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Exploratory Analysis of Maintenance in Behavioral Parent Training

by

Claudia Villari

A thesis submitted in partial fulfillment of the requirements for the degree of Masters of Arts
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ABSTRACT

A two-part study explored the maintenance effect of Behavioral Parent Training (BPT) featuring multi-component treatments by examining one year follow-up data from a larger study. Participants were ten parents of children (ages 3-5) with developmental disabilities and severe problem behaviors. Parents were also identified as having high levels of pessimism. BPT featuring multi-component treatments was provided in two conditions: Positive Behavior Support (PBS) and Positive Family Intervention (PFI). PBS included a standardized protocol to teach parents how to conduct a functional assessment, develop and implement a multi-component treatment, which includes the following strategies: prevention, teaching replacement skills, and managing consequences. PFI embedded optimism training in the same protocol used in PBS. Optimism training included presenting parents with their negative self-talk and having them practice using more positive self-talk throughout all sessions. In the first study, improvements in child behavior were observed after treatment, which maintained one year later for both conditions. The second study further revealed that participants in the PBS condition frequently used passive strategies vs. participants in the PFI condition who frequently used proactive strategies during post and one year follow-up. The current study did not reveal a specific treatment component to be responsible for behavior change.
and maintenance, but provided some insight as to the type of prevention strategies pessimistic parents are likely to use depending on whether or not they received optimism training. Suggestions for future research in assessing the remaining treatment components are discussed.
Introduction

Many parents of children with developmental disabilities (e.g., autism, pervasive developmental disorder, William syndrome) have a difficult time managing severe problem behaviors, such as self-injury, property destruction, and physical aggression. High rates of these behaviors interfere with the child’s ability to acquire adaptive skills, which in turn may result in the child being segregated in self-contained placements or exposed to restrictive or sedative procedures (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991). For this reason, it is important to conduct research on behavioral interventions that are not only effective in improving child behavior, but also in achieving long-term maintenance (Carr, et al. 1999; Chandler, Lubeck, & Fowler, 1992; Stokes & Baer, 1977). Treatment gains that are maintained over a lifetime give individuals an opportunity to improve their quality of life. They are more likely to find a job, have a social network, and live independently (Carr & Carlson, 1993; Clark & Hieneman, 1999; Sailor, Dunlap, Sugai, & Horner, 2008).

Relatively few studies have evaluated the long-term effects of behavioral interventions (Bushbacher et al., 2004; Feldman, Condillac, Tough, Hunt, & Griffiths, 2002; Vaughn, Wilson, & Dunlap, 2002; Lycyshyn et al., 1997). On two separate analyses, research has demonstrated experimental control across 27 articles and 109 studies, but less than 1% presented follow-up data beyond six months and one year (Bain, Rheams, Lee, & McCallum, 2004; Carr et al., 1999). For this reason, more research on
maintenance is necessary. According to Stokes and Baer (1977) generalization strategies can be purposely programmed to promote long-term maintenance. Generalization refers to the transfer of behavior change across time, persons, settings, and other behaviors. This can be achieved with one or a combination of the following strategies: sequential modification, introducing natural contingencies, training sufficient exemplars, loose training, using indiscriminable contingencies, programming common stimuli, mediating generalization, and training to generalize (Stokes & Baer, 1977). Many researchers who purposely programmed generalization into their study have shown behavior change maintenance for six months or more after treatment (Gronna, Serna, Kennedy, & Prater, 1999; Hughes, Harmer, Killian, & Niarhos, 1995; Kamps, Potucek, Lopez, Kravits, & Kemmerer, 1997). In addition, other researchers have recommended “contextual fit” as a strategy to increase the likelihood of maintenance. Contextual fit refers to the compatibility between an intervention and the child’s strengths, needs, preferences, and learning history, as well as the family’s lifestyle (Horner & Good, 2006; Bushbacher, Fox, & Clarke, 2004; Clark & Hieneman, 1999; Durand & Hieneman, 2008).

With many of these strategies in place, multi-component treatments have shown to maintain improvements in behavior well beyond one year, which was demonstrated across 14 participants in a study and one participant in another study (Feldman et al., 2002; Lucyshyn et al., 2007). A multi-component treatment consists of three strategies when addressing behavior change: prevention, teaching replacement skills, and managing consequences. Prevention involves manipulating the antecedent stimuli to set up the physical or social environment in a manner to elicit appropriate behaviors (Durand &
Another strategy is teaching a functionally equivalent appropriate behavior to replace problem behavior (i.e., FCT) (Durand, 1999; Durand 1993). Managing consequences consists of reinforcing the functionally equivalent appropriate behavior while withholding reinforcement from problem behaviors (Durand & Hieneman, 2008; Hieneman, Childs, & Sergay, 2006). Although multi-component treatments have shown to maintain improvements in behavior over an extended period of time, it is difficult for researchers to discern which treatment component was responsible for experimental control and maintenance (Lucyshyn, et al., 2007; Bushbacher, Fox, & Clarke, 2004; Carr & Carlson, 1993). In some studies, it has been suggested that a specific component of the intervention may have been sufficient to change and maintain behavior (Duda, Dunlap, Fox, Lentini, & Clarke, 2004; Dunlap et al., 1994). In other studies, researchers have concluded that all treatment components were necessary to promote long-term effects (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991).

The purpose of this research was to assess the extent to which two conditions of BPT featuring multi-component treatments produced maintenance and to investigate which treatment components were in place post-intervention and at one year follow-up. The goal was to contribute to the growing literature on the maintenance effect of multi-component treatments. This research study intended to use ten participants from a larger study, which took place at the University of South Florida directed by Drs. V. Mark Durand and Meme Hieneman.
As part of a larger study, parents identified as having high levels of pessimism received BPT featuring multi-component treatments in one of two conditions: Positive Behavior Support (PBS) or Positive Family Intervention (PFI). Both conditions followed the same standardized protocol, but optimism training was embedded in the protocol for the PFI condition. The present experiment has been divided into two studies. The first study was designed to assess the extent in which two behavioral interventions achieved long-term effects. Two multiple baseline designs across participants were used to compare treatment and maintenance effects of the two groups. In addition, a two-way ANOVA on the results of a standardized measure (SIB-R) for each participant per condition was conducted to assess the differences between pre and post-BPT sessions. The two-way ANOVA was then repeated to assess the differences between post and one year following BPT sessions. It is hypothesized that children of parents who completed BPT sessions, regardless of the experimental condition, will maintain reductions in problem behaviors at one year follow-up when compared to immediately post-intervention as measured by the behavioral observations as well as the SIB-R.

The second study was designed to analyze what aspects of the intervention were reported as being used most often at post and one year follow-up between groups. Parents in both conditions were to respond to questions presented on a 7-point Likert scale. A paired t-test was conducted to determine whether or not there was a statistical difference between group responses. Similar to the first study, two multiple baseline design across participants were used to verify and compare the use of treatment
components between groups based on the results of the paired $t$-test. It is hypothesized that by one year follow-up participants in the PBS condition will likely report using passive prevention strategies and participants in the PFI condition will likely report using proactive prevention strategies. In addition, observational data on participants’ use of passive and proactive strategies will verify the responses between PBS and PFI.
Literature Review

The primary focus of applied behavioral studies is to demonstrate whether or not an intervention is responsible for behavior change (Galensky, Miltenberger, Stricker, & Garlinghouse, 2001; Horner, Day, & Day, 1997; Iwata, Pace, Cowdery, & Miltenberger, 1994; Kazdin, 1982; Steege et al., 1990; Stokes & Kennedy, 1980). In addition to showing experimental control, evaluating the long-term effects of treatment is equally as important (Carr et al., 1999; Chandler, Lubeck, & Fowler, 1992; Stokes & Baer, 1977). It is crucial to analyze the durability of interventions, because if behavior interventions fail over time, many individuals with multiple disabilities run the risk of not acquiring skills that promote independence or being exposed to restrictive procedures or sedatives as consequences for challenging behavior (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991). They also are in danger of being mistreated by others (Carr & Carlson, 1993). Treatment gains that are maintained over a lifetime give individuals an opportunity to improve their quality of life (Clark & Hieneman, 1999; Sailor, Dunlap, Sugai, & Horner, 2008). They may be more likely to find a job, have friends, and live on their own (Carr & Carlson, 1993).

Relatively few studies have evaluated the long-term maintenance effect of behavioral interventions (Bushbacher et al., 2004; Feldman, Condillac, Tough, Hunt, & Griffiths, 2002; Vaughn, Wilson, & Dunlap, 2002; Lycyshyn et al., 1997). Because of this dearth of knowledge, several researchers conducted a meta-analysis of 109 studies,
published between 1985 and 1996, to determine whether maintenance data were provided (Carr et al., 1999). Although all studies demonstrated experimental control, less than 1% presented follow-up data beyond one year of post-intervention (Carr, et al., 1999).

Similar results were found in another study where researchers included a list of 27 articles on generalization. Fourteen of the 27 articles programmed for maintenance, but only one presented follow-up data beyond six months (Bain, Rheams, Lee, & McCallum, 2004).

Maintenance has been defined several ways. In one view, maintenance is described as the continuation of a behavior change over a long period of time after an intervention has been withdrawn (Miltenberger, 2008; Freeland & Noell, 2002). Others define maintenance as the durability of a stimulus control relationship over time. This signifies that behavior change has maintained in the presence of the conditioned stimulus (Mank & Horner, 1987). Although maintenance of behavior change can be achieved under tight stimulus control, it may not be socially significant if it does not generalize to the natural environment (Baer, Wolf, & Risley, 1968). In a classic paper, Stokes and Baer (1977) defined maintenance as a special case of generalization. In other words, maintenance occurs when behavior change generalizes across time. This view of maintenance may be particularly useful in order to examine methods for improving maintenance, which will be reviewed next.

Generalization can be defined as an appropriate response to situations outside of treatment (Schlosser & Braun, 1994). More specifically, generalization refers to the transfer of behavior change across time, persons, settings, and other behaviors (Stokes &
Baer, 1977). In the past, many researchers viewed generalization as a passive event by expecting behavior change to automatically transfer outside the intervention process. For example, “train and hope” is a term describing how some researchers do not actively pursue generalization but are hopeful that it will occur. Rather than programming for generalization, some researchers have conducted studies under the assumption that if generalization did not occur naturally, then the procedure was not successful (Stokes & Baer, 1977). However, today it is well recognized that purposeful programming is necessary to increase the likelihood of generalization, which has shown to subsequently promote maintenance (Boyce & Geller, 2001; Chandler, Lubeck, & Fowler, 1992; Koegel & Rincover, 1977). Several strategies have been used to achieve generalization and maintenance. For the purpose of this paper, literature on maintenance will focus on studies that demonstrate continuous behavior change for 6 months (or more) after intervention has been withdrawn. Generalization and other strategies used to facilitate maintenance will be categorized.

**Sequential Modification**

Sequential modification is described as a systematic approach to generalization because procedural changes to an intervention are initiated and sequentially introduced to non-generalized conditions. Sequential modification can be programmed in two ways: 1) intervention is implemented in one setting and then probed for generalization in untrained settings, or 2) sequentially introducing a treatment to several conditions (Kamps, Potucek, Lopez, Kravits, & Kemmerer, 1997; Stokes & Baer, 1977). Sequential
modification may be the least commonly used generalization strategy (Chandler, Lubeck, & Fowler, 1992).

In one example, Wood, Murdock, and Cronin (2002) examined the maintenance effect of self-monitoring the academic performance of four at-risk middle school students using sequential modification. Before intervention, the students did not monitor their academic behavior, but did work on class assignments. Self-monitoring consisted of students recording their grades for an assignment and circling “yes or no” when completing specific academic behaviors. Constructive feedback was provided after the students completed the self-monitoring data. Sequential modification was implemented by using a multiple-baseline design across six different settings (e.g., classes). Self-monitoring was introduced sequentially to the first three academic settings and generalization was assessed during the untrained academic settings. Results showed that academic performance dramatically increased when intervention was implemented. Generalization to untrained academic settings was achieved by all participants and behavior change maintained into the following school year (Wood, Murdock, & Cronin, 2002). In contrast, when sequential modification was not used in another study, self-monitoring did not generalize to untrained settings (Malone & Mastropieri, 1992).

**Introduce Natural Contingencies**

Introducing natural contingencies has been considered to be the most dependable strategy for achieving generalization (Stokes & Baer, 1977). This strategy involves transferring behavior control from the experimenter to the natural contingencies of a participant’s environment. Transferring behavior control to the participants may be
accomplished by teaching them functional skills to solicit or recruit reinforcement outside instruction (Stokes & Baer, 1977).

One view of problem behavior is that it is a skill that has been successful in achieving a certain purpose. In general, if individuals lack the appropriate skills to communicate their needs and wants, they may resort to misbehavior to effectively gain attention, escape demands, obtain tangibles, or experience self-stimulation (Durand & Hieneman, 2008; Hieneman, Childs, & Sergay, 2006). Looked at this way, individuals may be encouraged and taught to use appropriate replacement skills to reduce problem behaviors. The key to successfully teaching replacement skills is to select an appropriate behavior that demonstrates to be more effective than the problem behavior in achieving a desired outcome (Durand & Hieneman, 2008; Hieneman, Childs, & Sergay, 2006; Galensky, Miltenberger, Stricker, & Garlinghouse, 2001; O’Neill et al., 1997).

**Functional Communication Training (FCT).** FCT is a procedure in which an individual learns a communicative response that is functionally equivalent to a specific problem behavior (Carr & Durand, 1985; Durand, 1990). FCT has been shown to effectively reduce the frequency of problem behavior and increase appropriate behavior (Durand, 2001; Durand, 1999; Derby et al., 1997; Durand & Carr, 1992; Wacker et al., 1990). FCT allows individuals to control their own schedules of reinforcement and to depend on themselves rather than having to depend on others to obtain what they need or want (Durand, 2001). One of the key components for the success of FCT relies on the individual’s ability to recruit and obtain the same degree of reinforcement as would be achieved by the problem behavior (Durand, 1999). Long-term maintenance is probable, if
generalization of the new acquired skill occurs across various settings and individuals (Stokes & Baer, 1977).

