These observations

occurred once while collecting baseline and follow-up data and at least three times while

collecting intervention data for each participant. I observed and coded 53% of the filmed

compliance sessions and compared them to the codings of trained research assistants of

the same video session. The reliability check ensures that judgments of child compliance remain accurate measures of the participant's actual compliance rates (i.e., total compliance, compliance for low-probability requests).

Cohen's Kappa, which corrects for chance agreement, was used to calculate interrater reliability. A reliability coefficient of .80 or higher was achieved between the observers during each of these observations to suggest almost perfect agreement. Table 3.12 shows the reliability estimates for each of these observations throughout the study.

Total Percentage Agreement served as an additional measure of interrater reliability. Total Percentage Agreement considers observers' agreements and disagreements on the occurrence and nonoccurrence of behaviors on a point-by-point basis (Yoder & Symons, 2010). Overall total reliability was calculated to be 89%.

Table 3.1: Total Compliance Rates and Effect Sizes Across all Participants

	Participant A	Participant B	Participant C	Participant D	Mean
Baseline	36.1%	41.7%	18.8%	18.8%	28.9%
Treatment	97.9%	88.7%	91.0%	85.4%	90.8%
Effect Size	31.20	15.96	45.91	5.94	24.80
PND	100%	100%	100%	100%	100%
NAP	1.00	1.00	1.00	1.00	1.00

Table 3.2: Compliance Rates to Low-Probability Requests and Effect Sizes Across all Participants

	Participant A	Participant B	Participant C	Participant D	Mean
Baseline	5.6%	8.3%	16.7%	4.2%	8.7%
Treatment	84.7%	26.3%	51.7%	64.5%	56.8%
Effect Size	10.07	2.14	2.57	8.43	5.80
PND	100%	43%	60%	100%	75.6%
NAP	1.00	0.88	0.87	1.00	0.94

Table 3.3: Parent Fidelity of Treatment Implementation

	Parent A	Parent B	Parent C	Parent D	Mean
Treatment	100%	89.1%	94.3%	97.8%	95%

Table 3.4: Mean Pre- and Posttest *T*-Scores on the PSI

	Pretest	Posttest	Difference
Child Domain			
Distractibility/Hyperactivity	72	61	-11
Reinforces Parent	58	54	-4
Demandingness	70	57	-13
Mood	69	64	-5
Acceptability	68	63	-5
Total Child Domain	**70**	**61**	**-9**
Parent Domain			
Competence	59	63	+4
Isolation	59	58	-1
Attachment	57	49	-8
Health	49	51	+2
Role Restriction	54	55	+1
Depression	55	49	-6
Spouse	44	49	+5
Total Parent Domain	**52**	**50**	**-2**
Total Stress	**64**	**56**	**-8**
Life Stress	**56**	**52**	**-4**

Table 3.5: Pre- and Posttest *T*-scores on the PSI by Parent

	Parent A		Parent B		Parent C		Parent D	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Child Domain								
Distractibility/								
Hyperactivity	80	59	68	61	75	64	64	59
Adaptability	72	68	67	50	69	67	63	61
Reinforces Parent	56	46	59	60	59	54	59	56
Demandingness	70	53	75	62	74	61	60	50
Mood	67	57	70	71	74	65	65	62
Acceptability	69	67	65	66	74	62	64	58
Total Child Domain	**73**	**60**	**69**	**67**	**75**	**59**	**64**	**59**
Parent Domain								
Competence	55	78	60	64	61	55	60	55
Isolation	52	54	54	52	65	63	65	61
Attachment	54	42	57	53	59	54	57	47
Health	44	44	51	59	51	51	51	51
Role Restriction	65	65	53	57	51	49	47	47
Depression	57	50	57	50	53	48	53	48
Spouse	46	55	40	47	44	47	44	46
Total Parent Domain	**54**	**51**	**44**	**44**	**56**	**53**	**55**	**51**
Total Stress	**77**	**55**	**55**	**55**	**65**	**58**	**59**	**55**
Life Stress	**53**	**42**	**63**	**65**	**55**	**51**	**54**	**49**

Table 3.6: Pre- and Posttest *T*-Scores on CBCL: Externalizing Problems Scale

	Parent A	Parent B	Parent C	Parent D	Mean
Pre-treatment	79	73	87	74	78
Post-treatment	71	64	83	62	70
Difference	**-8**	**-9**	**-4**	**-12**	**-8.25**

Table 3.7: Total Compliance Rates With Follow-Up

	Participant A	Participant B	Participant C	Participant D	Mean
Baseline	36.1%	41.7%	23.6%	36.5%	32.4%
Treatment	97.9%	88.7%	91.1%	95.6%	93.3%
Follow-Up	100%	100%	91.7%	100%	97.9%

Table 3.8: Compliance Rates to Low-Probability Requests With Follow-Up

	Participant A	Participant B	Participant C	Participant D	Mean
Baseline	5.6%	8.3%	16.7%	4.2%	8.7%
Treatment	84.7%	26.3%	51.7%	64.5%	56.8%
Follow-Up	100%	66.7%	83.3%	66.7%	79.8%

Table 3.9: Parent Fidelity of Treatment Implementation at Follow-Up

	Participant A	Participant B	Participant C	Participant D	Mean
Treatment	100%	89.1%	92.64%	97.8%	95%
Follow-Up	100%	85.7%	100%	100%	96.4%

Table 3.10: Modified Behavior Intervention Rating Scale Mean Scores

Item	Parent A	Parent B	Parent C	Parent D	**Mean**
1. This was an acceptable intervention for the child's problem behavior.	6	5	6	6	**5.75**
2. Most parents would find this intervention appropriate for behavior problems in addition to the one addressed.	6	5	6	6	**5.75**
3. The intervention proved effective in changing the child's problem behavior.	6	5	5	6	**5.5**
4. I would suggest the use of this intervention to other parents.	6	5	6	6	**5.75**
5. The child's behavior problem was severe enough to warrant use of this intervention.	6	6	6	6	**6**
6. Most parents would find this intervention suitable for the behavior problem addressed.	6	5	6	6	**5.75**
7. The intervention did not result in negative side effects for this child.	6	6	6	6	**6**
8. The intervention would be an appropriate intervention for a variety of children.	6	6	6	6	**6**
9. The intervention is consistent with other parenting techniques I have been taught.	6	6	6	6	**6**
10. The intervention was a fair way to handle the child's noncompliance.	6	6	6	6	**6**
11. The intervention is reasonable for the behavior problem addressed.	6	6	6	6	**6**

Table 3.10: Continued

Item	Parent A	Parent B	Parent C	Parent D	Mean
12. I like the procedures used in the intervention.	6	5	5	5	**5.25**
13. The intervention was good a way to handle the behavior problem.	6	5	5	5	**5.25**
14. Overall, the intervention was beneficial for the child.	6	6	6	6	**6**
15. The intervention quickly improved the child's behavior.	6	4	5	6	**5.25**
16. The intervention will produce a lasting improvement in the child's behavior.	6	5	5	6	**5.5**
17. The intervention improved the child's behavior to the point that it would noticeably deviate from other children's behavior.	6	4	4	5	**4.75**
18. Soon after using the intervention, a parent would notice a positive change in the problem behavior.	6	5	5	5	**5.25**
19. The child's behavior will remain at an improved level even after the intervention is discontinued.	6	4	5	6	**5.25**
20. Using the intervention should not only improve the child's problem behavior at home, but also in other settings (e.g., school, playground).	6	5	6	6	**5.75**
21. When comparing this child with a well-behaved peer before and after use of the intervention, the child's and the peer's behaviors are more alike after the intervention.	6	4	4	5	**4.75**

Table 3.10: Continued

Item	Parent A	Parent B	Parent C	Parent D	Mean
22. The intervention produced enough improvement in the child's behavior so the behavior no longer is a problem in the home.	6	4	5	6	**5.25**
23. Other behaviors related to the problem behavior also are likely to be improved by the intervention.	6	5	6	6	**5.75**
Total Average Score:	**6**	**5.08**	**5.48**	**5.78**	**5.58**

Table 3.11: Child Intervention Rating Scale Mean Scores

Item	Participant A	Participant B	Participant C	Participant D	Mean
1. I liked watching to "Scooter Says" video.	5	4	5	5	**4.75**
2. I liked singing the "Scooter Says" song.	5	3	4	4	**4**
3. I liked playing the "Scooter Says" game.	5	3	5	5	**4.5**
4. I liked playing with my mom.	5	4	5	5	**4.75**
Total Average Score:	**5**	**3.5**	**4.75**	**4.75**	**4.5**