Durand and Carr (1992), for instance, compared the maintenance effects between FCT and time-out procedures for positively reinforced behavior. Twelve children diagnosed with developmental disabilities were randomly assigned to either the FCT or time-out from positive reinforcement conditions. During baseline, all participants demonstrated high levels and patterns of problematic behaviors such as aggression, tantrums, property destruction, and/or opposition. During the FCT procedure, children were taught to use verbal statements, (e.g., “Am I doing good work?”) in order to recruit attention from the trainer (e.g., “Yes, you are doing very good work; that’s nice asking”) and problem behaviors were placed in extinction. During the time-out condition, the trainer withdrew attention by removing materials from the table and turning away from the child for 10 s immediately following problem behavior. A multiple-baseline design across participants illustrated a dramatic decrease in problem behaviors for both procedures, which were maintained for up to 23 sessions.

The researchers decided to present naïve trainers to each student in order to further analyze the maintenance effect of the suppressed problem behaviors. The naïve trainers were not given specific instructions on how to respond to problem behaviors. During the time-out condition, problem behaviors for all participants reemerged and returned to high levels when a naïve trainer was introduced. In contrast, the problem behaviors for the participants in the FCT condition remained low when the naïve trainer was introduced. It was hypothesized that because the students could recruit reinforcers
through FCT, these natural contingencies maintained the replacement behaviors. This study provides a clear demonstration of how transferring behavior control to the participants (e.g., FCT) promotes generalization and maintenance compared to relying on a trainer to have behavior control (e.g., time-out). In another study, FCT was shown to maintain low levels of challenging behaviors and high levels of appropriate behavior six-months after intervention was withdrawn (Derby, et al., 1997). Introducing natural contingencies may be a valuable technique for insuring durable behavior change over time.

**Train Sufficient Exemplars**

Training sufficient exemplars involves training a particular response using many relevant situations to model acquisition skills. This strategy is used to increase the likelihood of a response to generalize and maintain over time (Hughes, Harmer, Killian, & Niarhos, 1995; Hughes, 1992; Stoke & Baer, 1977). One must be careful in training a response using only one discriminative stimulus. If this is the case, the taught response may be under stimulus control of one example, preventing generalization from occurring. Once the discriminative stimulus is removed, the trained response may no longer occur (Stokes, Baer, & Jackson, 1974).

In one study Hughes, Harmer, Killian, and Niarhos (1995) studied the long-term effects of teaching sufficient exemplars of conversational interactions. The participants were four female high school students with cognitive impairments. Before multiple-exemplar training was provided, the participants showed low levels of conversational initiations per minute. During multiple-exemplar training, several peers without
disabilities taught the participants how to use self-instructional social skills strategies across multiple examples of conversational situations. Self-instructional social skills included teaching the participants how to look at their partners, ask five questions, self-evaluate, and self-reinforce. The participants were provided with a pooled list of conversational openers to choose from. After self-instruction, participants practiced initiating and engaging in conversation with numerous familiar and unfamiliar students. Conversational initiations increased up to 4 initiations per minute for all participants but one.

The researchers assessed generalization and maintenance by withdrawing multiple-exemplar training for about 15 to 20 sessions. A multiple baseline design across participants illustrated that conversation initiations were generalized to at least one untrained setting for each participant (e.g., classroom, gym, lunchroom). Results of two to five conversations per minute were maintained. Long-term effects were further analyzed for two participants, showing that conversational initiations continued to maintain nine to 11 months after intervention (Hughes, Harmer, Killian, & Niarhos, 1995). In another study, multiple-exemplar training was used to teach participants how to solve a variety of task-related problems. Once training was withdrawn, results were maintained for over six months (Hughes, 1992).

**Loose Training**

Loose Training is a strategy in which discriminative control over the behavior is not the main goal. The purpose is to train responses using a wide variety of relevant situations to facilitate generalization to other situations and responses (Stokes & Baer,
Campbell and Stremel-Campbell (1982) conducted a study in which two young male participants learned how to use the words “is/are” across three syntactic structures (i.e., “wh” (who, what, where, when, why) questions, “yes-no” questions, and statements) through loose training. At the beginning of the session, the trainer gave the child an opportunity to initiate a conversation based on a large variety of natural occurring stimulus events in the room. If the participant did not initiate a conversation, then a prompt would be provided verbally, “What are you doing?” Reinforcement (i.e., praise, repetition of response, answer to child’s question, and a token) was provided to the participants following a grammatically correct sentence using the terms “is/are.” Before “loose training” was introduced both participants seldom used “is/are” statements correctly across the three syntactic structures. During loose training both participants gradually increased the number of correct responses per fives sessions from 20 to 140.

The maintenance effect of loose training was analyzed for each participant. Maintenance data was limited to the “wh” syntactic structure for one participant because he transferred to another school before completing the study. Despite demonstrating a downward trend (eventually stabilized), more than 60 correct “wh” responses were maintained for 44 sessions. The second participant demonstrated maintenance for 70 sessions in the “wh”, 25 sessions in the “Yes-No”, and 10 sessions in the statements condition. It is important to point out that maintenance was achieved in the academic training setting, but generalization to the free play setting was questionable. Although correct responses continued to be higher than baseline, they were significantly lower than the academic training setting and the data are variable. The researchers explained that the
use of another generalization strategy might have been necessary to achieve greater consistency (Campbell & Stremel-Campbell 1982).

**Use Indiscriminable Contingencies**

Intermittent schedules of reinforcement (Stokes & Baer, 1977) and delayed reinforcement (Baer, Williams, Osnes, & Stokes, 1984) have been identified as effective strategies to facilitate generalization over time. The key to generalization and maintenance is that the intermittent schedules of reinforcement decrease the likelihood of extinction, because it makes it difficult for participants to predict and discriminate when reinforcement will be delivered (Freeland & Noell, 2002; 1999; Dunlap, Koegel, Johnson, & O’Neill, 1987; Kazdin & Polster, 1973).

Freeland and Noell (2004) conducted a study examining the maintenance effects of delayed intermittent reinforcement on the number of correct mathematical problems per minute for two participants. Before intervention was introduced, the participants’ correct response to mathematical problems averaged to 14 per minute. When reinforcement (i.e., positive feedback and a prize) was introduced, both participants immediately exceeded the criterion and correctly completed 20 to 25 problems per minute. Every time contingent reinforcement was withdrawn, both participants drastically decreased to zero correct responses per minute. A possible explanation for these results is that the participants were able to predict and discriminate when reinforcement was going to be delivered between the two conditions (Freeland & Noell, 2004).
In order to reduce predictability and discrimination, delayed intermittent reinforcement was provided after continuous reinforcement was used to restore previous progress. Initially reinforcement was delayed by not providing reinforcement after the first math sheet was completed. Once the participants completed the second math sheet, the experimenter would randomly select one of the two sheets and then provide reinforcement to the participants who met or exceeded their goals. Both participants met their goals by correctly completing 25 or more math problems. Similar to what was found in continuous reinforcement, when delayed intermittent reinforcement (after 2 sheets) was withdrawn, neither participant completed any math problems correctly. The researchers introduced delayed intermittent reinforcement again, but this time reinforcement was not delivered until four math sheets were completed. Initially, both participants did not meet criteria for several sessions; it is possible that reinforcement was expected after two sheets. Eventually data showed a stable trend in meeting and exceeding criterion, which suggest that participants learned that reinforcement would be delivered after completing four sheets (Freeland & Noell, 2004).

Maintenance was then assessed by withdrawing delayed reinforcement after four math sheets. The first participant maintained significant high levels of correct problems per minute ranging from 27 to 40 for 18 sessions with variability for the remaining six sessions. The second participant maintained higher levels (range 33 to 45) of correct responses per minute for 24 sessions. These results suggest that the participants were unable to predict or discriminate when reinforcement was going to be delivered, which facilitated maintenance (Freeland & Noell, 2002).
Program Common Stimuli

Programming common stimuli involves intentionally selecting a stimulus common to more than one setting. In order to promote generalization, the training setting should include stimuli that the participant is most likely to encounter in the natural environment (Stokes & Baer, 1977).

Gronna, Serna, Kennedy, and Prater (1999) studied the long-term effects of teaching social skills (i.e., responding and initiating greetings, responding and initiating to conversations) to a young girl who had visual impairments, using puppet script training. Before puppet script training, the participant performed the correct social skills for conversation when she approached a peer at an average rate between 4% and 12% of the time. She never initiated a conversation when approached by a peer. Puppet script training was conducted in two stages. First, the instructor would teach the participant and her classmates social skills by presenting a puppet show and following a script for a specific skill (e.g., “Hi” as a greeting or saying, “Want to play chase?”). Second, the students were assigned to play with puppets and practice their assigned roles. After training, the participant initiated and responded to greetings and conversations nearly 100% of the time. Generalization was promoted by programming common stimuli by having the participant’s peers watch the puppet show and immediately be available for free play. The participant’s use of social skills, after puppet script training, maintained for two years.
Mediate Generalization

Stokes and Osnes (1989) defined a mediator of generalization as “a stimulus that is maintained and transported by the client as part of treatment” (p. 349). Mediating generalization requires an individual to learn a response to a specific problem that can be used to solve other similar problems (Stokes & Baer, 1977). For example, an individual may learn how to cross the street in a classroom using self-instructions. Generalization is then achieved if the individual is able to transfer the learned response when crossing the street outside of the classroom (Page, Iwata, & Neef, 1976).

In a study, self-instruction was used as a strategy intended to help employees with severe developmental disabilities complete a variety of job-related tasks independently. Researchers found that employees did not verbalize their self-instructions in the trained or generalized settings without prompts (Agran, Salzberg, & Stowitschek, 1987; Rusch, McKee, Chadsey-Rusch, & Renzaglia, 1988). Rusch et al. (1988) concluded that another strategy in conjunction with self-instruction may be necessary to achieve generalization.

To address this issue, Hughes and Rusch (1989) conducted a study to assess whether or not self-instruction combined with multiple-exemplar training would result in generalization. Two janitorial employees with severe developmental disabilities were selected as participants because they did not solve work-related problems independently. During training sessions, self-instruction consisted of teaching the participants to verbalize four statements when confronted with a work-related problem: 1) a statement of the problem (e.g., “Tape empty”), 2) a statement of the correct response (e.g., “Need more tape”), 3) a reporting of the response (e.g., “Fixed it”) and 4) self-reinforcement
(e.g., “Good”). Multiple-exemplar training consisted of the researcher presenting a variety of work-related problem situations (e.g., unplugged radio, pieces of trash on the table) and appropriate responses to these situation (e.g., plug in radio and turn on, throw trash in basket). Five responses to work-related problem situations were selected to be trained. Another five responses to other (untrained) work-related problem situations were selected to serve as generalization probes.

Frequency data on self-instruction were collected by recording each time the participants used each of the four statements. During baseline, both participants rarely verbalized self-instructions when confronted with a problem situation. Since verbalizations of self-instructions increased slightly during training sessions, the trainer began to requests for verbalizations after both participants initiated an appropriate response to a problem situation. The frequency of all four self-instruction statements dramatically increased when the trainer requested for verbalizations. After six months, both participants continued to verbalize all four statements at a high frequency when asked, “What are you doing?” after independently completing the appropriate response after each problem situation.

Frequency data was also collected for appropriate responses to work-related problem situations. At baseline, both participants responded appropriately to problem situations at a low frequency. During training sessions both participants gradually increased the frequency of appropriate responses. When both participants were no longer receiving training and untrained problem situations were introduced at every fourth session for generalization, the frequency of appropriate responses continued to increase
for both participants. Follow-up data were collected for six months and both participants continued to respond correctly to four or five trained and untrained problem situations. These results suggest that self-instruction is more likely to generalize and maintain over a six-month period when combined with multiple-exemplar training.

**Train “To Generalize”**

For this strategy generalization is considered to be a behavior itself. Therefore, reinforcement contingencies can be placed on generalization (Stokes & Baer, 1977). Rather than focusing on the elimination of one or two of problem behaviors, Herbert and Baer (1972) trained two mothers to provide social positive reinforcement for any appropriate behavior demonstrated by their children with severe developmental disabilities. Parents were provided with a golfer’s wrist counter to keep track of the number of times attention was given to their child’s appropriate behavior; this procedure was gradually faded out. During baseline, for one parent, attention was rarely provided following their child’s appropriate behavior. When the parent was instructed to count her own behavior attention following the child’s appropriate behavior increased and the child’s appropriate behavior increased. As the researcher gradually removed the use of the golfer’s wrist counter, attention following appropriate behavior and the child’s appropriate behavior stabilized at a high rate. These results were maintained for six months. The second parent had similar results, maintaining for five months. This study suggests that the mothers’ behavior of providing positive social reinforcement was “trained to generalize” to virtually any appropriate behaviors.
Additional Strategies

In addition to the generalization strategies previously outlined, research has suggested that other strategies may increase the likelihood of long-term maintenance. One example of a recommended strategy is “contextual fit.” Contextual fit refers to the compatibility between an intervention and other variables relating to individuals and environments surrounding the person with the target behavior. In order to achieve a contextual fit behavior plan, a behavior analyst must form a partnership with family members, friends, or caregivers (Horner & Good, 2006). Family members possess a vast amount of knowledge about the child’s strengths, needs, preferences, and learning history (Horner & Good, 2006; Bushbacher, Fox, & Clarke, 2004; Clark & Hieneman, 1999; Durand & Hieneman, 2008). They can provide critical input as to whether the behavior plan fits within the family’s context, values, and goals (Hieneman, Childs, & Sergay, 2006). When a treatment fits within the context of a family’s lifestyle, then it is believed that treatment adherence is more likely to occur, thus promoting maintenance (Allen & Warzak, 2000; Clark & Hieneman, 1999).

Moes and Frea (2000) compared the results of two treatment-planning approaches (e.g., prescriptive vs. contextualized) for a 3 year-old boy diagnosed with autism and a mood disorder. The young boy engaged in severe problem behaviors in order to avoid demands from his parents. The prescriptive approach had the interventionist decide on a treatment package, based on a functional assessment. The family was not involved in the development of the intervention (Moes & Frea, 2000). The interventionist provided the parents with a written protocol of the behavior plan and modeled the strategies for them.
In contrast, the contextualized treatment-planning approach included an assessment of the family context. For example, the parents were asked to identify the most difficult and successful routines, the abilities and needs of family members, and desired social interactions in the home. The family and the interventionist worked together and developed a protocol and adapted certain strategies to fit within the family’s lifestyle (Moes & Frea, 2000).

During the prescriptive treatment-planning phase, problem behaviors and duration of participation behavior remained at near-zero levels, but asking for a break dramatically increased which allowed the boy to continue to avoid family routines (Moes & Frea, 2000). Toward the end of the prescriptive intervention, family members continued to be concerned about their son’s lack of participation. Next, the contextualized treatment-planning phase was implemented and as a result, problem behaviors and asking for a break were rarely observed and participation behavior spiked up to high levels. Follow-up data demonstrated that maintenance was achieved for three months after the implementation of the contextualized treatment plan. Although, these results suggest that interventions are sustainable when behavior plans are contextually fit, a larger study with more participants would be more convincing (Moes & Frea, 2000). One could also argue that behavior change may be due to a modification after an intervention was not effective.

Another recommended strategy is the use of multi-component treatments. A multi-component treatment consists of a variety of strategies when addressing behavior change. One class of strategies involves preventing problem behavior, which includes the manipulation of the physical or social environment (e.g., antecedent stimuli) to make
desirable behaviors more likely to occur (Durand & Hieneman, 2008; Miltenberger, 2008). For instance, if the target behavior is likely to occur in situations where there is a lack of predictability, then a visual schedule and providing expectations should be presented to add predictability and subsequently increase the likelihood of desired behaviors (Durand & Hieneman, 2008; Hieneman, Childs, & Sergay, 2006; Boetcher, Koegel, McNerney, & Koegel, 2003). A second class of strategies is teaching an appropriate behavior to replace problem behavior (Durand, 1990). For example, an individual may be taught to say, “Am I doing good work?” to receive attention rather than engaging in problem behavior (Craft, Alber, Heward, 1998; Durand & Carr, 1992). For individuals with severe communication deficits, the use of assistive devices has shown to effectively replace problem behaviors (Durand, 1999; Durand 1993). An additional strategy is managing consequences, in which FCT is used to reinforce desirable behavior and withhold reinforcement following problem behaviors (Durand & Hieneman, 2008; Hieneman, Childs, & Sergay, 2006).

Using multiple strategies, Feldman et al. (2002) evaluated the maintenance-effect of multi-component treatments across a spectrum of 17 children and 3 adults. The participants were diagnosed with a variety of developmental disabilities (e.g., autism, cerebral palsy, Rett syndrome). During baseline, all participants engaged in high levels of problem behaviors. Although most participants rarely demonstrated appropriate behaviors, some already had them in their repertoire. A multiple baseline design revealed that behavior change was robust when the intervention was introduced. Problem behaviors immediately decreased to low levels and appropriate behaviors increased to
high levels. Follow-up observations were conducted for 14 participants, which included one adult. These participants were followed over a three-year period (mean=1.5 years) and results demonstrated that the treatment gains were maintained after intervention was withdrawn (Feldman et al., 2002).

Lucyshyn et al. (2007) conducted a ten-year (1994 to 2004) longitudinal study to determine whether or not a multi-component treatment can maintain treatment gains. The family of a young girl with autism participated in this study. The parents were concerned about their daughter’s severe problem behaviors, which were characterized as high-pitched vocalizations, physical resistance, non-compliance, property destruction, and aggression. The female was 5 years old when the study began and 15 years old when the study ended. Two years of baseline data was collected and consisted of an average of ten problematic responses per minute. During this time, her participation in family-valued routines (e.g., going to bed, dinner time, grocery shopping, and eating out) was limited to an average of 2 min due to problem behaviors (Lucyshyn, et al., 2007).

Intervention was conducted for 1 year and 4 months; two multiple-baseline research designs across four routines illustrated the immediate effects the multi-component treatment had on the frequency of problem behaviors and duration of participation in each routine. The rate of challenging behaviors dramatically decreased and duration of participation significantly increased. Follow-up consisted of a total of 13 probes across all routines in 86 months (7.2 years). Although duration of participation slightly declined, all routines were completed. Data suggested that long-term
maintenance for the reduction of problem behaviors was achieved (Lucyshyn et al., 2007).

Although examples of multi-component interventions have shown to have long-term maintenance, experimental control is not clear. The nature of these interventions does not allow researchers to accurately identify which component (i.e., strategy) is responsible for the behavior change and the long-term effects (Lucyshyn, et al., 2007; Bushbacher, Fox, & Clarke, 2004; Carr & Carlson, 1993). In some cases, researchers have suggested that a specific component of the intervention may have been sufficient to change and maintain behavior change (Duda, Dunlap, Fox, Lentini, & Clarke, 2004; Dunlap et al., 1994). In other cases, researchers have concluded that multiple-component interventions are necessary to promote long-term effects including the fidelity of treatment (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991). In other words, what is often not clear in studies of maintenance is what, if any, components of treatment are in place at follow-up.

The current study sought to assess the extent to which two parenting interventions featuring multi-component treatments produced maintenance and to investigate which treatment components were in place at one year follow-up. The present experiment has been divided into two studies. The first study was designed to analyze the long-term effects of behavior parent training with multi-component treatments on child problem and adaptive behaviors. The second study was designed to analyze what aspects of the intervention were reported and observed as being used most often at post and one year follow-up.
Study 1

Method

The purpose of this study is to expand the literature on maintenance by analyzing the effects of Behavioral Parent Training (BPT) featuring multi-component treatments on problem and adaptive behaviors one year following treatment withdrawal. As part of a larger study, participants received BPT in one of two conditions, Positive Behavior Support (PBS) or Positive Family Intervention (PFI). PBS is a comprehensive, assessment-based, and lifestyle change approach to developing individualized interventions for reducing challenging behaviors and improving appropriate behaviors (Duda et al., 2004). It places an emphasis on bringing together a broad range of people to agree on goals and on intervention strategies that best fit within the context of the family’s lifestyle (Bud, Stokes, & Etzel, 2003). PFI involves the same parent training in behavioral strategies as PBS, but also includes cognitive behavior therapy for the parents via optimism training. The focus of this study centers around the multi-component treatments developed in both conditions, since research has shown this strategy to be effective in maintaining behavior change over a long period of time. For this reason, it is hypothesized that children of the families who complete the eight-sessions of intervention (regardless of experimental condition) will maintain reductions in behavior problems at one year follow-up when compared to immediately post-intervention as measured by the behavioral observations as well as the SIB-R.
Selection Criteria & Participants

Participants were parents of children between the ages of 3 and 5 with developmental disabilities (e.g., Autism, ADHD, William Syndrome) and severe problem behaviors. Table 1 lists the participants, child’s age, diagnoses, and a brief description of problem behaviors.

As part of a larger study, each participant had to meet several inclusion requirements. First, participants must have demonstrated high levels of pessimism by scoring 6 or above on the Pessimism scale of the Questionnaire of Resource and Stress-Short-Form (QRS-F; Friedrich, Greenberg, & Crnic, 1983) (See Appendix A). The purpose of using the questions from the pessimism scale of the QRS-F was to identify participants who were pessimistic about their abilities as parents and/or their child’s ability to make changes in behavior. Second, scores on a standardized measure, Scales of Independent Behavior Revised (SIB-R) (Bruininks, Woodcock, Weatherman, & Hill, 1996) must have reflected severe child problem behavior; a minimum of -21 or below on the general maladaptive index (GMI) must have been obtained. Third, problem behaviors must have been observed in an average of 20% or more intervals during one to three 30-minute video probes of a specified routine. Once participants met the criteria from the larger study, they were randomly assigned to the PBS or PFI condition. Table 2 provides the QRS-F, SIB-R scores, average % of intervals with problem behaviors, and assigned condition for each participant. For the purposes of this study, ten participants from the larger study with one year observational follow-up data were selected. Six participants were from the PBS condition and four participants were from the PFI condition.
### Table 1

**Participants Information**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Child</th>
<th>Age (mos.)</th>
<th>Gender</th>
<th>Diagnoses</th>
<th>Target Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary</td>
<td>Art</td>
<td>27</td>
<td>M</td>
<td>Autism</td>
<td>screaming, opposition, biting</td>
</tr>
<tr>
<td>Dorothy</td>
<td>Emory</td>
<td>38</td>
<td>F</td>
<td>Williams Syndrome; PDD-NOS</td>
<td>SIB, property destruction</td>
</tr>
<tr>
<td>Danielle</td>
<td>Earl</td>
<td>35</td>
<td>M</td>
<td>Moderate ASD</td>
<td>head banging, SIB, property destruction, hitting, kicking</td>
</tr>
<tr>
<td>Evelyn</td>
<td>Isaac</td>
<td>36</td>
<td>M</td>
<td>PDD-NOS</td>
<td>hitting, kicking others, noncompliance</td>
</tr>
<tr>
<td>Laura</td>
<td>Albert</td>
<td>37</td>
<td>M</td>
<td>PDD-NOS</td>
<td>noncompliance, screaming, property destruction, elopement</td>
</tr>
<tr>
<td>Audrey</td>
<td>Jeff</td>
<td>36</td>
<td>M</td>
<td>PDD-NOS</td>
<td>noncompliance, property destruction, hitting, kicking</td>
</tr>
<tr>
<td>Jennifer</td>
<td>Gus</td>
<td>36</td>
<td>M</td>
<td>Autism</td>
<td>hitting, kicking, spitting, oppositional, pica</td>
</tr>
<tr>
<td>Erin</td>
<td>Anthony</td>
<td>37</td>
<td>M</td>
<td>Autism</td>
<td>head butting, kicking, hitting, pinching, scratching</td>
</tr>
<tr>
<td>Paul</td>
<td>Terrence</td>
<td>58</td>
<td>M</td>
<td>Autism</td>
<td>pushing, biting, pinching, screaming</td>
</tr>
<tr>
<td>Claire</td>
<td>Carl</td>
<td>39</td>
<td>M</td>
<td>Tuberous sclerosis</td>
<td>Hitting, kicking, noncompliance</td>
</tr>
</tbody>
</table>
Table 2

*Participants’ Inclusion Information and Assigned Conditions*

<table>
<thead>
<tr>
<th>Participant</th>
<th>QRS-F</th>
<th>SIB-R/GMI</th>
<th>Avg. % Problem Behaviors</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary</td>
<td>7</td>
<td>-33 (Serious)</td>
<td>46%</td>
<td>PBS</td>
</tr>
<tr>
<td>Dorothy</td>
<td>9</td>
<td>-55 (Very Serious)</td>
<td>42%</td>
<td>PBS</td>
</tr>
<tr>
<td>Danielle</td>
<td>8</td>
<td>-43 (Very Serious)</td>
<td>76%</td>
<td>PBS</td>
</tr>
<tr>
<td>Evelyn</td>
<td>7</td>
<td>-44 (Very Serious)</td>
<td>50%</td>
<td>PBS</td>
</tr>
<tr>
<td>Laura</td>
<td>6</td>
<td>-47 (Very Serious)</td>
<td>50%</td>
<td>PBS</td>
</tr>
<tr>
<td>Audrey</td>
<td>6</td>
<td>-43 (Very Serious)</td>
<td>36%</td>
<td>PBS</td>
</tr>
<tr>
<td>Jennifer</td>
<td>9</td>
<td>-30 (Moderately Serious)</td>
<td>50%</td>
<td>PFI</td>
</tr>
<tr>
<td>Erin</td>
<td>8</td>
<td>-46 (Very Serious)</td>
<td>72%</td>
<td>PFI</td>
</tr>
<tr>
<td>Paul</td>
<td>9</td>
<td>-53 (Very Serious)</td>
<td>51%</td>
<td>PFI</td>
</tr>
<tr>
<td>Claire</td>
<td>6</td>
<td>-41 (Very Serious)</td>
<td>48%</td>
<td>PFI</td>
</tr>
</tbody>
</table>

**Dependent Measures**

Scores on the SIB-R and the partial interval scoring system on video probes were used to measure problem and adaptive child behaviors.

**Standardized measure.** The SIB-R (Appendix B) was included to support the results gathered from the direct observation. It is a comprehensive measure for
participants (i.e., parents) to report the level of their child’s problem behavior and adaptive behavior. The researchers visited the participants in their home and administered this assessment tool by reading out the questions and filling out the participants’ verbal responses. Questions are divided into eight categories: hurtful to self, hurtful to others, destructive to property, disruptive behavior, unusual or repetitive habits, socially offensive behavior, withdrawal or inattentive behavior, and uncooperative behavior. For each category, the participant reported the frequency and the severity of the behavior. To determine the seriousness of problem behaviors, scores on the general maladaptive index (GMI) were calculated. The maladaptive index scores range from approximately +10 to -70 with an average of 0 and a SD of 10, among clinical samples. Specified ranges of scores are assigned to describe the severity of problem behaviors.

See Table 3.

Table 3

*Categories for GMI Scores*

<table>
<thead>
<tr>
<th>Level of Seriousness</th>
<th>Index Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N-Normal</td>
<td>+10 to -10</td>
</tr>
<tr>
<td>MgS- Marginally Serious</td>
<td>-11 to -20</td>
</tr>
<tr>
<td>MdS- Moderately Serious</td>
<td>-21 to -30</td>
</tr>
<tr>
<td>S-Serious</td>
<td>-31 to -40</td>
</tr>
<tr>
<td>VS- Very Serious</td>
<td>-41 and below</td>
</tr>
</tbody>
</table>
To evaluate behavior change the SIB-R was administered prior to and following treatment. For further analysis, the SIB-R was administered one year after treatment to see if similar results continued. The researchers verified the SIB-R results by comparing them to the percentage of problem and adaptive behaviors observed on video probes.