Table 3.12: Interrater Reliability

	Participant A	Participant B	Participant C	Participant D
Baseline	.86	.85	1	.92
Treatment	.97	.90	.86	1
Treatment	1	.95	.85	.98
Treatment	1	.88	.90	.85
Follow-up	1	1	.92	1
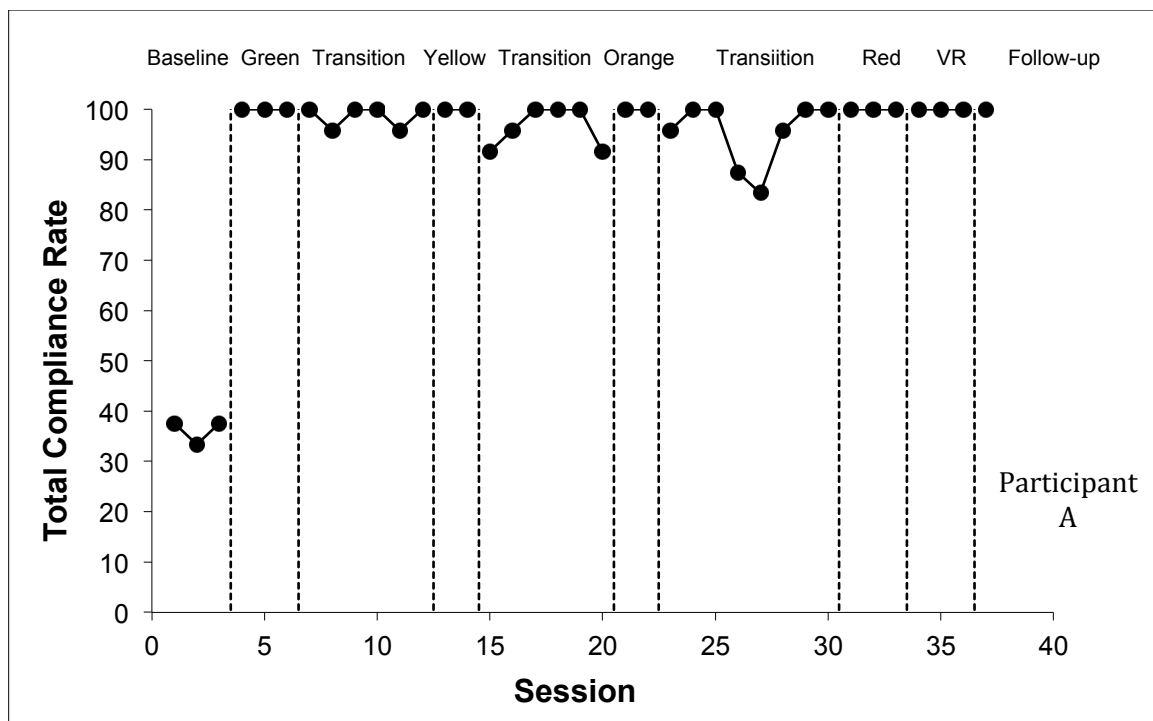
Figure 3.1: Total Compliance Rate for Participant A
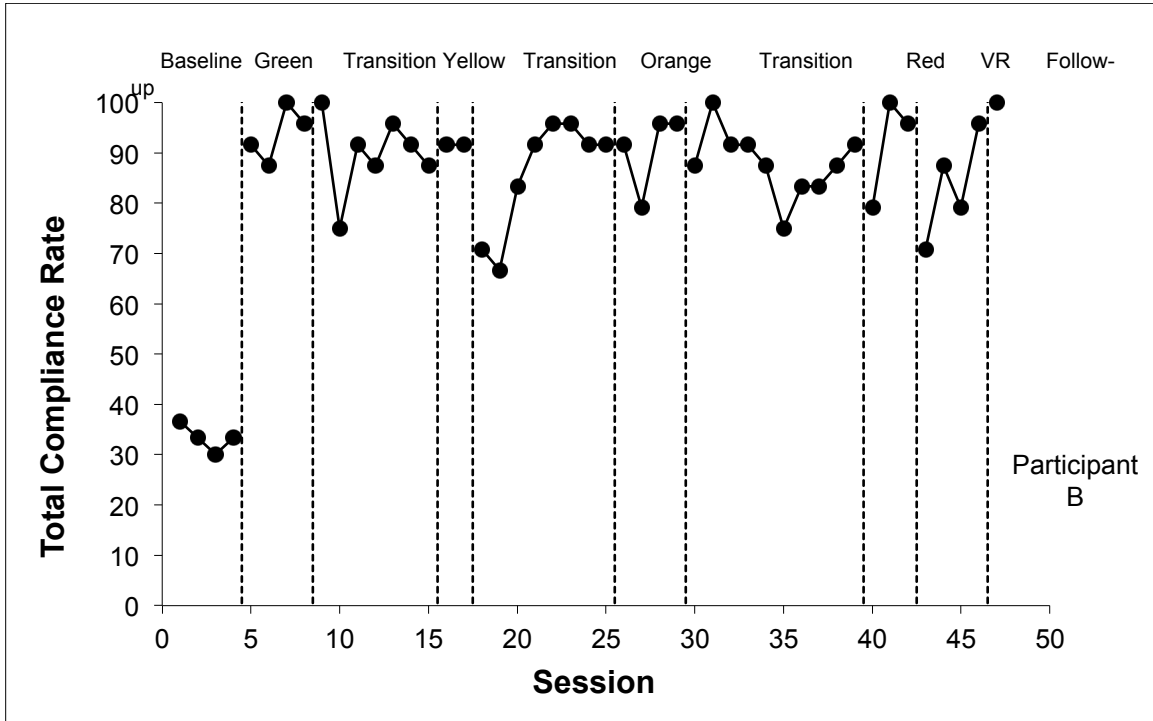
Figure 3.2: Total Compliance Rate for Participant B
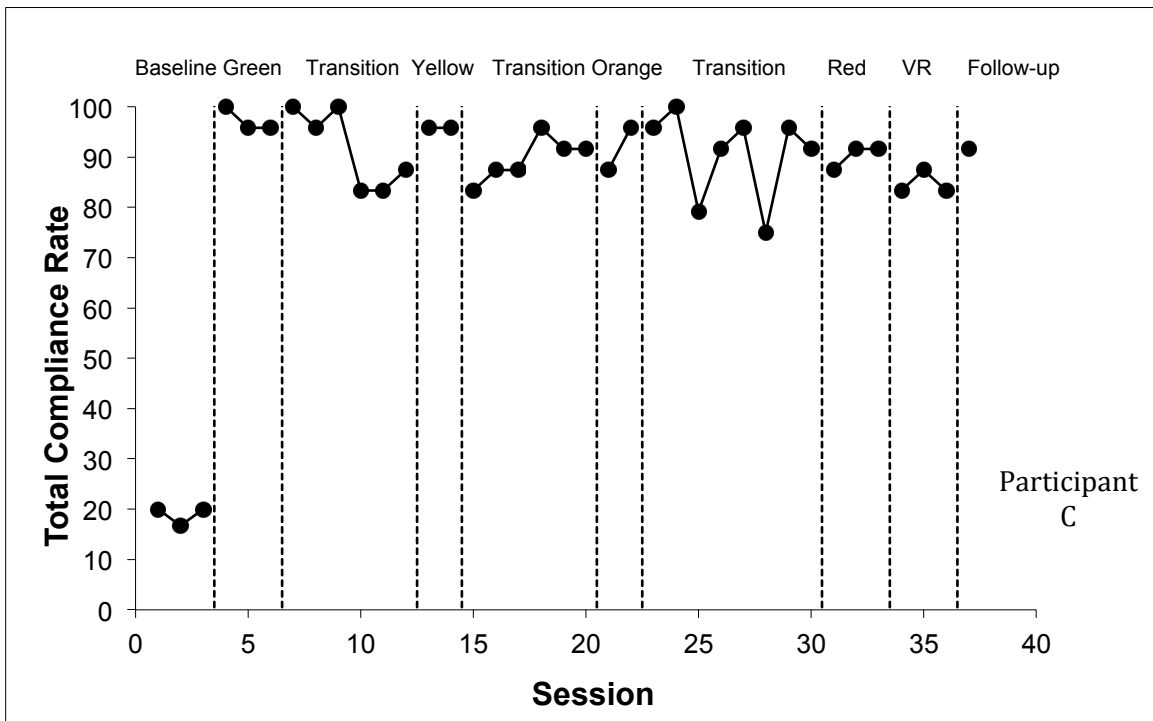
Figure 3.3: Total Compliance Rate for Participant C
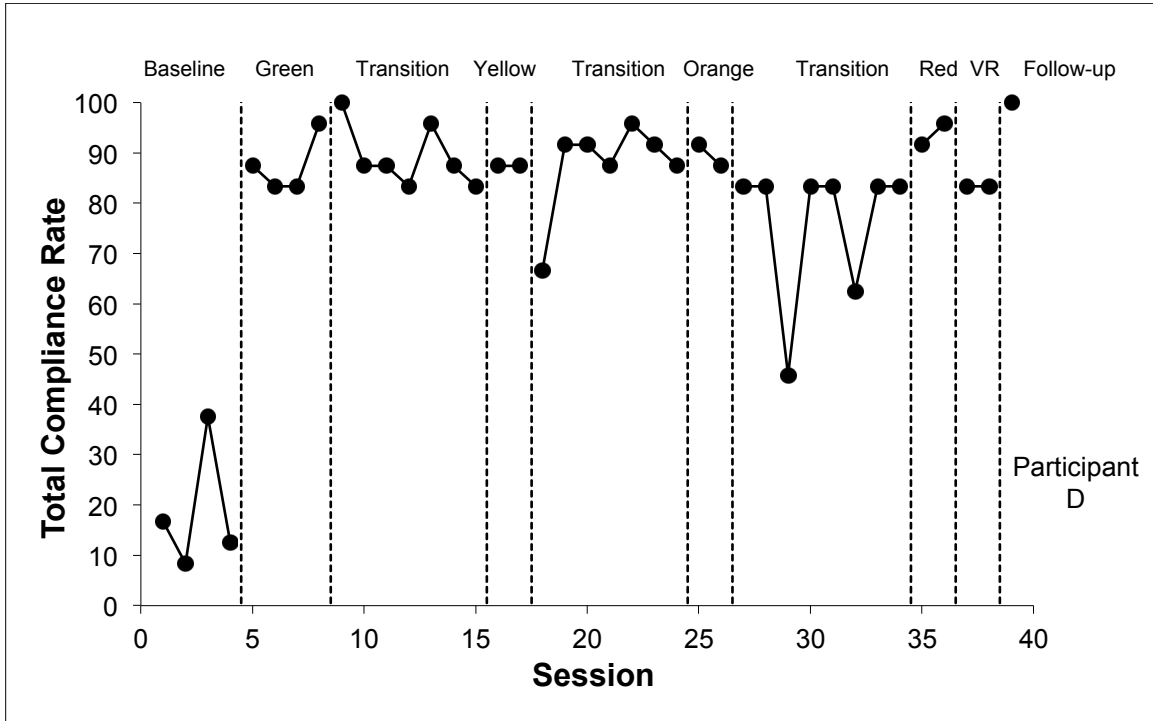
Figure 3.4: Total Compliance Rate for Participant D
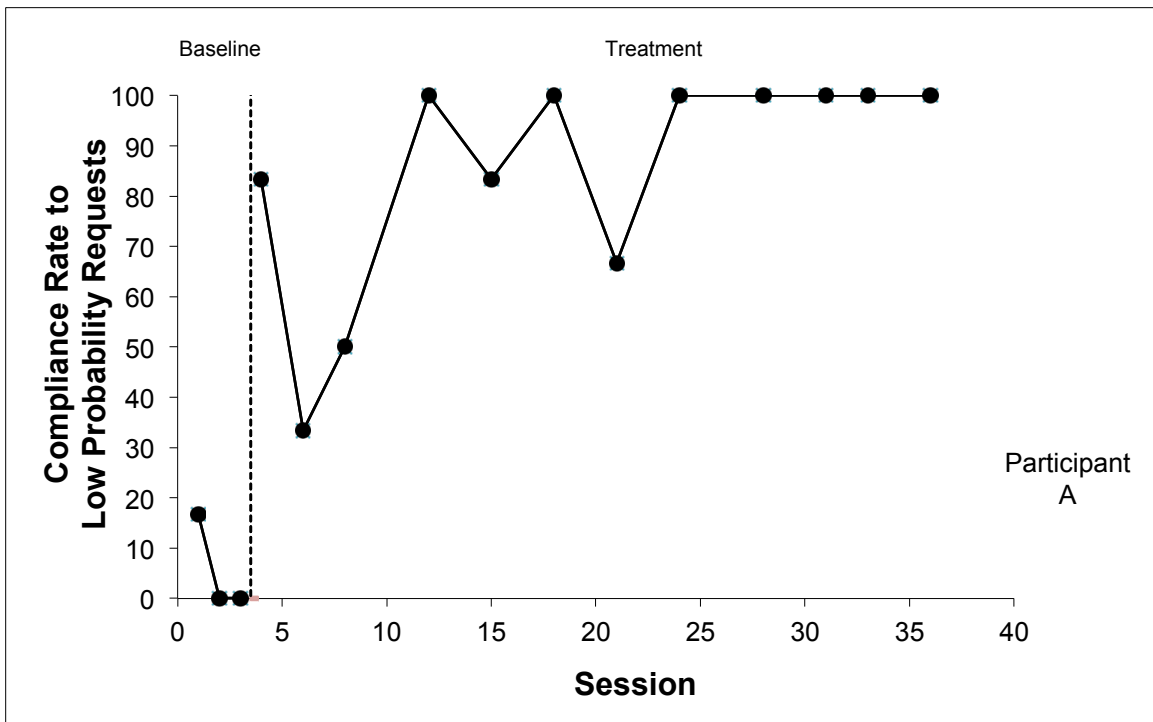
Figure 3.5: Compliance Rate to Low-Probability Requests for Participant A
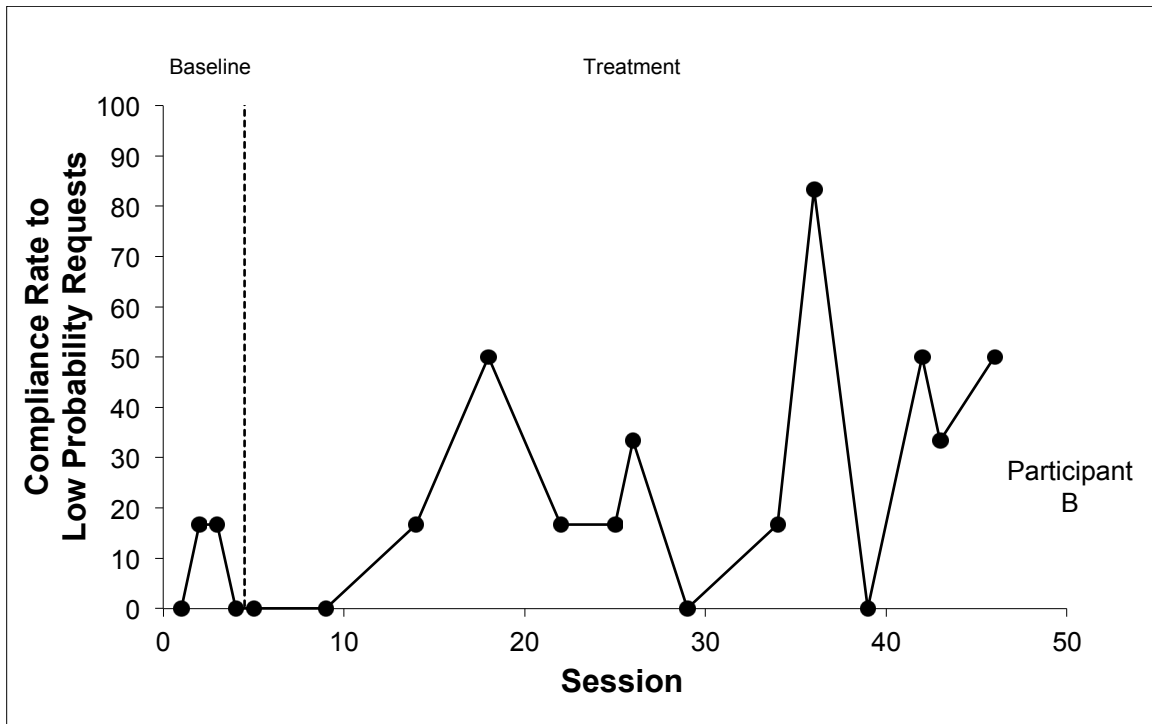
Figure 3.6: Compliance Rate to Low-Probability Requests for Participant B
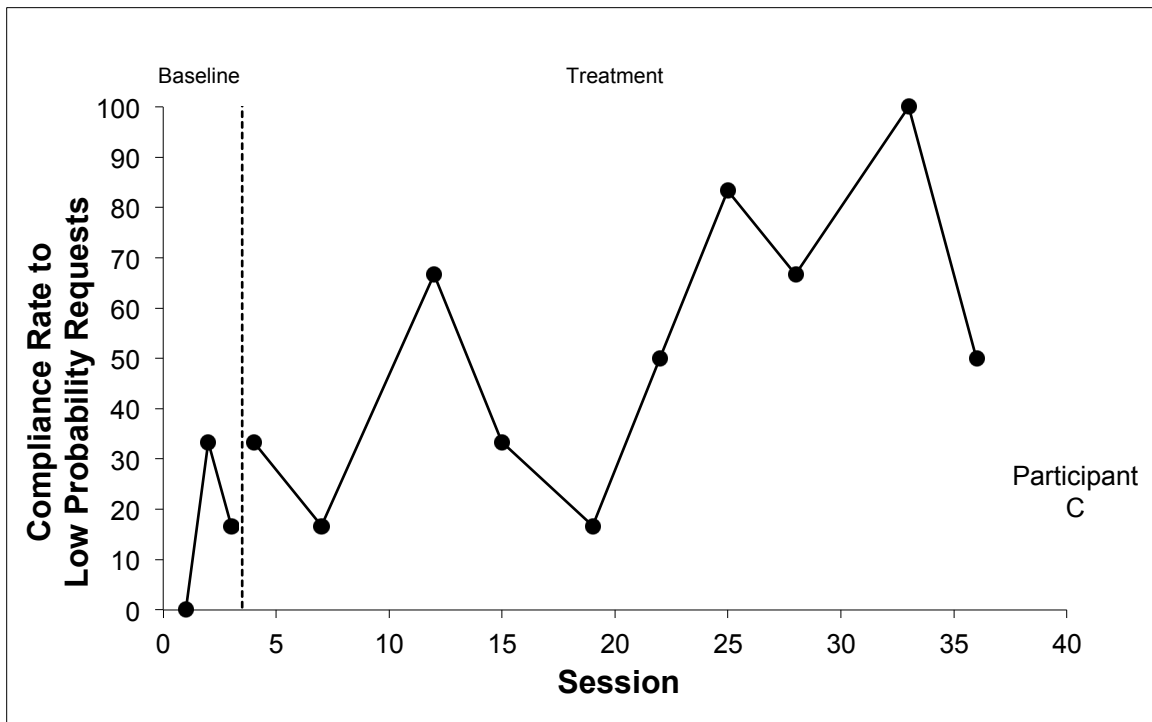
Figure 3.7: Compliance Rate to Low-Probability Requests for Participant C
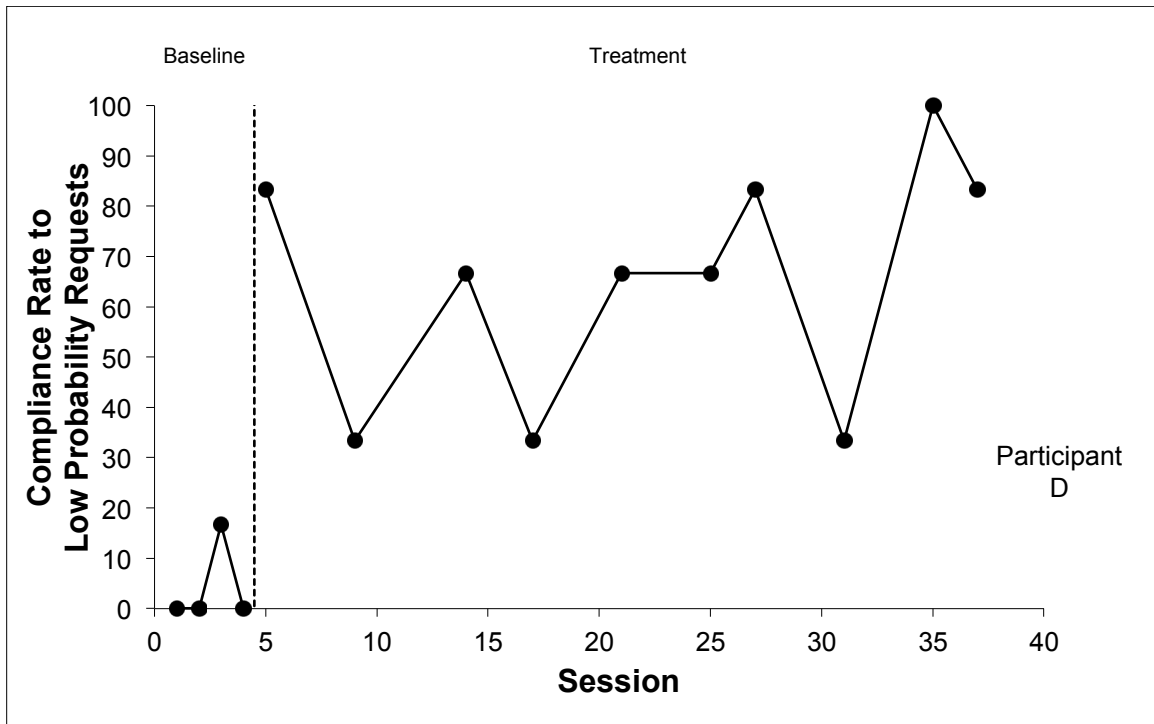
Figure 3.8: Compliance Rate to Low-Probability Requests for Participant D