**Behavioral definitions of child behaviors measured.** For analysis purposes, child behaviors were divided into two groups: problematic and adaptive. Problematic child behaviors included:

1) aggression- striking or attempting to strike or injure another person with any part of the body or with an object (e.g., hitting, kicking, biting, pushing, throwing objects at a person)

2) vocalization- crying or screaming involving high-pitched sounds which exceed normal conversational volume

3) destruction- slamming, striking, or throwing with risk of damage to those items (i.e., as opposed to tossing a ball during play)

4) opposition- refusing to follow a direct request by saying or shaking head, signifying “no,” turning or pulling away from the adult, actively resisting physical guidance (e.g., dropping to the ground, running away, struggling to retain an item) or engaging in behavior immediately after being told, “no”

5) self-stimulation- repetitive movements or manipulation of items that serve no functional use (i.e., flapping, rocking, manipulating fingers, flipping items)

6) other- behavior of concern specific to the child.
Adaptive child behaviors included:

1) engagement- participating in a physical activity through the manipulation of items or objects independently to complete a functional task (even if accompanied by problem behavior)

2) interaction- initiating or responding to another person verbally (e.g., words, sounds) or non-verbally (e.g., gesture, movement, contact)

Experimental Design

Up to three video probes were used to gather baseline, post treatment, and one year follow-up data. For ethical reasons, baseline video probes were discontinued once a stable trend was achieved or when the severity of the problem behavior was considered dangerous to themselves, others, or destructive to property. A non-concurrent multiple baseline design across participants per condition were used to analyze the long-term effects of BPT on children’s problem behavior and adaptive behaviors. The non-concurrent multiple baseline design was chosen because each participant began intervention at different times. For this study, maintenance is defined as the continued stability or progress in behavior change during one year follow-up.

Measurement and Reliability

Participating parents identified their most difficult routine based on their child’s highest level of problem behavior. With the guidance of a research undergraduate psychology student, the parents dictated a detailed script (See Appendix C) which included: a description of the routine, the time of day, location (e.g., dinner table), sequence of activities, expectations of the child’s behavior, and typical parent’s response
to their child’s behavior. By signing a consent form (See Appendix D), participants gave permission for researchers to videotape their most difficult routine.

The characteristics and severity of problem behaviors varied across participants; therefore, the length of time for video probes varied from 20 to 30 min. A partial interval recording system (See Appendix E) was chosen to calculate the percentage of intervals in which child problem and adaptive behaviors occurred. It consisted of 10 s intervals in which the researchers observed a continuous event. Each interval was separated by 5 s, giving the observer an opportunity to record the occurrence of problem and adaptive behavior before observing the next interval. Researchers used the following conventions: 1) Slash the number assigned to intervals to indicate that the child did not engage in a problem or adaptive behavior (e.g., walking down the hall, or watching T.V.); 2) Cross out entire interval with a large “X” (and do not count) when view of the behavior was obscured on the video (e.g., lighting was too dark). When scoring each video, child problem behavior was calculated by dividing the sum of intervals in which problem behavior occurred by the total number of intervals per video probe and multiplying the total by 100. Child adaptive behavior was calculated in the same manner.

Interobserver agreement (IOA) data were collected to determine the level of agreement between two independent observers viewing a particular event at the same time (Cooper, Heron, & Heward, 2007). Researchers worked in pairs and followed specific procedures when conducting IOA. First, each pair were to agree on the definitions of problem and adaptive behaviors that pertain to a particular child (See Appendix F). Second, when calculating IOA for problem and adaptive behavior, the
following equation was used: Agreed occurrences + Agreed non-occurrences/ Total number of intervals per video probe X 100. IOA was conducted for approximately 1/3 of the videotaped sessions. The overall mean agreement across both conditions was 95% (range=80% - 100%) for problem behavior and 90% (range=78% - 100%) for adaptive behavior. For PBS, the mean agreement for problem behavior was 90% (range=81% - 100%) and for adaptive behavior was 94% (range=85% - 100%). For PFI, the mean agreement for problem behavior was 87% (range=80% - 100%) and for adaptive behavior was 90% (range=78% - 96%).

**Procedures**

The interventions for this study were introduced using a standardized protocol (Durand & Hieneman, 2008). Parent educators, with a Master’s or Ph. D. degree, introduced the principles of Applied Behavior Analysis (ABA) and practices of PBS to parents. The educators did not go into the participants’ homes or meet their children prior to, during, or after the completion of BPT. Parents implemented strategies learned from sessions into their homes, independently. The participants and educators met for eight 90-minute sessions (one session per week) designed to build upon one another. The participants were provided with a user-friendly manual, which included: objectives for each session, guided notes, homework instructions, summary reviews, and weekly progress reports. Weekly progress reports helped parents keep track of how they were applying what they learned from sessions into their home and to record any progress in their child’s behavior. In addition to all these materials, a self-talk journal was provided for participants in the PFI condition.
Positive Behavior Support (PBS). Parent educators followed a specified protocol to teach parents how to conduct a functional assessment, develop and implement a multi-component treatment, which includes the following strategies: prevention, teaching replacement skills, and managing consequences.

Positive Family Intervention (PFI). Optimism training was embedded in the same protocol used in PBS. Optimism training included presenting parents with their negative self-talk and having them practice using more positive self-talk throughout all sessions (Seligman, 1998).

A variety of generalization strategies were used and contextual fit was at the center of each session. Before each session, educators reviewed homework assignments, provided feedback, outlined objectives, and presented the content. Self-talk journals were also reviewed for participants receiving optimism training. Throughout the sessions, parents were presented with related written stories and video samples. To facilitate the parents’ learning process, educators modeled new concepts, allowed the parents to rehearse, and provided feedback when necessary.

Session 1: Introduction and goal setting. Parents identified several broad goals describing what they would like to achieve as a family in the future (e.g., enjoy a community outing). Educators taught parents to define behaviors of concern by describing what the behavior looks and sounds like (e.g., throwing themselves to the floor) rather than labeling the behavior (e.g., tantrum). After defining their child’s problem behavior, parents decided on a recording system. Several examples were presented: rating the seriousness of the behavior, counting (frequency) each time the
target behavior occurred, and timing the duration of a behavior from beginning to end. If these recording methods were too difficult for participants, the educator suggested gathering a sample. Sampling involved observing and collecting data during a specified period of time in which behavior problem is likely to occur (e.g., dinner table).

In the PFI condition, parents were also asked to share and record their thoughts and feelings regarding their child’s behavior during a challenging and successful event. Parents were to determine what situations prompted negative and positive self-talk.

**Session 2: Gathering information.** Educators helped parents understand the importance of identifying the function of the behavior of concern. Parents were taught how to identify events that occur before (e.g., antecedents) and after (e.g., consequences) the target behavior. Parents were prompted with “wh” questions (e.g., “Who is around, what demands are given, where does it occur, and when does it occur?”) to produce possible antecedents. In addition to the “wh” questions, parents were asked to consider the physical conditions (e.g., hunger, medication effects, lack of sleep) or event conditions (e.g., changes in routine or schedule) that may set up the environment for problem behavior. Parents were also requested to think about the consequences of problem behavior. More specifically, parents were to identify their own and others’ reaction, what the child receives, or what the child avoids as a result of the behavior. The Motivation Assessment Scale (MAS) (Durand & Crimmins, 1986) (See Appendix G) was introduced and completed by the parents to help them identify and confirm or disconfirm their beliefs of the function of the problem behavior. Results on the MAS indicated whether the function of the behavior was attention, tangibles, escape, or self-stimulation.
Once parents understood the concept of the “function” of behavior, the educators taught them how to conduct a functional assessment using indirect (e.g., interviews) and direct observations (e.g., recording data). To keep it simple, information-gathering was presented as three general methods: watching, talking, and recording. Watching refers to observing behavior objectively, by paying attention and taking note of what surrounds the desired and problem behavior. Talking refers to interviewing other people who frequently interact with the child using the “wh” questions. Recording refers to various methods used to getting more information about behavior. The scatterplot is one method, which is designed to pinpoint a particular time period in which problem behavior is most likely to occur. The A-B-C behavior log is another method designed to describe in detail antecedents, behavior, and consequences.

In the PFI condition, parents were also to select one of their negative beliefs from the previous session. They were helped to recognize the circumstances preceding their thoughts and feelings and the consequences of those beliefs. This process was repeated throughout the session with other negative beliefs.

**Session 3: Analysis and plan design.** With the guidance of the educators, parents analyzed the information they gathered and identified patterns affecting their child’s behavior. Patterns refer to frequent and recurrent sequences of events across people, settings, and over time. After identifying the patterns surrounding a behavior, the parents were able to construct several summary statements, following an A-B-C format: antecedents (A), when/where/ or with whom a particular behavior was most likely to
occur; behavior (B), the behavior itself; and consequences (C), what the child obtained or avoided as a result of the behavior.

The parents selected one of their summary statements and brainstormed strategies to develop a tentative multi-component treatment. Strategies were also created in the A-B-C structure to correspond to the summary statements: A, preventing problem behaviors (e.g., modifying the physical or social environment); B, teaching functionally equivalent or more effective appropriate behaviors to replace problem behavior (e.g., functional communication training); and C, managing consequences by maximizing reinforcement following appropriate behavior rather than problem behavior (e.g., differential reinforcement).

In the PFI condition, parents were also introduced to the disputation process. They selected a negative belief and completed the following steps:

1. Identify the negative belief (e.g., what exactly do you say to yourself that is pessimistic?)
2. List evidence that supports the belief (e.g., what makes you believe that to be true?).
3. Find alternative explanations for the problem (e.g., are there other possible reasons/motives?).
4. Evaluate the usefulness of maintaining the belief (e.g., in what ways does that belief benefit you, others, or improve the situations?)

**Session 4: Preventing problems.** The educators helped the parents identify prevention strategies for their summary statements. Before discussing possible strategies,
the parents identified the circumstances (e.g., setting events, antecedents, or triggers) that set up the stage for problem behavior. Afterwards, the educators and parents briefly discussed certain strategies on how to avoid difficult situations surrounding the problem behavior (e.g., avoiding the stores), which may not always be feasible. Another strategy was presented, which was to arrange the environment in such a way to make difficult situations better. For example, embedding something a child enjoys into difficult routines or providing choices. The educator also suggested adding cues to the environment to prompt appropriate behavior. For example, increasing predictability for children (e.g., providing an explanation of how long the adult will be busy), providing a daily schedule for children to follow, or providing warnings (e.g., “five more minutes and then toys must be put away”).

In the PFI condition, parents were also to decide on a distraction strategy to quickly shift attention away from pessimistic thoughts. This strategy may be more useful than the disputation process when parents are in the midst of a difficult circumstance. The following examples were provided for parents: singing to oneself, choosing a mantra, writing down the belief and throwing it away, scheduling a time to think through the belief, or reading a note card that says, “STOP!”

**Session 5: Managing consequences.** Parents learned that children are more likely to engage in problem behavior that consistently and effectively result in obtaining attention, tangibles, or avoiding something. The key to managing consequences is to immediately deliver what the child wants (e.g., positive or negative reinforcer) following appropriate behavior rather than problem behavior. For example, after a child misbehaves
to get attention, the parents rehearsed withholding attention and immediately provide attention, only after the child behaves appropriately (e.g., catch them being good). An additional consideration is the effort it takes a child to engage in problem behavior compared to appropriate behavior. If problem behavior takes too much energy or no longer works, the child will be more likely to engage in appropriate behavior that takes less energy and time to obtain the desired goal. With this knowledge, the parents produced strategies for managing consequences by focusing on reinforcing appropriate behaviors and placing undesirable behaviors on extinction.

In the PFI condition, parents were to come up with a positive affirmation to substitute their negative beliefs. Afterwards, parent educators prompted parents to dispute, distract, or substitute when parents were engaging in negative self-talk.

**Session 6: Replacing behavior.** Educators explained to parents that problem behaviors might be viewed as a child’s communicative means of expressing what they want to obtain or what they want to avoid. Therefore, parents are encouraged to think of alternative more appropriate behaviors to teach their children to communicate their needs and want and ultimately replace problem behaviors. Once parents identify exactly the appropriate behavior they want to teach, they were to break it down into teachable steps for their children. In addition the parents decided where, when, and with whom these new skills were necessary. Similar to prevention strategies, the parents were to think about how to arrange the environment (e.g., providing prompts or cues) to promote appropriate behavior. To set the child up for success, the parents made a list of how they will help their child learn the new skill (e.g., give them an example or provide them with
physical guidance). Parents also described how they were going to gradually fade their assistance as the child gradually became independent in the new skill.

In the PFI condition, parents were asked to select one or two entries from their self-talk journal. They were to discuss the circumstances preceding and the consequences following the negative thoughts. Also, they were to describe how they disputed or distracted themselves from pessimistic beliefs, and what positive statement they used for substitution. Parents were to evaluate themselves by answering several questions (e.g., “What is or is not working?” “How will you do things differently next time?”). Parents recorded their impressions.

**Session 7: Putting the plan in place.** The parents were to combine all three-components (e.g., preventing problem behaviors, managing consequences, and teaching replacement skills) into a behavior plan that contextually fits within their family’s lifestyle. To include “contextual fit” based on the behavior plan, the parents were encouraged to realistically determine whether they had the time, energy, and necessary resources to implement the program. If not, the parents were prompted to make any necessary modifications. Of note, the behavior plan was designed to compliment family values, family roles, cultural characteristics, typical routines, and traditions. Furthermore, parents were reminded that the main goal was not to simply reduce problem behavior, but promote their family’s lifestyle by focusing and achieving broader goals.

In the PFI condition, similar to session 6, parents were also asked to evaluate entries in their self-talk journal and record their impressions. Parent educators reminded parents to identify negative thoughts, preceding circumstances and consequences of those
beliefs. Parents were encouraged to dispute or distract and substitute pessimistic thoughts with positive affirmations.

Session 8: Monitoring results and wrap up. Parents were encouraged to monitor the results of their behavior plan. This includes reviewing the behavior plan and determining if problem behaviors are decreasing, appropriate behaviors are increasing, and whether or not all strategies can continue to be implemented. If problem behaviors reemerged the parents were advised to take a step back and begin recording behavior in a more systematic fashion. Educators explained that children develop and change over time and parents may find that future adjustments to the current behavior plan may be necessary. Parents were also encouraged to apply their acquired knowledge of PBS when facing future behaviors of concern.