CHAPTER 4

DISCUSSION

Main Findings

Noncompliance is considered a keystone behavior in the development of conduct problems and antisocial behaviors and parents frequently report noncompliance as one of the most prevalent behavior problems (Forehand & McMahon, 1981; McMahon & Forehand, 2003). Noncompliance greatly contributes to levels of stress among parents (Estes, Munson, Dawson, Koehler, Zhou, & Abbott, 2009; Lecavalier, Leone, & Wiltz, 2006; Schieve, Blumberg, Rice, Visser, & Boyle, 2007) and this may be especially true among parents of children with ASD. Children with ASD present with impaired understanding of verbal and nonverbal communications and understanding of social rules and conventions that often result in challenging behaviors such as noncompliance, further exacerbating social and behavioral concerns that are serious and lifelong. Previous research has shown parent-training programs can be effective in increasing prosocial behaviors and decreasing challenging behaviors.

The overall results of the current study indicate that Play Your Way to Compliance was an effective parent-training program in increasing compliance rates in school-aged children with ASD. Treatment results demonstrate that compliance rates

substantially increased from baseline and follow-up results demonstrate that compliance rates maintained with levels similar to those during the treatment phase. In addition to the training and coaching of parents, the Play Your Way to Compliance program incorporated several evidence-based practices for children with ASD such as video modeling, errorless learning, and behavioral momentum.

Results of each research question in this study affirmed the efficacy of the intervention. The first research question evaluated the change in total compliance rates from baseline and intervention, with the hypothesis that rates would be higher after receiving the intervention package than during baseline. Total compliance rates for the participants in this study increased from a mean of 28.9% during baseline to a mean of 90.8% during treatment. Each participant experienced a substantial increase in compliance rates and using Cohen's metric for judging effect sizes, large positive effects were observed in compliance among each participant (mean $ES = 24.80$). This suggests that there were benefits from the program for individual participants that were also noticeable in the overall group effect size.

The second research question examined the change in compliance rates to low-probability requests. Because children show the least compliance with these requests, the hypothesis was that rates of compliance with more difficult requests would increase as a result of intervention. Participants complied with low-probability requests an average of 8.7% during baseline and rose to 56.8% during treatment. A large positive effect was observed in compliance to low-probability requests for the group ($ES = 5.80$).

The third research question evaluated treatment integrity to determine if parents would be able to properly implement the treatment protocol throughout the treatment

phase. The number of steps parents successfully completed when implementing compliance-training sessions with their child determined treatment integrity. On average, parent participants demonstrated 95% integrity in delivering treatment. In addition to the training and coaching of parents with the necessary feedback to implement the intervention with fidelity, manualization of the intervention may also contribute to high levels of intervention fidelity. When implementing the program, parents could reference the manual as needed and could utilize the fidelity checklists. Overall, the current study demonstrates that parents can implement the Play Your Way to Compliance program.

The fourth research question assessed parenting stress with the hypothesis that parenting stress would decrease after receiving the intervention as indicated by scores on the Parenting Stress Index (PSI). Mean pretest measures of Total Stress on the PSI indicated a *T*-score of 64, or over one standard deviation of the mean, suggesting above-average levels of stress. Following intervention, mean posttest measures of Total Stress decreased to a score of 56 and within one standard deviation of the mean. Of particular importance, ratings on the Total Child Domain decreased from a mean of 70 during baseline to a mean of 61 during treatment to suggest improvement in stress caused by the parent-child interaction and challenging child behaviors such as noncompliance. These results suggest that the implementation of parent-training procedures, in conjunction with child compliance training, was effective in decreasing parenting stress. This finding is important, as training not only benefitted child participants in the study, but also parent participants. Due to high levels of parental stress present at pretest, it is possible that the Play Your Way to Compliance program is not effective at substantially reducing parental stress on its own. However, several scales that did demonstrate improvement could be

attributed to increased child and parent skills.

The fifth research question examined parent ratings on the Externalizing Problems scale of the Child Behavior Checklist (CBCL), with the hypothesis that parents would report a decrease in scores after receiving the intervention. Based on pre- and posttest measures, parent ratings decreased slightly from a *T*-score of 78 prior to treatment to a score of 70 following treatment. Although ratings from Parents A and C indicated some improvement in externalizing problems, the change in scores did not affect the diagnostic category and scores remained within the clinically significant range. Ratings from Parents B and D demonstrated a change in diagnostic category from the clinical to normal range.