In the PFI condition, parents were also to evaluate entries in their self-talk journal, similar to session 7. Parents were encouraged to continuously monitor and evaluate their positive self-talk over time. For general information on each session, refer to Table 4 for a structured representation.
### Table 4

**Description of the Objectives of Individual Sessions**

<table>
<thead>
<tr>
<th>Session</th>
<th>Module</th>
<th>Objectives</th>
</tr>
</thead>
</table>
| 1       | Intro. & Goal Setting | 1. Understand PBS, including its key concepts and process as illustrated in scenarios.  
2. Determine who needs to be involved in the PBS process for their children and how to engage them.  
3. Define their children’s behaviors of concern objectively (in terms of what they say or do)  
4. Establish a system for tracking (i.e., frequency, duration) their children’s behavior to establish a baseline.  

PFI
- Identify situations and associated self-talk |
| 2       | Gathering Information | 1. Understand the purpose and goals of behavior through *functional (behavioral) assessment*.  
2. Examine their current assumptions about what is influencing their child’s behavior.  
3. Learn how to gather information through  
  - watching their children  
  - talking to other people  
  - recording simple data (i.e., ABC charts)  

PFI
- Identify the preceding events of beliefs  
- Determine the consequences of beliefs on behavior |
| 3       | Analysis & Plan Design | 1. Be able to identify the events surrounding their child’s behavior, including  
  - Circumstances in which their child’s behavior is most likely and least likely to occur (antecedent and setting events)  
  - the results, outcomes, our functions of the behavior  
2. Summarize these patterns into a brief sentence or paragraph (i.e., a hypothesis) to be used as a foundation for intervention planning.  
3. Using the hypothesis, identify possible strategies for  
  - preventing problems  
  - managing consequences  
  - replacing behavior  

PFI
- Dispute current thinking (accuracy and impact) |
| 4       | Preventing Problems | 1. Understand the impact that circumstances preceding behavior (i.e., antecedents, setting events) may have on behavior.  
2. Identify and prepare to implement strategies for preventing their child’s problem behavior.  

PFI
- Use a distraction to interrupt negative thinking |
Table 4 (Continued)

Description of the Objectives of Individual Sessions

<table>
<thead>
<tr>
<th>Session</th>
<th>Module</th>
<th>Objectives</th>
</tr>
</thead>
</table>
| 5       | Managing Consequences   | 1. Understand the impact that consequences may have on behavior.  
                                           | 2. Identify and prepare to implement for encouraging their child’s positive behavior and responding to problem behavior.  
                                           | PFI • Substitute with more positive, productive thoughts.                                                                 |
| 6       | Replacing Behavior      | 1. Understand the purpose and criteria for selecting skills to replace problem behavior.  
                                           | 2. Identify specific skills that meet the functions of their child’s problem behavior and allow them to deal with circumstances.  
                                           | 3. Create step-by-step plans for teaching replacement skills.  
                                           | PFI • Practice skills developed for recognizing and modifying pessimistic self-talk |
| 7       | Putting the Plan in Place | 1. Develop a written plan that includes all of the components (preventing problems, managing consequences, and replacing behavior).  
                                           | 2. Ensure that the strategies they select fit their child, family, and circumstances and focus on lifestyle change.  
                                           | 3. Create an action plan for implementing the behavior plan.  
                                           | PFI • Practice skills developed for recognizing and modifying pessimistic self-talk |
| 8       | Monitoring Results & Wrap-Up | 1. Develop a plan for monitoring the results of the behavior plan including both changes in behavior and lifestyle outcomes.  
                                           | 2. Understand the longitudinal, problem-solving nature of PBS and discuss how adjustments may need to be made to the plan over time.  
                                           | PFI • Help identify strategies to maintain positive changes in self-talk |


**Procedural Fidelity of Intervention Sessions**

Videotaping and providing procedural fidelity scores for each intervention session were used to promote treatment integrity. Scores on procedural fidelity refers to the degree in which parent educators adhered to the training protocol during each session. Undergraduate and graduate research students scored each parent educator by watching the videotaped sessions and following along with a Yes/No checklist to indicate whether or not each objective was completed (for an example see Appendix H). Shaded boxes represent optimism training objectives in PFI. Along with the checklist, a column for
notes (optional) was provided for researchers to clarify a rating, draw attention to strengths, weaknesses, or concerns. Also, the research director used the checklist to provide further training and clinical feedback.

Procedural fidelity was scored by dividing the total number of objectives the parent educator covered by the total number of objectives listed in the protocol. In the PBS condition, the mean level of fidelity for the parent educator was 99% (range=93% - 100%) for Danielle’s sessions, 96% (range= 93% - 100%) for Laura’s sessions, 99% (range=99% - 100%) for Evelyn’s sessions, 100% for all of Mary and Audrey’s sessions. For Dorothy’s sessions, fidelity was completed for three of the eight sessions due to technical difficulties with a mean level of 100%. The overall mean level of fidelity for parent educators in the PBS condition was 99% (range= 96% - 100%).

In the PFI condition, the mean level of fidelity for the parent educator was 94% (range=79% - 100%) for Jennifer’s sessions, 90% (range=71% - 100%) for Claire’s, 98% (range=91% -100%) for Paul’s sessions, and 95% (range=82% - 100%) for Erin’s sessions. The overall mean level of fidelity for the parent educators in the PFI condition was 94% (range=95% - 98%). The overall mean level of fidelity across both conditions was 97%.

Inter-rater reliability was conducted for a minimum of three of the eight sessions for all participants. A primary observer and a secondary observer were assigned to watch the same sessions, while completing the checklist, described above. The secondary observer’s checklist was compared to the primary observer’s checklist, item by item.
Reliability was scored by dividing the total number of agreed items by the total number of objectives on the checklist.

In the PBS condition, the mean level of reliability was 98% (range= 91% – 100%) for six of Laura’s sessions, and 97% for five of Evelyn’s sessions. For four participants 100% reliability was achieved; seven sessions for Mary, three sessions for Audrey, Danielle, and Dorothy. The overall mean level of reliability in the PBS condition was 99% (range=97% - 100%).

In the PFI condition, the mean level of reliability was 98% (range=88% - 100%) for all of Jennifer’s sessions, 95% (range=82% - 100%) for seven of Claire’s sessions, 97% (range=86% -100%) for five of Paul’s sessions, and 97% (range=86% - 100%) for all of Erin’s sessions. The overall mean level of reliability in the PFI condition was 97% (range=95% - 98%). The overall mean level of reliability across both conditions was 98%.

Data Analysis

Observational data. A non-current multiple baseline design was used to graph the percentage of intervals with problematic and adaptive behavior. The structured criteria for analyzing the data were adapted from Hagopian et al. (1997).

General procedure. According to the baseline condition, an upper criterion line (CL) is 1 SD above the mean for adaptive behavior and a lower CL is 1 SD below the mean for problematic behaviors. To compare the data collected from baseline to post-treatment to one year follow-up, a criterion for differentiation is based on whether or not the data points fell beyond the CLs. More specifically, differentiation for adaptive
behaviors was achieved when at least 2 data points fell above the upper CL. If the upper CL was 100, each 100 data point was considered as falling above the upper CL. Differentiation for problematic behaviors was achieved when 2 data points fell below the lower CL. If the lower CL was zero, each zero data point was considered as falling below the lower CL.

_Downward trends._ A downward trend was defined as when 2 or more data points fell below the mean level of baseline.

_Upward trends._ An upward trend was defined as when 2 or more data points fell above the mean level of baseline.

_Maintenance._ At the one year follow-up, maintenance for problem and adaptive behavior was defined as when a stable trend continued to occur from post-treatment.

_Standardized Measure._ The SIB-R was used to determine whether or not the severity of problematic behavior, during baseline, was reported as a reduction to a less severe category after treatment. The SIB-R was also used to determine whether or not the reduction in severity of problematic behavior continued to be reported during one year follow-up. A two-way ANOVA on the GMI scores for each participant was conducted to assess the differences between pre and post-BPT sessions. The ANOVA on GMI scores for each participant will be repeated to assess the differences between post and one year following BPT sessions.
Results

Child Behavior

Individual Participants (PBS). To facilitate visual analysis, individual data are presented on a non-concurrent multiple-baseline design for PBS as seen in Figure 1 and PFI as seen in Figure 2.

Earl’s problem behavior decreased and adaptive behavior increased from baseline to post intervention. There was an increase in problem behavior and a decrease in adaptive behavior from post to one year follow-up. During baseline, problematic behavior occurred in 76% of the intervals and adaptive behavior occurred in 10% of the intervals, only one video probe was conducted due to the severity of the problem behavior. During the 3 post video probes, problematic behavior was observed in 1%, 8%, and 6% (M=5%) of the intervals and adaptive behavior was observed in 82%, 74%, and 70% (M=75%) of the intervals. During the two video probes conducted at one year follow-up, problem behavior was observed in 16% and 43% (M=30%) of the intervals and adaptive behavior was observed in 35% and 72% (M=30%) of the intervals. A third video probe was not conducted due to scheduling difficulties. The average reduction of problem behavior from baseline to one year follow-up was 93% and the average increase of adaptive behavior from baseline to one year follow-up was 440%. Only one video probe was collected during baseline preventing the criteria for differentiation to be calculated. Based on the available results, one could conclude that improvements in child
behaviors were maintained according to the downward trend for problem behavior and an upward trend for adaptive behavior.

Albert’s problem behavior decreased from baseline to post and increased during one year follow-up. Adaptive behavior increased from baseline to post and remained at similar levels at one year follow-up. During baseline problem behavior occurred in 27% and 73% (M=50%) of the intervals and adaptive behavior occurred in 92% and 49% (M=71%) of the intervals. Only two video probes were conducted due to the severity of the problem behavior. During post, problem behavior was observed in 3%, 4%, and 3% (M=3%) of the intervals and adaptive behavior was observed in 91%, 85%, and 92% (M=89%) of the intervals. At one year follow-up, problem behavior occurred in 23%, 27%, and 11% (M=20%) of the intervals and adaptive behavior occurred in 89%, 63%, and 92% (81%) of the intervals. Data from baseline to one year follow-up indicate an average of 59% decrease in problem behavior and an average of 15% increase in adaptive behavior. Problem behavior had a SD of 33 making the lower CL 17. Falling below the lower CL, all post video probes met the criteria for differentiation. Adaptive behavior had a SD of 30 making the upper CL beyond 100. Under this circumstance the criteria for differentiation is two data points falling at 100, which did not occur. Although differentiation did not continue for both behaviors at one year follow-up, maintenance was achieved due to a decreased stable trend in problem behavior and an increased stable trend in adaptive behavior.

Emory’s problem behavior decreased and adaptive behavior increased from baseline to post, similar result continued at one year follow-up. During 3 videos probes
at baseline problem behaviors were observed in 58%, 19%, and 52% (M=43%) of the intervals and adaptive behaviors were observed in 16%, 71%, and 11% (M=33%) of the intervals. During the 3 post-video probes, problem behavior was observed in 22%, 20%, and 13% (M=18%) of the intervals and adaptive behavior was observed in 49%, 77%, and 71% (M=66%) of the intervals. At one year follow-up, problem behavior was observed in 3% and 45% (M=24%) of the intervals and adaptive behavior was observed in 55% and 76% (M=66%) of the intervals. From baseline to one year follow-up, there was an average reduction of 44% for problem behavior and an average improvement of 100% for adaptive behavior. The SD for problem behavior was 21 making the lower CL 22. During post, differentiation was achieved for two post video probes, but differentiation did not continue during one year follow-up, as for only one of the two data points fell below the lower CL. The SD for adaptive behavior was 33 making the upper CL 66, in which differentiation was achieved during post, but only one data point met the upper CL at one year follow-up, which also suggests that differentiation did not continue. Maintenance for problem behavior reduction was not achieved due to an increasing trend for problem behavior, but was achieved for adaptive behavior at one year follow-up.

Art’s reduction in problem behavior from baseline to post decreased and maintained during one year follow-up. Adaptive behavior remained at similar levels from baseline to post and one year follow-up. During baseline problem behavior was observed in an average of 51%, 48%, and 30% (M=46%) of the intervals and adaptive behavior was observed in an average of 48%, 36%, and 39% (M=41%) of the intervals. At post, problem behavior occurred in an average of 16%, 17%, and 14% (M=16%) of
the intervals and adaptive behavior occurred in an average of 28%, 52%, and 6% (M=41%) of the intervals. At one year follow-up, problem behavior was observed in 5% 13%, and 7% (M=8%) of the intervals and adaptive behavior was observed in 33%, 46%, and 34% (M=37%) of the intervals. From baseline to one year follow-up there was an average decrease of problem behavior of 82% and an average decrease in adaptive behavior of 8%. The SD for problem behavior was 6 making the lower CL 40, in which differentiation was achieved during post and one year follow-up. The SD for adaptive behavior was 6 making the upper CL 52, in which differentiation was not achieved during post or one year follow-up. Maintenance in the reduction of problem behavior was achieved due to a downward stable trend.

Jeff’s problem behavior decreased from baseline to post and increased again during one year follow-up and adaptive behavior remained at similar levels from baseline to post and increased during one year follow-up. During baseline problem behavior occurred in 15%, 20%, and 42% (M=36%) of the intervals and adaptive behavior occurred in 71%, 52%, and 52% (M=58%) of the intervals. During post problem behavior occurred in 7%, 1%, and 26% (M=11%) of the intervals and adaptive behavior occurred in 63%, 99%, and 14% (M=59%) of the intervals. At one year follow-up problem behavior occurred in 42%, 7%, and 27% (M=25%) of the intervals and adaptive behavior occurred in an average of 50%, 95%, and 80% (M=75%) of the intervals. Comparing baseline to one year follow-up data, there was an average of 29% decrease in problem behavior and an average of 29% increase in adaptive behavior. The SD for problem behavior was 18 making the lower CL 18 in which differentiation was achieved.
by two post video probes. Differentiation was not fully achieved at one year follow-up, for only one data point met the criteria. The SD for adaptive behavior was 11 making the upper CL 69, which was not achieved during post, but was achieved during one year follow-up. Maintenance was achieved with a decreasing stable trend for problem behavior and an increasing stable trend for adaptive behavior at one year follow-up.