The sixth research question evaluated whether compliance rates would remain improved above baseline at follow-up 3 weeks after intervention. The mean total compliance rate for all participants at follow-up was approximately 98% and was slightly higher than their mean rate of compliance during intervention, but substantially higher than their mean rate of compliance of 32% during baseline. Additionally, compliance rates to low-probability requests increased from a group mean of 8.7% during baseline, to 56.8% during treatment, and to 79.8% at follow-up, suggesting generalization and maintenance of compliance to more difficult requests. Participants A, B, and C also demonstrated great gains in compliance to low-probability requests between treatment and follow-up alone, to suggest that compliance rates were continually improving beyond the treatment phase.

The seventh research question evaluated treatment integrity to determine if parents would be able to properly implement the treatment protocol at follow-up 3 weeks postintervention. Parent participants demonstrated a mean of 96.4% treatment integrity at

follow-up to indicate parents were able to maintain the skills learned during parent training. Parents A, C, and D implemented treatment with 100% integrity and Parent B showed a slight decrease and implemented treatment with 85.7% integrity at follow-up.

The eighth research question assessed parent participant ratings on the Intervention Rating Scale and hypothesized that parents would report positive ratings regarding their participation in the intervention. The questionnaire included 23 items that were modified from the Behavior Intervention Rating Scale (Elliot & Trueting, 1991) to better fit the purposes of this study. The parent participants' responses to the items were overall positive. More specifically, items that focused on the effect that the intervention package on their children's behaviors were rated positively. This indicates that although externalizing problems were not reduced entirely, each parent was able to observe improvement in their children's compliance. Consumer satisfaction and social validity results are important as they play an important role in how the intervention is used and ultimately how successful the intervention is.

The last research question assessed child participant ratings on the Children Intervention Rating Scale and hypothesized that participants would report positive ratings regarding their participation in the intervention. The child participants' responses were mostly favorable to indicate satisfaction with the program. Participant A, C, and D rated the overall program and its components favorably, whereas Participant B indicated less favorable ratings for the "Scooter Says" song and game. In response to open-ended questions, 3 of 4 participants reported edible reinforcement as their favorite component of the intervention.

Prior Research

Similar to previous research on parent-training programs, the current study found that the Play Your Way to Compliance program is an effective program as an intervention for children with ASD to address a specific target behavior (Elder, Valcante, Yarandi, White, & Elder, 2005; Kroeger & Sorensen, 2010; Laugeson, Frankel, Gantman, Dillon, & Mogil, 2011; Love, Matson, & West, 1995; Radley, Jenson, Clark, & O'Neill, 2014). The current study further supports the new specification of parent training as an Established treatment to decrease problem behaviors in the *National Standards Project, Phase 2* (National Autism Center, 2015).

Additionally, the program shared similarities with many programs that focused on training parents to work with their children using the principles of applied behavior analysis. Osborne, McHugh, Saunders, and Reed (2008) found that parent-training programs for children with ASD were more effective once parents had received training in behavior management. In their meta-analysis of 128 studies of parent training, Wyatt Kaminski and colleagues (2008) found larger effect sizes when programs engaged parents through modeling and role-playing of specific behavior management skills such as providing clear instructions, delivering positive reinforcement, and using planned ignoring. Similarly, the current study found Play Your Way to Compliance to produce a large mean effect size of 24.80 when delivered by trained and coached parents. In particular, Wyatt-Kaminski and colleagues found parent training on positive parent-child interactions to be predictive of behavioral outcomes for both parents and children. The results of the current study demonstrated improved behavioral outcomes for both parent and child participants with decreases in parenting stress related to parent-child interaction

based on pre- and posttest measures of the Parenting Stress Index in addition to decreases in parent ratings of externalizing problems between pre- and posttest measures of the Externalizing Problems scale of the Child Behavior Checklist.

The findings of the current study also support previous findings regarding the treatment of noncompliance through an errorless compliance training program in which parents are trained to systematically deliver increasingly demanding requests and provide positive reinforcement in order to gain compliance in children with ASD (Drain, 2011; Ducharme, 1993; Ducharme & Drain, 2004; Ducharme, Sanjuan, & Drain, 2007) Ducharme and Drain (2004) effectively increased compliance rates in four children with ASD and specifically increased compliance to low-probability requests from 36% during baseline to 86% during treatment, a mean improvement of 50 percentage points. Comparably, the participants in the current study demonstrated a mean improvement of 48 percentage points in compliance to low-probability requests, from a mean of 8.7% during baseline to 56.8% during treatment.

<div align="center">Contributing Factors</div>

Play Your Way to Compliance employs a number of evidence-based practices in order to increase compliance including errorless learning, behavior momentum, and video modeling. Play Your Way to Compliance addresses key skills in parenting behaviors and the inclusion of videos, a jingle, and a game make the program of high interest to parents and children while incorporating evidence-based practices that have been shown to aid in the acquisition, maintenance, and generalization of new skills and behaviors. Therefore, it is difficult to know the exact cause or causes for the increases in compliance displayed by

each participant. Although exact causes cannot be delineated, several factors may have contributed to the success of the intervention package.

The incorporation of parent training and coaching by the research team likely contributed to the large effect sizes. Schopler and Reichler (1971) demonstrated that parents could be trained and successfully acquire behavior management strategies that promoted improvements in their children's behavior. Jull (2008) also demonstrated that parents could be trained to implement social skills training programs in their own homes. Similarly, the current study found that following training and coaching, parents were able to implement compliance training sessions in their own home with nearly 100% fidelity with results maintaining at a 3-week follow-up. Additionally, Play Your Way to Compliance is a manualized program, which allows parents to reference and review behavior management skills when direct coaching is not available. A manualized program provides parents the opportunity to review data and make data-based decisions to move forward with the treatment protocol without delays from meeting with a coach or trainer.

The success of the intervention package can also be attributed to video modeling. As with the current study, several other studies support the utility of video modeling in parent-training programs and child interventions (Bellini & Akuillian, 2007; Meharg, Lipsker, 1991; Webster-Stratton, 1990, 1992). A factor that may have contributed to the success of the intervention package is an increased sense of self-efficacy provided by the video modeling components. According to Bandura (1997), self-efficacy is the sense or belief that one can succeed and is an important factor in promoting learning. Observing others succeed conveys a message to an observer that he or she is capable and can

motivate them to attempt a task (Schunk, 1991). Additionally, the use of multiple

exemplars decreases the likelihood that the observer can discount the successful

behaviors of a single peer (Schunk, 1987). In the current study, the parent participants

watched multiple peers effectively deliver instructions and respond to compliance or

noncompliance. Additionally, the child participants watched multiple peers comply with

requests across a variety of settings. These observations could have raised the

participants' sense of self-efficacy, thus raising their beliefs that they could display the

modeled behavior.

The NAC has also classified video modeling as an Established treatment for

children with ASD in both phases of the *National Standards Project* (National Autism

Center, 2009, 2015), supporting the large effect sizes observed in the current study. In

their review of 79 studies across both phases, the NAC has found video modeling to be

effective in decreasing problem behaviors and increasing interpersonal skills and personal

responsibility, as supported by the current study. The *National Standards Project, Phase

2* state "video modeling can be a great option for children/adolescents with an affinity for

television shows, movies, or interest in seeing themselves on a monitor " (p. 51).

The use of high-interest materials, such fasthands animated videos, may have also

contributed to the outcomes observed in the current study. Consumer satisfaction data

suggest that child participants in the current study enjoyed the use of the "Scooter Says"

video, giving this portion of the program high satisfaction ratings. This finding supports

that of Milne, Leurssen, Lewis, Leibbrandt, and Powers (2011), who found that

participant evaluations of a program utilizing virtual agents who presented learned social

skills were very positive. Similar to the Incredible Years (Webster-Stratton, 1984), the

inclusion of high-interest media may contribute to participant recall of learned skill steps, use of learned skills, maintenance of skills, and generalization of skills. The incorporation of high-interest media, labeled as "sticky" by Gladwell (2000), likely contributed to the treatment and follow-up effects observed.

Limitations

The current study evaluated the effects of the Play Your Way to Compliance program and the strength of the intervention is the utilization of several research-based techniques to increase compliance rates; however, it also causes certain limitations in interpreting study results. Because the intervention package uses several evidence-based interventions simultaneously, it is difficult to determine which intervention component was most effective. It is also difficult to determine whether or not using multiple interventions had an additive effect in increasing compliance versus using only one of the intervention techniques independently.

The findings in this study are also limited by the small sample size and setting. Although the study included participants who were recruited from two separate sites, only four 6-year-old male participants were included in the study. The small sample size calls into question the generalizability of these results to other participants or age groups. Along with the small sample size of child participants, parent participants were limited to mothers. It is unclear whether similar increases in compliance would have resulted with the inclusion of other caregivers (i.e., fathers, grandparents, babysitters). Additionally, the current study was not able to measure maintenance in a generalized setting beyond the home setting, such as schools or public places. Generalization probes were also

measured in highly unnatural settings (i.e., in front of a webcam). Replication and further study across a wider variety of child and parent participants and settings would be needed before inferences or generalizations about the intervention can be made.