Isaac’s reduction in problem behavior and improvements in adaptive behavior between baseline and post remained at similar levels at one year follow-up. During the three video probes at baseline, problem behavior was observed in an average of 12%, 45%, and 92% (M=50%) of the intervals and adaptive behavior was observed in an average of 72%, 68%, and 53% (M=64%) of the intervals. During the 3 video probes at post, problem behavior was observed in an average of 19%, 29%, and 34% (M=27%) of the intervals and adaptive behavior was observed in an average of 75%, 68%, and 76% (M=73%). Two video probes were conducted at one year follow (due to lack of availability) in which problem behavior was observed in an average 23% and 21% (M=22%) of the intervals and adaptive behavior was observed in an average of 95% and 98% (M=97%) of the intervals. Comparing the average percentage of intervals from baseline to one year follow-up, there was an average decrease of 56% for problem behavior and an average increase of 50% for adaptive behavior. The SD for problem behavior was 40% making the lower criterion line (CL) 10. The SD for adaptive behavior was 10% making the upper criterion line (CL) 74. Differentiation was not achieved from baseline to post to one year follow-up. However differentiation was shown for adaptive behavior as two data points were above the UL during post and one
year follow-up. Maintenance was achieved as a decreasing stable trend was evident for problem behavior and an increasing stable trend for adaptive behavior.
Figure 1. Child PBS data for baseline, post, and 1-year follow-up. Graphs indicate the percentage of intervals in which problematic and adaptive behavior occur. Data illustrating the child’s problem behaviors are solid circles and adaptive behaviors are solid triangles.
**Individual Results (PFI).** Gus’ problem behavior decreased from baseline to post to one year follow-up. Adaptive behavior increased during post and slightly decreased during one year follow-up. Due to the participant’s request, only one video probe per phase was completed. During baseline problem behavior occurred in an average of 50% of the intervals and adaptive behavior occurred in an average of 29% of the intervals. At post problem behavior occurred in 0% of the intervals and adaptive behavior occurred in an average of 58% of the intervals. Similar results were found at one year follow-up, problem behavior was observed in 1% of the intervals and adaptive behavior was observed in an average of 51% of the intervals. From baseline to one year follow-up, problem behavior decreased by an average of 98% and adaptive behavior increased by an average of 76%. Only one video probe was collected during each condition preventing the criteria for differentiation to be calculated. According to the available results problem behavior remained at near zero levels, demonstrating that maintenance has been achieved.

Carl’s problem behavior decreased and adaptive behavior steadily increased from baseline to post to one year follow-up. During baseline problem behavior occurred in an average of 44% and 52% (M=48%) of the intervals and adaptive behavior occurred in an average of 59% and 66% (M=63%) of the intervals. Data from the third video was not gathered due to technical difficulties. At post sessions problem behavior was observed in an average of 18% 16%, and 6% (M=8%) of the intervals and adaptive behavior was observed in an average of 90%, 61%, and 85% (M=88%) of the intervals. During one year follow-up problem behavior occurred in an average of 9%, 6%, and 3% (M=6%) of
the intervals and adaptive behavior occurred in an average of 83%, 92%, and 97% (M=91%) of the intervals. From baseline to follow-up, problem behavior decreased an average of 88% and adaptive behavior increased an average of 45%. The SD for problem behavior was 6 making the lower CL 42 and the SD for adaptive behavior was 5 making the upper CL 68. During post differentiation was achieved for problem and adaptive behavior. As problem behavior continued to decrease in trend and adaptive behavior continued to increase in trend, maintenance was achieved at one year follow-up.

Terrence’s problem behavior decreased from baseline to post to one year follow-up. Although adaptive behavior decreased from baseline to post, an increase occurred at one year follow-up. During baseline problem behavior was observed in an average of 44%, 37%, and 72% (M=51%) of the intervals and adaptive behavior was observed in an average of 56%, 70%, and 44% (M=57%) of the intervals. During post problem behavior occurred in an average of 19% and 58% (M=39%) of the intervals and adaptive behavior occurred in an average of 53% and 28% (M=41%) of the intervals. At one year follow-up problem behavior was observed in 32% and 33% (M=33%) of the intervals and adaptive behavior was observed in 50% and 55% (M=53%) of the intervals. From baseline to follow-up problem behavior decreased an average of 36% and adaptive behavior decreased an average of 7%. The SD for problem behavior was 19 making the lower CL 32. The SD for adaptive behavior was 13 making the upper CL 70. Differentiation for problem and adaptive behavior was not achieved during post or one year follow-up. Although differentiation was not achieved, problem behavior continued to decrease in trend, suggesting that maintenance has occurred.
Anthony’s problem behavior decreased from baseline to post and increased briefly during one year follow-up. Adaptive behavior remained at similar levels from baseline to post and decreased during one year follow-up. At baseline, problem behavior was observed in an average of 92%, 65%, and 58% (M=72%) of the intervals and adaptive behavior was observed in an average of 40%, 51%, and 69% (M=64%) of the intervals. During post, problem behavior occurred in an average of in an average of 0%, 8%, and 7% (M=5%) of the intervals and adaptive behavior occurred in an average of 80%, 52%, and 61% (M=64%) of the intervals. At one year follow-up problem behavior occurred in an average of 38%, 25%, and 18% (M=27%) of the intervals and adaptive behavior occurred in an average of 60%, 43%, and 35% (M=46%). Comparing data from baseline to one year follow-up problem behavior decreased at an average of 62% and adaptive behavior decreased at an average of 14%. Problem behavior has a SD of 18 making the lower CL 54. Differentiation was achieved for all 3 video probes during post and one year follow-up. Adaptive behavior has a SD of 15 making the upper CL 68 in which differentiation was not achieved during post, but was achieved during one year follow-up. According to these results maintenance was achieved for problem and adaptive behavior.
Figure 2. Child PFI data for baseline, post, and 1-year follow-up. Graphs indicate the percentage of intervals in which problematic and adaptive behavior occur. Data illustrating the child’s problem behaviors are solid circles and adaptive behaviors are solid triangles.
Overall PBS and PFI. Observational data on child behavior was gathered for each participant. The average percentage of intervals per participant’s child behaviors per condition are shown for baseline, post treatment, and one year follow-up in Table 5.

Table 5

Average Percentage of Intervals for Problem and Adaptive Child Behavior: Baseline, Post, and 1 Year Follow-Up for PBS and PFI.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Problem Baseline</th>
<th>Problem Post</th>
<th>Problem 1-Year Follow up</th>
<th>Adaptive Baseline</th>
<th>Adaptive Post</th>
<th>Adaptive 1-Year Follow up</th>
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<tr>
<td>PBS</td>
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<tr>
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<td>30</td>
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<td>17</td>
<td>51</td>
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</table>

There was little difference in the child’s behavior when comparing the average scores across participants per condition. During baseline for PBS, problem behavior occurred at
an average of 50% (range=36% - 76%) of the intervals and adaptive behavior occurred at an average of 46% (range=10% - 71%) of the intervals. For the PFI’s baseline condition problem behavior was observed in an average of 55% (range=48% - 72%) of the intervals and adaptive behavior was observed in an average of 51% (range=29% - 63%) of the intervals. At post for PBS problem behavior decreased to an average of 13% (range=3% - 27%) of the intervals and adaptive behavior increased to an average of 65% (range=66% - 89%) of the intervals. Similar results were found during post for the PFI condition, problem behavior decreased to an average of 14% (range=0% - 39%) and adaptive behavior increased to an average of 60% (range=41% - 79%) of the intervals. During PBS and PFI’s one year follow-up, problem behavior slightly increased to an average of 22% (range=8% - 30%) and an average of 17% (range=1% - 33%) of the intervals. Adaptive behavior remained stable for the PBS and PFI condition with an average of 67% (range=38% - 97%) and 57% (range=41% - 79%). For PBS’ baseline to one year follow-up problem behavior was decreased by an average of 56%; adaptive behavior was increased by an average of 46%. For PFI’s baseline to one year follow-up problem behavior was decreased by an average of 69%. From baseline to one year follow-up, adaptive behavior increased by an average of 37% in the PBS condition and increased by an average of 12% in the PFI condition.

Scales of Independent Behavior Revised (SIB-R)

Analysis of Variance. Data from participants who completed the one year follow-up from the PBS group (N=6) and the PFI group (N=4) were included in a two way ANOVA. A bar graph was used to display average scores between PBS and PFI on
the SIB-R GMI scales for baseline, post, and one year follow-up in Figure 3. Mean scores at baseline on the SIB-R GMI scales were -44.2 and -42.5 for PBS and PFI, respectively. Similarly, mean scores at post-intervention were -24 and -20.45 for PBS and PFI and at the one year follow-up were -21.2 and -18 for PBS and PFI. A two way repeated measures ANOVA was conducted on the SIBR-GMI data during baseline, post-treatment and at the one year follow-up. All pairwise multiple comparison procedures (Holm-Sidak method) were used. There were no significant differences across conditions (PBS versus PFI) in this sub-group of participants. However, across both groups there were significant differences between baseline and post-treatment (p< .001) and from baseline and the one year follow-up (p< .001).

![GMI Scores (SIB-R)](image)

**Figure 3.** Average GMI scores on the SIB-R for PBS and PFI during baseline, post, and one year follow-up.
Discussion

The purpose of this study was to examine the extent to which maintenance of child behavior change was achieved after the completion of BPT sessions featuring multi-component treatments for PBS and PFI. Generally, improvements in child behavior were maintained up to one year following treatment for both conditions. This was evident as decreasing trends for problem behavior for 5 participants in the PBS condition and all participants in the PFI condition stabilized one year following treatment. In addition, the participants’ GMI scores on the SIB-R supported the observational data. A two-way ANOVA verified a difference for both groups at post-treatment. Of note, attrition and a small N accounts for the lack of difference in this sub-group. Based on the participants’ GMI scores, treatment was effective at post-treatment and was maintained one year later. These results contribute to the growing body of literature on the long-term effects of multi-component treatments (Feldman et al., 2002; Lucyshyn, et al., 2007).

Generalization strategies were purposefully embedded throughout the BPT sessions to increase the likelihood of maintenance (Stokes & Baer, 1977). Several strategies will be briefly reviewed. During sessions, generalization strategies were applied loosely according to the participants’ learning styles. For instance, multiple examples of scenarios were presented via videos, narratives, and role-plays to help participants grasp a concept, such as identifying the function of a behavior. Common stimuli to the target individual were also included; familiar individuals took part in the
development and implementation of the behavior plan (as reported by participants). As part of the behavior plan, participants were to teach children appropriate skills to replace target behaviors. Particularly, teaching the target individual to recruit reinforcers from the natural environment via FCT. For instance, the participant was to negatively reinforce a child’s appropriate request for a break rather than for tantrum behavior. In programming for maintenance, participants were to fade the continuous schedule of reinforcement to an intermittent schedule for appropriate behavior. This strategy helps disguise the contingencies of reinforcement by preventing the child from discriminating when it is likely to be delivered. Participants were trained to generalize, as educators presented a variety of difficult situations and probed parents for answers. In addition to generalization strategies, contextual fit was at the core of each session by considering the strengths and limitations of each participant. All these strategies were combined in an effort to develop an effective and durable multi-component treatment for each participant based on their lifestyle.

Although, the results from the current study were expected, one must consider the uniqueness of the standardized protocol that served as an effective tool for conducting BPT sessions. Due to the systematic structure of the protocol, parent educators were able to teach the same skills and process for producing behavior change with high fidelity across each participant in the PBS and PFI condition. As a result, parents were able to effectively improve their child’s behavior by implementing their individualized treatment independently in their home while receiving distal support from sessions. These results are encouraging in the sense that parents can be taught how to develop and implement an
effective and durable treatment in a relative short amount of time (eight 90 min sessions). This would potentially allow more parents to benefit from these types of services.

Despite the positive outcomes several concerns arise. One concern is the inconsistent correspondence between the achievement of differentiation and maintenance of reductions in problem behavior. The criterion for differentiation in problem behavior was met when two data points fell below the lower CL from baseline to post. The criterion for maintenance was met when a continued stable trend from post to one year follow-up occurred. One would assume that if maintenance of behavior change was achieved at one year follow-up then differentiation in problem behavior would also maintain, but this was not the case for several participants. For 3 participants in the PBS condition, differentiation was achieved from baseline to post, but was no longer achieved during one year follow-up, yet an overall downward and stable trend met the criterion for maintenance. To the contrary for participants in the PFI condition, differentiation was achieved from baseline to post to one year follow-up, which corresponded with the overall downward and stable trend that met the criterion for maintenance. One may want to make sense of these slight inconsistencies.

A possible explanation for these differences, is the level of variability during baseline may have made the achievement of differentiation more or less difficult for participants. For instance in the PBS condition, Isaac’s problem behavior had high variability with data points ranging from an average of 12% to 92% of the intervals making the lower CL 10. In the PFI condition, Anthony had moderate variability with data points ranging from an average of 58% to 92% of the intervals making the CL 54.
As one can see, it may be more difficult for Isaac to reduce problem behavior from an average of 92% to 10% of the intervals compared to Anthony having to reduce problem behavior from an average of 92% to 54% of the intervals. It is possible that the high variability seen in the PBS condition may be due to higher levels of reactivity. In an ideal experiment, more data points would have been collected until stable trends were achieved in order to further analyze the differentiation in problem behavior in correspondence to the criteria for maintenance. Ethically this was not possible due to the severity of child behavior.

Although differences in the patterns of the observational data for each condition were subtle, some insight can be gained. When visually inspecting the multiple baseline design at one year follow-up, behaviors in the PBS condition are variable compared to the more stable trends in the PFI condition. According to the principles of applied behavior analysis, it is possible that the variability seen in the PBS condition may be due to an inconsistent implementation of the prevention strategies. If this assumption is correct then the stable trends in behavior seen in the PFI condition may be due to implementing the treatment more consistently in regards to the frequent use of proactive strategies. The variable trends in behavior seen in the PBS condition may be due to implementing the treatment less consistently as proactive strategies were combined with passive strategies. To expand on this assumption it is possible that participants in the PBS and PFI condition tend to use certain treatment components with more or less frequency, whether it be prevention strategies, teaching replacement skills, or managing
consequences. The use of treatment components for PBS and PFI are further explored in the next study.
Study 2

Method

Although it is clear that multi-component treatments have shown durable improvements in behavior; it is not clear as to which component is responsible for the maintenance effect on behavior change (Feldman et al., 2002; Lucyshyn, et al., 2007). For this reason, study 2 was purposely designed to further explore the long-term results of study 1, which included multi-component treatments. The Behavioral Adherence Rating Scale (BARS) (See Appendix I) was created to interview participants about their usage of each component of the behavior plan, separately. Specifically, responses were analyzed to answer two questions. First, what components of the treatment were participants more likely to report using during post, and one year follow-up? Second, at one year follow up, were responses different between groups (PBS vs. PFI)?

Remember, participants with high levels of pessimism (not the main focus of this study) were recruited and the only difference between PBS and PFI, is that one includes optimism training. Keeping this in mind, research has found a correlation between high levels of depression in mothers and severe problem behaviors in their children with developmental disabilities. Compared to non-depressed mothers, parents with depression reported having less self-efficacy and often used escape-avoidance strategies to manage their child’s difficult behavior. Escape-avoidance strategies may include withdrawing demands or interactions from the child, in hopes that problem behavior will eventually go
away (Feldman et al., 2007). In another study, Duda, Dunlap, Fox, Lentini, and Clarke (2004) studied the effects of multi-component treatments on pre-school students with problem behavior. Researchers examined video recordings to determine which components were implemented with fidelity. According to the data, structural strategies (i.e., prevention) were implemented with fidelity, but other interactional strategies (i.e., replacement skills and managing consequences) were not. With this knowledge, it is hypothesized that by one year follow-up participants in the PBS condition will likely report using passive strategies and participants in the PFI condition will likely report using proactive strategies. In addition, observational data on participants’ use of passive and proactive strategies will verify the responses between PBS and PFI.

Participants

The participants from study one were included in the current study, but only eight conducted the BARS interview. For more information refer to the participants section in study one.

BARS Description

The BARS was developed from the protocol used in study one (Durand & Hieneman, 2008). It includes questions on functional assessments tools, treatment components, and barriers to treatment. For purposes of this study only, items on treatment components will be addressed. The first section includes a space to be filled out by the researcher to identify the participants’ hypothesis statements that correspond to their individualized multi-component treatment. For each participant, specific strategies were listed under prevention strategies, replacement strategies, and behavioral
consequences. From there on, each question included a specific component as a term of reference. For example, if a question included the term “behavioral consequences,” participants were to answer according to the strategies listed under “behavioral consequences”.

Primary questions were used to lead into a set of secondary questions. For example the primary question, “Did you use prevention strategies for your child's problem behavior as described in the treatment sessions?” leads to the following secondary questions: a) during the time you received sessions with the therapist, b) during the videotaping at the end of the sessions, c) one or more times after the sessions, d) during the time of the one year follow-up, e) during the videotaping at the one year follow-up? Responses to the secondary questions require the participants to rate their answers on a seven-point Likert scale. The scale is as follows: 1=Never, 2=Almost Never, 3=Seldom, 4=Sometimes, 5=Usually, 6=Almost Always, and 7=Always.

Incentive

As an incentive, each participant was offered a $25.00 Wal-Mart gift card for completing the BARS. Within two weeks, the researcher hand-delivered the incentive and requested each participant to complete the "Gift Card Confirmation" form (See Appendix J) as proof of receipt. If hand-delivery was not feasible, these items were delivered by mail. For the university’s accounting purposes, participants were required to provide their contact information (name, address, and phone number) and social security number. These forms were secured in locked files and in locked offices.
**Dependent Measures**

Scores on the BARS were used to determine how often participants reported using each component of the treatment. The partial interval scoring system on post and one year video probes were used to measure passive and proactive prevention strategies.

**Likert Scale.** The BARS was created to analyze the participants’ responses to questions about each treatment component; prevention strategies, replacement strategies, and managing consequences. To determine the estimated frequency of a component, the total score (based on the Likert scale) for each category was calculated. Total scores ranged from 5 to 35 points for each treatment component. Specified ranges of total scores are used to estimate the frequency of each treatment component, see Table 6. To evaluate responses from the BARS, the researchers verified the results by comparing them to the average percentage of intervals, in which passive and proactive prevention strategies were observed on video probes.

Table 6

*Ranges of BARS Scores*

<table>
<thead>
<tr>
<th>Estimated Frequency</th>
<th>Score range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>01 to 05</td>
</tr>
<tr>
<td>Almost Never</td>
<td>06 to 10</td>
</tr>
<tr>
<td>Seldom</td>
<td>11 to 15</td>
</tr>
<tr>
<td>Sometimes</td>
<td>16 to 20</td>
</tr>
<tr>
<td>Usually</td>
<td>21 to 25</td>
</tr>
<tr>
<td>Almost Always</td>
<td>26 to 30</td>
</tr>
<tr>
<td>Always</td>
<td>31 to 35</td>
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</table>
**Behavioral definitions of parent behaviors measured.** For analysis purposes, prevention strategies presented in session 4 of study one were adapted and divided into two general categories: proactive and passive. Of note, general definitions were adapted according to the individualized behavior plan of each participant, see flow chart (Appendix K).

Proactive strategies included:

1) making difficult circumstances better- adult is embedding a preferred activity to the difficult routine (e.g., playtime); providing choices verbally (e.g., by asking the child which item or activity he or she wants) or through written words or pictures (e.g., by displaying a menu of choices for the child to choose from); or providing warnings to the child before transitioning to another activity, how long he or she must wait, or when there is a change in the routine to *initiate* and *complete* steps in the routine

2) adding cues that prompt good behavior- adult presents cues or prompts (e.g., gestural, verbal, or physical) to the child to *initiate* and *complete* steps in the routine

Passive strategies included:

1) avoiding bad situations- After three attempts, the adult continues to repeat a specific proactive strategy (e.g., 5 more minutes) and the child continues to *delay* or *avoid* the steps in the routine
2) avoiding interaction- adult is not visible on the videotape or is visible but does not verbally or physically interact with the child which results in a delay or avoidance of the routine

**Research Design**

The video probes from study one were used in the current study to gather post and one year follow-up data. Specifically, a non-concurrent multiple baseline design across participants per condition was used to present and verify the results from the BARS and to examine the use of passive and proactive prevention strategies between PBS and PFI. This research design was selected because each participant began the study at different times.

**Measurement and Reliability**

Video probes from study one were scored to determine the frequency in which participants in the PBS and PFI condition used prevention strategies. The first 10 min of each routine was observed, since prevention strategies were designed to take place before the target behavior. The partial interval recording system for prevention strategies (See Appendix L) was chosen for two reasons: 1) to calculate the percentage of intervals in which passive and proactive strategies occurred and 2) a total four behaviors were observed at the same time. It consisted of 10s intervals in which the researchers observed a continuous event. When scoring each video, proactive strategies were calculated by dividing the sum of intervals in which proactive strategies occurred by the total number of intervals per video probe and multiplying the total by 100. Passive strategies were calculated in the same manner. Interobserver agreement (IOA) data were collected to
determine the level of agreement between two independent observers viewing a particular event at the same time. When calculating IOA for passive and proactive strategies, the following equation was used: Agreed occurrences + Agreed non-occurrences/ Total number of intervals per video probe X 100. IOA was conducted for approximately 1/3 of the videotaped sessions.

**Procedures**

**Behavioral Adherence Rating Scale (BARS)**

Before interviewing participants the first section of the BARS was completed. The researcher identified the hypothesis statement(s) each participant developed with the guidance of a parent educator during BPT sessions. This information was retrieved by reviewing each participant’s behavior plan, session notes, and/or watching the corresponding videotaped BPT sessions (e.g., session four for prevention strategies). Once this information was gathered, the researcher filled out the first section of the BARS (Appendix M).

**Interview Protocol**

Interviewers were required to follow a detailed protocol (See Appendix N). The script began with a brief introduction that addressed the participant’s previous involvement in BPT sessions, purpose of the interview, incentive for completing the BARS, and assurance of confidentiality. To conclude the interview, the researcher expressed thanks to the participant.
Phone Interview

**Pilot Test.** A pilot test was completed with a participant who completed all BPT sessions, during the larger study, but did not meet the specific requirement of having one year follow-up observational data to be included in the current study. When asked for feedback the participant suggested reading the information that corresponds to the answer before asking the question. This modification was made.

**Scheduling and conducting interviews.** After finalizing the interview protocol, each parent from the first study was contacted to participate in the phone interview. The interviewer placed phone calls or left phone messages up to three times for recruitment purposes, if participants did not respond to phone calls or phone messages contact was no longer initiated. Interviews were conducted at the participants’ convenience and by speakerphone (participants will be notified). Since consent was previously given for follow-up questionnaires (See Appendix D), verbal consent from the participants was requested. Participants were notified that they may end the interview at any time.

**Procedural Fidelity**

Each phone interview (including the pilot test) was observed by another researcher to insure procedural adherence. The questions from the BARS were converted into a Yes/No checklist for the researcher to indicate whether or not each item was completed (See Appendix O). Deviations from the checklist were noted and corrections were made to avoid problems in the future. Scores on the procedural fidelity refer to the degree each interviewer adhered to the protocol during the interview. Scores were
calculated as a percentage by dividing the total number of items the interviewer covered by the total number of items listed on the protocol.

Inter-rater reliability was conducted for a minimum of one-third of the interviews. A primary and secondary observer listened to the same interview at the same time while completing the procedural checklist described above. The secondary observer’s checklist was compared to the primary observer’s checklist, item by item. Reliability was scored as a percentage by dividing the total number of agreed items by the total number of items on the checklist.

Data Analysis

**Paired t-test.** According to the BARS’ results, a paired t-test for each treatment component (i.e., prevention, replacement, behavior consequences) was conducted to determine whether or not a statistical significance was achieved between the mean scores of the PBS and PFI condition.

**Observational data.** A non-current multiple baseline design was used to graph the percentage of intervals with passive and proactive prevention strategies. This allowed the researcher to visually analyze and interpret the data.
Results

Statistical Analysis

A paired t-test was conducted to compare the mean scores for each treatment component in the PBS and PFI condition. There was a significant difference in the prevention strategies between PBS (M=34, SD=1) and PFI (M=27, SD=2.65) conditions; t (8)=6.06, p=0.026. These results suggest that parents reported using prevention strategies more often in the PBS condition than in the PFI condition during, post, and one year following BPT sessions. There were no significant differences between the scores of PBS (M=29.80) and PFI (M=26) for replacement strategies and for behavioral consequences, PBS (M=28.60) and PFI (M=28). The BARS interview was scripted for the interviewer, primary observer, and secondary observer to follow along. As a result, IOA and procedural fidelity was achieved at 100% for all the participants in both conditions.

Prevention Strategies

Data depicting the average percentage of intervals of prevention strategies (passive vs. proactive) are presented on a non-concurrent multiple baseline design for PBS in Figure 4 and PFI in Figure 5.

Individual Participants (PBS). Danielle’s use of proactive strategies increased and passive strategies decreased from post to one year follow-up. During post video probes, proactive strategies occurred in 48%, 18%, and 13% (M=26%) of the intervals
and passive strategies occurred in 33%, 77%, and 83% (M=64%) of the intervals. During the two video probes conducted at one year follow-up, proactive strategies were observed in 48% and 55% (M=52%) of the intervals and passive strategies were observed in 33% and 42% (M=38%) of the intervals.

Laura’s use of passive strategies decreased and proactive strategies increased during post, but both were used at similar levels during one year follow-up. At post, proactive strategies occurred in 88%, 50%, and 63% (M=67%) of the intervals and passive strategies occurred in 6%, 40%, and 30% (M=25%) of the intervals. At one year follow-up, proactive strategies were observed in 45%, 47%, and 48% (M=47%) of the intervals and passive strategies were observed in 52%, 47%, and 48% (M=49%) of the intervals. After treatment, Laura used both strategies, but was more likely to use proactive strategies. At one year follow-up, she used both strategies at similar levels with little variability.

Dorothy’s data on proactive and passive strategies show a decreasing trend from post to one year follow-up. During post, Dorothy used proactive strategies in 32%, 32%, and 40% (M=35%) of the intervals and used passive strategies in 58%, 58% and 50% (55%) the intervals. At one year follow-up, proactive strategies were used in 25% and 13% (M=19%) of the intervals and passive strategies were used in 47% and 18% (M=33%) of the intervals.

Mary’s use of proactive strategies decreased and passive strategies varied from post to one year follow-up. During post, proactive strategies were observe in 5%, 35%, and 48% (M=29%) of the intervals and passive strategies were observed in 95%, 72%,
and 30% (M=66%) of the intervals. At one year follow-up, proactive strategies were observed in 18%, 20%, and 33% (M=24%) of the intervals and passive strategies were observed in 48%, 24%, and 97% (57%) of the intervals.

Audrey used proactive strategies more frequently than passive strategies. During post, proactive strategies occurred in 81%, 27%, and 75% (M=61%) of the intervals and passive strategies occurred in 3%, 15%, and 8% (M=9%) of the intervals. At one year, proactive strategies were used in 70%, 47%, and 13% (M=43%) and passive strategies were used in 3%, 0%, and 32% (M=12%).

Evelyn used proactive strategies at high levels and rarely used passive strategies from post to one year follow-up. During post, Evelyn used proactive strategies in 73%, 98%, and 75% (M=82%) of the intervals and passive strategies in 0%, 0%, and 25% (M=8%) of the intervals. Similar results were found at one year follow-up because proactive strategies occurred in 70% of the intervals and passive strategies occurred in 0% and 2% (M=1%) of the intervals.