Another limitation of the study was the length of time required to carry out treatment. The intervention required a mean of 9 weeks, from the termination of baseline to the completion of treatment (ranging from 6 weeks to 15 weeks). Although this is comparatively less than other parent-training programs, the length of time can be a relatively large commitment and hindrance to families and may interfere with normal home activity. However, the mean length of time should be interpreted with caution as one participant required more time during the treatment phase due to unforeseen circumstances (i.e., multiple family deaths and parent illness). Exclusion of this participant would indicate a mean of 7 weeks of treatment. Maughan and colleagues (2005) found that treatment efficacy of behavioral parent training was significantly affected by the number of treatment sessions, with shorter programs having a larger effect size than longer programs.

As I am an author of the Play Your Way to Compliance program, this is also a limitation of the current study. Familiarity with the procedures used in the program may have benefitted the researcher-present parent training and compliance training sessions. This familiarity makes it difficult to determine how effective parent training would be with individuals less familiar with the program. Independent verification of the efficacy of the intervention is necessary prior to it being identified as a well-established or evidence-based intervention (Chambless et al., 1998).

Another possible limitation could be that the researcher and research assistants were program implementers as well as primary observers throughout the study. Due to this fact, reactivity on the part of the participants to the observer's presence could have occurred during the treatment and follow-up phases. Because the program implementers also served as observers, there is also the possibility of observer bias. However, two observers were used during 54% of the observations that were conducted throughout the study and interrater agreement was shown to be high.

<div align="center">Future Research</div>

Future research on parent-training packages, such as Play Your Way to Compliance, should address the previously mentioned limitations. While the current study attempted to measure maintenance and, to an extent, generalization, it is important that future studies focus on these areas. Especially important is the evaluation of the parent-training program delivered by individuals not associated with the development of the program.

Throughout the current study, Play Your Way to Compliance was used with each participant individually and parent training occurred within each family's home. However, research indicates that parent-training programs can be conducted via group formats. Specifically, parents may be able to meet as a group to learn behavioral management skills and engage in modeling, role-playing, and coaching as a group. The presence of other parents may also serve as a support group for participants and may have an impact on parenting stress or satisfaction with the program. Future research could compare any differences in the delivery of parent-training sessions to the current study.

The present study only used peer-modeling videos for parent and child videos during the intervention. Future studies could compare the effectiveness of implementing Play Your Way to Compliance with only peer-modeling videos, only self-modeling videos, or a combination of peer- and self-modeling videos. It could then be determined if one format is comparatively more effective than the other or if the addition of one format to another would add to the effectiveness and acceptability of the program.

It is also possible that the simultaneous use of the interventions used in Play Your Way to Compliance had an additive effect, which was greater than the use of the interventions individually. However, future research is needed to clarify the effects of each component on noncompliance alone and in combination with each other. A suggested course in designing future studies would be to compare compliance rates of participants receiving Play Your Way to Compliance to participants receiving each intervention separately.

Future research may also evaluate the efficacy of parent training when delivered entirely via telehealth. While the researcher and assistants were able to travel to each participant's home, this may not be feasible in more rural areas where access to professionals or similar opportunities may be limited. The evaluation of parent-training procedures presented via video-conferencing would be beneficial in providing more individuals and families with evidence-based interventions. Relatedly, evaluation of Play Your Way to Compliance as a manualized program used independently by parents without facilitators or parent-training sessions would also provide information on the efficacy of the intervention as a stand-alone parent-training manual. A suggested course in designing future studies would be to compare compliance rates and treatment integrity

of participants who receive parent-training sessions in person, to participants who receive parent-training sessions via telehealth, and to participants who independently implement the program with the manual alone.

Finally, future research is necessary to evaluate Play Your Way to Compliance to alternative parent-training programs designed to increase compliance. Results of the current study demonstrate that the program was beneficial for all participants in the program, with increases in total compliance and compliance to low-probability requests maintained at follow-up. The program was also found to be social valid, based on parent and child participants. However, additional research is needed to determine if Play Your Way to Compliance is comparatively more effective than other programs in terms of changes in parent and child behaviors, social validity, and cost and time.

<u>Implications for Practice</u>

Results of the current study provide support for the delivery of the Play Your Way to Compliance parent-training program to increase compliance rates in young, school-aged children with ASD. The results suggest that the program was effective in increasing compliance rates for all participants, with increases maintained at a 3-week follow-up. The program was found to be socially valid and rated favorably by parent and child participants.

The current study also demonstrates that parents can implement the treatment with high levels of integrity. In general, the current study suggests that parents may be trained to become effective facilitators to deliver evidence-based treatments to their children. This finding is particularly important for families without access to services, as

parents themselves may learn and become effective facilitators of interventions. Overall, the results of the study suggest that the Play Your Way to Compliance program is an effective and acceptable treatment option for addressing noncompliance in children with ASD.

APPENDIX A

CONSENT FORMS

Parent Permission for Initial Observation

Dear Parent:

Purpose: The purpose of the study is to increase compliance rates of preschool aged children who display low rates of compliance to parental instructions. In order to determine if your child would be a good candidate for participation in this study, I would like permission for trained graduate students to observe your child in your home setting.

Procedure: With your permission, trained graduate students will observe and record the percentage of opportunities that your child follows your directions in your home.

After the observations are completed, the researcher will contact you about the results. At that time, the researcher will also let you know if your child is a good candidate to continue participation in the study. If it is determined that your child is a good candidate, the researcher will explain additional procedures involved in the intervention study and invite you to have your child participate in the study. If you choose not to have your child participate or if your child is not observed to be a good candidate for the study, you will still be given the option of having the researcher provide you with consultation concerning your child's behavior.

Duration: The observations will occur during afternoon or evening hours and is recorded for 15 minutes. A total of three observations will be conducted across three different days.

Confidentiality: Only your child's first name will be recorded on the observation form. Observation forms of students who do not continue or participate in the study will be destroyed. Methods for maintaining confidentiality of students who continue in the study will be communicated to you prior to you making a decision regarding being included in the study.

Risk/Benefits: Potential risks involved in home observations include disruption to home and family routines and embarrassment or self-consciousness at having someone observe behaviors in the home. Potential benefits include the opportunity to participate in a research project designed to increase compliance to parent instructions.

Withdrawal: After giving initial permission, consent can be withdrawn at any time by sending a written note to your child's teacher asking that no further observations be done on your child and/or calling the primary researcher at (916) 612 – 6735. If you withdraw consent, any observation forms that have been completed on your child will be destroyed immediately.

Person to Contact: If you have questions, complaints, or concerns about this study, you may contact the primary researcher, Linda Phosaly, at (916) 612 – 6735 or at linda.phosaly@utah.edu. If you feel you have been harmed as a result of participation, please call the faculty advisor, Dr. William R. Jenson, at (801) 581-7148. If Dr. Jenson is unavailable, please leave a message and your call will be returned as soon as possible.

Institutional Review Board: Contact the Institutional Review Board (IRB) if you have questions regarding your child's rights as a research participant. Also, contact the IRB if you have questions, complaints, or concerns that you do not feel you can discuss with the primary investigator. The University of Utah IRB may be reached by phone at (801) 581 – 3655 or by e-mail at irb@hsc.utah.edu.

Research Participant Advocate: You may also contact the Research Participant Advocate (RPA) by phone at (801) 581 – 3803 or by e-mail at participant.advocate@hsc.utah.edu.

It is up to you to decide whether to allow your child to take part in this study. Refusal to allow your child to participate or the decision to withdraw your child from this research study will involve no penalty or loss of benefits to which your child is otherwise entitled, nor will it affect your or your child's relationship with the investigator or classroom teacher. There are no costs or compensation for study participation.

Your permission to observe your child at home will be greatly appreciated. I hope that the study will prove helpful for many young children and their families.

Linda Phosaly
Doctoral Candidate in Educational Psychology
University of Utah

CONSENT:

By signing this consent form, I confirm that I have read the information in this parent permission form and have had the opportunity to ask questions. I will be given a signed copy of this parent permission form. I voluntarily agree to allow my child to be observed in my home as part of this study.

_____   _____
Child's Name   Parent/Guardian's Name

_____   _____
Parent/Guardian's Signature   Date

_____
Relationship to Child

Parent Consent for Study Participation

BACKGROUND

Your child has been asked to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether you will allow your child to take part in this study.

The purpose of the study is to increase compliance rates of preschool aged children who have great difficulty in complying with parental instructions. The study will involve you, as a parent, attending two parent sessions where trained professionals will provide strategies to effectively deliver instructions and reinforcement. Additionally, you will be conducting brief sessions at home with your child to practice skills learned. By learning effective strategies to deliver instructions, it is also the goal of this study to increase your child's compliance to your instructions that are rarely followed.

STUDY PROCEDURE

If your child is considered a good candidate and you wish to continue, you will participate in a parent-training intervention aimed to increase your child's compliance rates. Participating in the study would include the following: 1) you attending two parent sessions and a feedback session,
2) you completing questionnaires about your child's behaviors and preferences and about any potential stressors for you, 3) you and your child viewing videos 4) you practicing skills learned and your child responding to your instructions, 5) continued home observations and recording of sessions, 6) consulting with the researcher via a web-based program, and 7) you and your child filling out brief questionnaires about your experience of being in the study. Follow up observations of your child in the home will be conducted approximately 3 weeks after your last home session.

RISKS

The risks of this study are minimal. Potential risks involved include disruption to home and family routines by the presence of the researcher and/or trained graduate students and embarrassment or self-consciousness from being observed. Participation in this study is completely optional and at your own discretion.

BENEFITS

Although benefits can not be guaranteed, possible benefits include enhancing your child's skills in following directions and complying with requests with parents or other adults, which in turn, could increase his or her ability to acquire or engage in new skills or prosocial behaviors.

 CONFIDENTIALITY

All research records and information that identifies your child will be private to the extent allowed by law. Records about your child will be kept on computers protected with passwords and encryption and filed in locked cabinets. Only those who work with this study or are performing their job duties for the University of Utah will be allowed access to your child's information.

Observation forms and questionnaires will only contain the child's first name. After the study is completed, data will be analyzed and each child will be assigned a letter name such as
"Participant A" or "Participant B", etc. In publications, your child's name will be removed and provided with this pseudonym that will be used when reporting results of this study.

Person to Contact

If you have questions, complaints or concerns about this study, you may contact the primary investigator, Linda Phosaly, at (916) 612 – 6735 or by e-mail at linda.phosaly@utah.edu. If you feel your child has been harmed as a result of participation, please call the faculty advisor, Dr. William Jenson, at (801) 581 – 7148 during regular business hours. If Dr. Jenson is unavailable, please leave a message and your call will be returned as soon as possible.

Institutional Review Board: Contact the Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Also, contact the IRB if you have questions, complaints, or concerns in which you do not feel can be discussed with the investigator. The University of Utah IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu.

Research Participant Advocate: You may also contact the Research Participant Advocate (RPA) by phone at (801) 581-3803 or by email at participant.advocate@hsc.utah.edu.

VOLUNTARY PARTICIPATION

It is up to you to decide whether to participate in this study. Research studies include only people who choose to take part. You can tell us that you do not want your child to be in this study at any time. Your child can start the study and then choose to stop the study later. Refusal to participate or the decision to withdraw from the study will involve no penalty or loss of benefits to which you or your child are otherwise entitled to, nor will it affect your relationship with the investigator or the classroom teacher.

COSTS AND COMPENSATION TO PARTICIPANTS

There are no costs or compensation for participation in this study. The anticipated conclusion of this study is Summer 2015. After the study is complete, I would be happy to share the results with you, as well as any possible recommendations for your child.

CONSENT

By signing this consent form, I confirm I have read the information in this parental consent form and have had the opportunity to ask questions. I will be given a signed copy of this parental consent form. I voluntarily agree to participate and allow my child to take part in this study.

_____
Child's Name

_____
Parent/Guardian's Name

_____   _____
Parent/Guardian's Signature   Date

_____
Relationship to Child

_____
Name of Person Obtaining Consent

_____   _____
Signature of Person Obtaining Consent   Date

APPENDIX B

CHECKLISTS

COMPLIANCE PROBABILITY CHECKLIST

Child's Name: _____   Completed By: _____

	Almost Always (76-100%)	Usually (51-75%)	Occasionally (26-50%)	Rarely (0-25%)	Skill not learned	Skill not important
PLAY						
Get your (toy)						
Play with your (toy)						
Pick a game/activity						
Come here						
Come sit down						
Sit next to me						
Play with me						
My turn						
Wait your turn						
Take your turn						
Give me the (item)						
Find the (item)						
Show me the (item)						
Touch the (item)						
Pick up the (item)						
Put the (item) down						
Throw me the ball						
Catch the ball						

Kick the ball					
Put the shapes in the sorter					
String the beads					
Stack the blocks					
Build a tower					
Build the tracks					
Push the train					
Push the car					
Put a piece in the puzzle					
Draw a picture					
Color the picture					
Turn on the music					
Dance with me					
Sing with me					
Pick a song					
Jump up and down					
Turn around					
Stand up					
Stop/Freeze					
Copy me/Do this					
Let's play hide and go seek					
Let's play ring around the rosy					

	Almost Always (76-100%)	Usually (51-75%)	Occasionally (26-50%)	Rarely (0-25%)	Skill not learned	Skill not important
HYGIENE						
Wash your hands						
Wash your face						
Wash your mouth						
Wash your hair						
Rinse your hands						
Rinse your mouth						
Rinse your hair						
Dry your hands						
Dry your mouth						
Dry your face						
Dry your hair						
Comb your hair						
Brush your teeth						
Turn on the water						
Turn off the water						
Use the soap						
Take a bath						
Put toothpaste on your toothbrush						
Put the cap on the toothpaste						
Wet the toothbrush						

Spit into the sink						
Put the toothbrush away						
Put the toothpaste away						
Get a tissue						
Throw the tissue away						
Blow your nose						
Wipe your nose						
Wipe hands						
Wipe your face/mouth						
Wipe your bottom						
Wipe your feet/shoes						
Go potty						
Close the door						
Flush the toilet						
Throw the toilet paper away						
Hang up the towel						
Throw the paper towel away						
	Almost Always (76-100%)	Usually (51-75%)	Occasionally (26-50%)	Rarely (0-25%)	Skill not learned	Skill not important
CLEAN UP						
Pick up your (item)						
Put your (dish/cup) into the sink/on the counter						
Put your school bag away						

Put your worksheets away					
Put your toys away					
Put your shoes away					
Put your (clothing item) into the drawer					
Put your (clothing item) into the dirty clothes hamper					
Put the (crayons/markers) into the box					
Put the pencils away					
Put the books on the shelf					
Put the lid on the (item)					
Stack the papers					
Close the box					
Close the bin					
Close the (item) bag					
Hang up your towel					
Hang up your coat					
Fold your clothes					
Make your bed					
Wash the (item)					
Scrub the (item)					
Dry the (item)					
Throw the (item) into the garbage					

	Almost Always (76-100%)	Usually (51-75%)	Occasionally (26-50%)	Rarely (0-25%)	Skill not learned	Skill not important
Pour the (item) into the sink						
Turn off the lights						
Turn off the water						
Wipe the counter						
Wipe the table						
Wipe/sweep the floor						
Wipe the spill						
MEAL TIME						
Come here						
Sit down						
Stay in your seat						
Feet down						
Hands on the (table/lap)						
Speak softly						
Chew with your mouth closed						
Put your (bowl/plate) on the table						
Keep (toy) on the table						
Keep (food) on the plate						
Use your spoon						
Use your fork						

	Almost Always (76-100%)	Usually (51-75%)	Occasionally (26-50%)	Rarely (0-25%)	Skill not learned	Skill not important
Take a bite						
Chew your food						
Eat your (veggie)						
Eat your (fruit)						
Finish your (item)						
Drink your water						
Drink your juice						
Drink your milk						
BEDTIME						
Turn off the TV						
Turn off the iPad						
Turn off the game						
Clean up the (toys)						
Eat your bedtime snack						
Brush your teeth						
Wash your face						
Take a bath						
Go potty						
Take off your clothes						
Put your dirty clothes into the hamper						
Put on your pajamas						

Pick out tomorrow's clothes					
Pick a book					
Turn off the light					
Turn on the nightlight					
Say a prayer					
Get under the covers					
Stay in bed					

PRAISE STATEMENTS

Specific	General
Amazing job ___!	All right!
Great job ___!	Amazing!
High five! You ___!	Fantastic!
How awesome that you ___!	Give me props!
I am so excited that you __!	Great job following directions!
I am so glad that you ___!	Great listening!
I am so happy that you ___!	Great work!
I am so proud of you for ___!	High five!
I like how hard you worked to __!	I am so proud of you!
I love how quietly you ___!	I appreciate you doing that!
I love that you ___ right away!	I can tell you worked so hard!
I love that you ___ so quickly!	I love that you did it right away!
I love that you ___!	I love that you did it!
I really liked that you __ as soon as I asked!	I love that you're listening!
It was great to see you ___!	Look at what you just did!
It was so nice of you to ___!	Nice job!
Look at how you ___!	Perfect! That was wonderful.
Look how awesome you ___!	Thanks for being a great helper!
So amazing to see you __!	Thanks for doing it right away!
Thank you for ___!	Thanks for following directions!
Thanks for ___ right away!	Thanks for listening!
Thanks for ___ when I asked!	That was awesome!
Thanks for being a good listener and ___!	That was fantastic!
Thanks for quickly ___!	That was great!
That was so great that you ___!	That was great listening!
What a great job ___!	Way to go!
What a great listener and ___!	Way to listen!
Wow! You ___ like a speedracer!	What a good helper!
You __ so nice and quietly!	What a great listener!
You __ so well!	Woo hoo!
You (did) ___ so fast!	Wow! Great job!
You are a great listener for ___!	Yay! Look at you!
You are awesome for ___!	You are a champ!
You did __ all by yourself!	You are a great listener!
You did a great job ___!	You are a rockstar!
You did it! You ___!	You are awesome!
You just ___!	You did an amazing job!
You worked so hard to ___!	You did it!
	You did that all by yourself!
	You got it!

APPENDIX C

COMPLIANCE DATA SHEETS

Compliance Data Sheet
Baseline Observations

Child Name: _____   **Observer:** _____

Requests	Trials (+ or -)			
	1	2	3	4

Total   =   _____

[(total +)   ÷   (total trials)**]**   ×   **100**

Compliance Data Sheet
Green Requests

Child Name: _____   Date: _____

Observer: _____

| Requests | Trials (+ or -) | | | Total |
	1	2	3	
1				
2				(total +)
3				÷
4				(total trials)
5				× 100
6				
7				
8				

REINFORCERS:

EDIBLES	PRAISE STATEMENTS	
	Way to go!	You did it!
	You are awesome!	Nice job!
	Thanks for listening!	What a great listener!
	Woo hoo!	High five!
	All right!	That was awesome!
	Great job!	Perfect!
	I loved that you did it!	Yay!

Compliance Data Sheet
Yellow Requests

Child Name: _____   **Observer:** _____

Date:		Trials (+ or -)			TOTAL
Requests		**1**	**2**	**3**	
1					
2					

Date:		Trials (+ or -)			TOTAL
Requests		**1**	**2**	**3**	
1					
2					

Date:		Trials (+ or -)			TOTAL
Requests		**1**	**2**	**3**	
1					
2					

REINFORCERS:

EDIBLES	PRAISE STATEMENTS	
	Way to go!	You did it!
	You are awesome!	Nice job!
	Thanks for listening!	What a great listener!
	Woo hoo!	High five!
	All right!	That was awesome!
	Great job!	Perfect!
	I loved that you did it!	Yay!
	That was great!	Amazing!
	I love that you're listening!	Great job following directions!
	That was fantastic!	Way to listen!
	You are a champ!	You're doing great!

Compliance & Generalization Data Sheet

Child Name: _____   **Observer:** _____

Setting: _____   **Date:** _____

Requests				Trials (+ or -)			Total
Green	Yellow	Orange	Red	1	2	3	
1							
2							(total +)
3							÷
4							
5							(total trials)
6							× 100
7							
8							

Red Request Probes	Trials (+ or -)		
	1	2	3
1			
2			

APPENDIX D

FIDELITY CHECKLISTS

Fidelity Checklist

Child: _____   Parent: _____

Video Date: _____   Observer: _____

☐   Sang the "Scooter Says" jingle with child
☐   Played the "Scooter Says" game and requested silly actions
☐   Used precision request sequence and delivered selected requests
☐   Avoided more difficult requests not targeted

		Trials (+ or -)			Total
	Criterion:	**1**	**2**	**3**	
1	Did parent gain attention prior to delivering request?				
2	Did parent deliver appropriate "please" request?				
3	Did parent allow time (3-5 seconds) for child to respond?				
4	Did parent provide immediate reinforcement or, ignore behavior?				
5	*Did parent deliver appropriate "need" request?*				
6	*Did parent allow time (3-5 seconds) for child to respond?*				
7	*Did parent provide immediate reinforcement, or ignore behavior?*				

Total =   _____

               [(total +)   ÷   (total trials)**]**   ×   **100**

Implementation Checklist
For Parents

☐   Sing the "Scooter Says" jingle with my child

☐   Play the "Scooter Says" game and request silly actions

☐   Use precision request sequence and deliver selected requests

☐   Avoid more difficult requests not being worked on

	Precision Request Sequence
☐	Gain attention prior to delivering a request
☐	Deliver an appropriate "please" request
☐	Allow enough time (3-5 seconds) for my child to respond
☐	Provide immediate reinforcement or, ignore inappropriate behavior
☐	Deliver an appropriate "need" request
☐	Allow enough time (3-5) seconds for my child to respond
☐	Provide immediate reinforcement, or ignore inappropriate behavior.

APPENDIX E

CONSUMER SATISFACTION QUESTIONNAIRES

Intervention Rating Scale

Adapted from the BIRS (Elliot & Trueting, 1991)

Please evaluate the intervention by circling the number which best describes your agreement or disagreement with each statement. You must answer each question.

1= Strongly Disagree	2= Disagree	3=Slightly Disagree
4= Slightly Agree	5= Agree	6= Strongly Agree

1. This was an acceptable intervention for the child's problem beha vior.   1   2   3   4   5   6

2. Most parents would find this intervention appropriate for behavior problems in addition to the one addressed.   1   2   3   4   5   6

3. The intervention proved effective in changing the child's problem behavior.   1   2   3   4   5   6

4. I would suggest the use of this intervention to other parents.   1   2   3   4   5   6

5. The child's behavior problem was severe enough to warrant use of this intervention.   1   2   3   4   5   6

6. Most parents would find this intervention suitable for the behavior problem addressed.   1   2   3   4   5   6

7. The intervention did not result in negative side effects for this child.   1   2   3   4   5   6

8. The intervention would be an appropriate intervention for a variety of children.   1   2   3   4   5   6

9. The intervention is consistent with other parenting techniques I have been taught.   1   2   3   4   5   6

10. The intervention was a fair way to handle the child's noncompliance.   1   2   3   4   5   6

11. The intervention is reasonable for the behavior problem addressed.   1   2   3   4   5   6

12. I like the procedures used in the intervention.   1   2   3   4   5   6

13. The intervention was good a way to handle the behavior problem.   1   2   3   4   5   6

14. Overall, the intervention was beneficial for the child.   1   2   3   4   5   6

15. The intervention quickly improved the child's behavior.   1   2   3   4   5   6

16. The intervention will produce a lasting improvement in the child's behavior.   1   2   3   4   5   6

17. The intervention improved the child's behavior to the point that it would noticeably deviate from other classmate's behavior.   1   2   3   4   5   6

18.	Soon after using the intervention, a parent would notice a positive change in the problem behavior.	1	2	3	4	5	6
19.	The child's behavior will remain at an improved level even after the intervention is discontinued.	1	2	3	4	5	6
20.	Using the intervention should not only improve the child's problem behavior at home, but also in other settings (e.g., other classrooms, home).	1	2	3	4	5	6
21.	When comparing this child with a well- behaved peer before and after use of the intervention, the child's and the peer's behaviors are more alike after the intervention.	1	2	3	4	5	6
22.	The intervention produced enough improvement in the child's behavior so the behavior no longer is a problem in the home.	1	2	3	4	5	6
23.	Other behaviors related to the problem behavior also are likely to be improved by the intervention.	1	2	3	4	5	6

- What aspects of this intervention did you like?

- What, if anything, did you not like about the intervention?

- What did you like about the parent-training package?

- What, if anything, did you not like about the parent-training package?

Children's Intervention Rating Scale

Name: _____   Date: _____

Instructions to be read to participants:
I am going to read you some questions about playing the "Scooter Says" game. Please circle how you feel about each question. Circle the face under the 1 if you really disagree with the statement, the face under the 3 if you kind of agree, and face under the 5 if you really agree.

1. I liked watching the the "Scooter Says" *video*

   1   2   3   4   5

2. I liked singing the "Scooter Says" song.

   1   2   3   4   5

3. I liked playing the " Scooter Says" game.

   1   2   3   4   5

4. I liked playing with my mom.

   1   2   3   4   5

5. What do you like about the game?

6. What did you not like about the game?

APPENDIX F

TELEHEALTH SCRIPT

Telehealth Script

1. **Greet parents:** "Hello, *(Name)*! How are you?"

2. **Check in:**

   a. "How have the sessions gone this week?

   b. "Are there any concerns that we could address at our next home visit?"

   [Praise any progress the parent expresses].

   c. "I am so glad to hear that you have had success with [summarize successes]. It sounds like you have some concerns about [paraphrase concerns]. Let's discuss this some more during my next visit and come up with strategies to help you."

3. **State the purpose of the call:** "For today, I would like you to deliver the following commands to *(name of child)*." [Name requests].

4. **End the video call:**

   a. "*(Parent name),* thank you for taking the time to do that today. I am still planning to be there on *(date and time).* Will that still work for you?" [Reschedule as needed].

   b. "While I'm there, we will make sure to discuss the concerns about [name concerns] that you mentioned earlier. I look forward to seeing you two next week."

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