Interobserver agreement (IOA) data was collected for proactive and passive strategies for 1/3 of the videotaped probes. The total mean agreement for the proactive strategies was 96% (range=93% - 100%) and for passive strategies was 98% (range=96% - 100%). Danielle’s reliability was achieved at a level of 99% for proactive and 99% for passive. For Laura, reliability was achieved at a level of 89% for proactive and 100% for passive strategies. For Dorothy, reliability was achieved at a level of 97% for proactive and 94% for passive strategies. For Mary, reliability was achieved at a level of 98% for proactive and 99% for passive strategies. For Audrey, reliability was achieved at a level
of 100% for proactive and 98% for passive strategies. For Evelyn, reliability was achieved at a level of 94% for proactive and 98% for passive strategies.
Figure 4. Parent PBS data for post, and one year follow-up. Graphs indicate the percentage of intervals in which passive and proactive strategies occur. Data illustrating the passive strategies are solid squares and proactive strategies are solid diamonds.
**Individual Participants (PFI).** Jennifer’s use of proactive strategies decreased and there were no occurrences of passive strategies from post to one year follow-up. During post, Jennifer used proactive strategies in an average of 98% of the intervals. At one year follow-up, proactive strategies occurred in an average of 37% of the intervals.

Claire’s use of proactive strategies remained at moderate levels and passive strategies decreased and remained at zero or near zero levels from post to one year follow-up. At post, proactive strategies were observed in an average of 52%, 45%, and 87% (M=61%) of the intervals and passive strategies had zero occurrences. During one year follow-up, proactive strategies occurred in an average of 42%, 48%, and 68% (M=53%) of the intervals and passive strategies occurred in an average of 5%, 0%, and 0% (M=2%) of the intervals.

Paul’s use of proactive and passive strategies varied at post and showed a decreasing trend at one year follow-up. During post proactive strategies occurred in an average of 8%, 15%, and 55% (M=38%) of the intervals and passive strategies occurred in an average of 13% and 10% (M=12%) of the intervals. During one year follow-up proactive strategies occurred in an average of 63% and 38% (M=51%) of the intervals and passive strategies occurred in an average of 13% and 10% (M=12%) of the intervals.

Erin used proactive strategies more frequently than passive strategies during post and one year follow-up. Also, both strategies show a decreasing trend at one-year follow-up. During post, proactive strategies were observed in an average of 40%, 42%, and 78% (M=53%) and passive strategies were observe in an average of 32%, 13%, and 0% (M=15%) of the intervals. At one year follow-up, proactive strategies were observed
in an average of 44%, 33%, and 28% (M=34%) of the intervals and passive strategies were observed in an average of 0%, 0%, and 25% (M=8%) of the intervals.

IOA data was collected for proactive and passive strategies for 1/3 of the videotaped probes. The total mean agreement for the proactive strategies was 89% (range=77% - 97%) and for passive strategies was 95% (range=87% - 100%). Jennifer’s reliability was achieved at a level of 92% for proactive and 100% for passive, only one video probe was available. For Claire, reliability was achieved at a level of 78% for proactive and 98% for passive strategies. For Paul, reliability was achieved at a level of 78% for proactive and 98% for passive strategies. For Erin, reliability was achieved at a level of 91% for proactive and 96% for passive strategies.
Parents PFI data for post, and one year follow-up. Graphs indicate the percentage of intervals in which passive and proactive strategies occur. Data illustrating the passive strategies are solid squares and proactive strategies are solid diamonds.

*Figure 5.*
Overall PBS and PFI. The average percentage of intervals for participants’ prevention strategies per condition are illustrated on a bar graph for post-treatment in Figure 6 and one year follow-up in Figure 7. In general both conditions used prevention strategies, but there were differences in the types of strategies being used. During post for PBS, proactive strategies occurred in an average of 50% (range=19% - 70%) of the intervals and passive strategies occurred in an average of 38% (range=8% - 66%) of the intervals. For PFI post, proactive strategies were observe in an average of 63% (range=38% - 98%) of the intervals. Post passive strategies were observed in an average of 14% (range=0% - 43%) of the intervals. During one year follow-up, proactive strategies and passive strategies decreased for both conditions, but passive strategies decreased to near zero levels for PFI. For PBS, proactive strategies occurred at an average of 42% (range=19% - 70%) of the intervals and for PFI at an average of 43% (range=34%-53%) of the intervals. Passive strategies were observed in an average of 31% (range=1% - 57%) of the intervals for PBS and in an average of 5% (range=0% - 12%) of the intervals for PFI. From post to one year follow-up, proactive strategies were reduced by 16% and passive strategies were reduced by 18% in the PBS condition. In PFI, the use of proactive strategies were reduced by an average of 34% and passive strategies were reduced by an average of 64%.
Figure 6. Average percentage of intervals of parents’ use of proactive and passive strategies between PBS and PFI during post.
Figure 7. Average percentage of intervals of parents’ use of proactive and passive strategies between PBS and PFI during one year follow-up.
Discussion

A common limitation in the literature of multi-component treatments is the unclear demonstration of experimental control. In other words, which treatment component is responsible for the behavior change and maintenance? To explore this limitation, study 2 examined the maintenance effect of BPT featuring multi-component treatments. In particular, we were interested in finding which component the participants were likely to report as being used more often and whether there was a difference between PBS and PFI. According to the results on the BARS, participants in both conditions reported using each of the treatment components during post and one year follow-up, but a paired $t$-test revealed a statistical difference in the use of prevention strategies. As hypothesized, participants in the PBS condition were more likely to report using prevention strategies than participants in the PFI condition.

Based on these results, observational data on the use of prevention strategies were gathered for both conditions. During preliminary observations two types of prevention strategies were identified: proactive and passive. Of note, in session 4 of the first study, parent educators de-emphasized the use of avoidance strategies and emphasized the use of proactive strategies. Despite the importance placed on proactive strategies during sessions, participants in the PBS condition were frequently observed using a combination of proactive and passive strategies during post and one year follow-up. In contrast, participants in the PFI condition were primarily observed using proactive strategies.
The critical finding of this study was the parents’ frequent use of passive strategies in the PBS condition compared to the PFI condition. These results are consistent with another study in which preschool teachers were more likely to implement passive strategies (i.e., structural). It was suggested that the teachers may have perceived structural strategies to be more efficient or more feasible to implement. This may have resulted in avoidance of more interactive strategies, such as teaching replacement skills or managing consequences (Duda et al., 2004). Similar to the preschool teachers, it is possible that parents in the PBS condition perceived passive strategies as more efficient and more feasible to implement. Another possibility may or may not be that these perceptions correlate with high levels of pessimism, which then correlate with the use of passive strategies.

The only difference between PBS and PFI was that optimism training was provided for the participants in the PFI condition. The demonstrations reported in the current study are also consistent with the literature on the correlation between parents with high levels of depression and the use of escape-avoidance (i.e., passive) strategies when managing child behavior (Feldman et al., 2007). It is possible that the participants’ level of pessimism in the PBS condition remained higher than participants in the PFI condition, therefore PBS participants were more likely to use passive strategies and PFI participants were more likely to use proactive strategies.

In general parents in the PBS condition were observed hesitating or avoiding presenting their child with demands. As a result, initiation of the target routine was delayed or avoided. For instance, Laura (from PBS) was initially observed using a
proactive strategy by embedding a preferred task into the routine. Albert was allowed to play on the computer before going to bed. Another proactive strategy was provided as Erin verbally presented Albert with a 5 minute warning. As the 5 minute mark approached, instead of requesting Albert to go to bed, Laura preceded to avoid potential problem behavior by giving him 5 more minutes on the computer and five more again. Meanwhile, Laura was playing on the computer with him. As a result, Albert was engaging in high levels of adaptive behavior (e.g., playing on the computer) with little to no problem behaviors for the majority of the video probe. In essence passive strategies were effective in reducing the frequency of problem behaviors and seemingly increased adaptive behavior, but the target routine was not completed. It is possible that proactive strategies were occasionally used because parents were aware of being videotaped.

On the other hand, parents in the PFI condition were observed providing their child with expectations, reminders, or prompts to initiate the routine quickly. For instance, Erin (from PFI) was observed reviewing specific tasks (e.g., shoes off, jacket away, and snack time) with Anthony before the routine. Afterward, Erin gave Anthony the opportunity to remove his shoes independently. If he became distracted she would then provide a verbal reminder, “Anthony, shoes off.” If he continued to be distracted then Erin would provide a gestural prompt by tapping or pointing to the shoe, then a physical prompt by guiding him through the task. Erin used this process for each step of the routine as needed. As a result, proactive strategies were effective in reducing Anthony’s problem behavior. Although, Anthony may have demonstrated lower levels of adaptive behavior compared to Albert; he initiated and completed the routine in a
timely fashion. In addition, he was learning to complete simple but important daily tasks that promote independence.
General Discussion

In study one, BPT featuring multi-component treatments was shown to be effective in improving and maintaining child behavior up to one year. In general, these results were consistent across participants despite whether or not optimism training was provided. Study 2 further explored the maintenance effect of multi-component treatments by interviewing the participants about their use of each component. A paired $t$-test demonstrated that there was significant difference between the two conditions. Participants in the PBS condition were more likely to report using prevention strategies when compared to the participants’ responses in the PFI condition. Observational data confirmed these results and demonstrated that participants in the PBS condition used a combination of passive and proactive strategies while participants in the PFI condition primarily used proactive strategies at post and one-year follow-up. As mentioned earlier, participants in the PBS condition may have used passive strategies when dealing with difficult child behavior due to higher levels of pessimism compared to participants in the PFI condition who possibly decreased their level of pessimism through optimism training and relied on proactive strategies.

Limitations

There are several limitations of the present research that should be acknowledged. First, it is important to consider the issue of treatment integrity. After BPT sessions were completed, parent educators had no further contact with the participants. As a result,
participants did not receive feedback as to whether or not strategies were implemented correctly, nor were there any form of data collection for procedure fidelity. Participants were expected to implement treatment components as they learned them through the sessions. It is possible that since parents in the PBS condition used both prevention strategies then treatment was not implemented as intended by the development of the multi-component treatment. This may also explain PBS’ subtle variability in the observational data from the first study compared to PFI’s more stable trends demonstrating the frequent use of proactive strategies, which indicate implementation of treatment as intended from the BPT protocol.

Second, follow-up data collection occurred one year after sessions were completed. For this reason, it is difficult to determine whether the treatment itself maintained behavior change, if maturation or history has not been ruled out. This issue could have been addressed, if the larger study included a control group, which did not receive any treatment. Third, observational data on prevention strategies were not collected during baseline due to time constraints. This is particularly important because there may or may not have been changes in terms of the use of prevention strategies from baseline to post, which may indicate that other strategies should have been analyzed.

**Future Directions**

The question as to which component of the treatment was responsible for experimental control and maintenance remains unanswered. During the BARS interview, participants in both conditions expressed having to rely on all three components of the treatment; making it difficult for them to rank one component as more important than
others. Further analysis could be done in the current study by extending the analysis to the use of each treatment component. In addition to prevention strategies, observational data on teaching replacement skills and managing consequences could be collected to see if it corresponds to the participants’ responses on the BARS. Based on current results one may assume that participants in the PFI condition may be more likely to teach replacement skills or manage consequences compared to participants in the PBS condition. This assumption is made because participants in the PBS condition were frequently observed using the least interactive strategies. Also, PFI’s overall use of prevention strategies were shown to decrease from post to one year follow-up, which may suggest that other treatment strategies were in place.

Another suggestion is to find what factors accounted for the participants in the PBS condition to use passive strategies and what factors accounted for the participants in the PFI condition to use proactive strategies. One possibility is to analyze whether or not there was a correlation between improvements in pessimism scores and the use of proactive strategies or other interactive strategies. Another possible factor for the use of passive strategies may be an issue of contextual fit. It may be that participants identified strategies that seemed feasible at the time of the sessions, but the culmination of the three components and sessions ending may have been overwhelming for the participants. Although the current study did not reveal a specific component to be responsible for behavior change and maintenance, it has provided us with some insight as to the type of prevention strategies pessimistic parents are likely to use depending on whether or not they received optimism training.
Participants in both conditions were able to generalize what they learned in the sessions into their home, which maintained one year later. Although maintenance was achieved for both conditions two types of prevention strategies were used in which generalization to other settings and persons may or may not occur. For example, participants in the PBS condition may have achieved maintenance by essentially avoiding problem behavior. Since passive strategies were used, one may question whether or not the parents actually changed their child’s behavior or if parents change their own behavior by withdrawing demands, subsequently negatively reinforcing problem behavior. If this is the case, then generalization to other settings and persons may be difficult. For this reason, it is important to promote proactive strategies rather than passive strategies to increase the likelihood of generalization.

Many parents in the PFI condition were observed using interactive strategies that involved teaching their children how to recruit reinforcement from the natural environment, which included the use of FCT. While conducting the BARS interview, several parents from the PFI condition briefly mentioned that as their child gradually gained independence, through FCT, they felt “happier.” These comments suggest a possible cycle of reinforcement which fosters behavior change, generalization, and maintenance: when confronted with problem behavior, parents with a more optimistic perception may be more likely to use proactive strategies, which then reinforces the child’s use of FCT, which in turn reinforces the parents’ optimistic perception. In short, optimism training may be the key to increasing self-efficacy when managing difficult
child behavior, subsequently using more interactive strategies that promote adaptive behaviors and generalization across time, settings, persons, and other behaviors.
References


Appendices
Appendix A: Questionnaire on Resources and Stress (QRS)

Short Form of the Questionnaire on Resources and Stress

This questionnaire deals with your feelings about a child in your family. Imagine that your child’s name is filled in on each blank on the questionnaire. Please give your honest feelings and opinions. Answer all of the questions, even if they do not seem to apply to your family. If it is difficult to decide true (T) or false (F), answer in terms of what you or your family feel or do most of the time.

1. __________ doesn’t communicate with others of his/her age group. T F

2. Other members of the family have to do without things because of __________. T F

3. Our family agrees on important matters. T F

4. I worry about what will happen to __________ when I can no longer take care of him or her. T F

5. The constant demands for care of __________ limit the growth and development of someone else in our family. T F

6. __________ will be limited in the kind of work he/she can do to make a living. T F

7. I have accepted the fact that __________ might have to live out his or her life in some special setting (e.g., residential program, group home). T F

8. __________ can feed himself/herself. T F

9. I have given up things I have really wanted to do in order to care for __________. T F

10. __________ is able to fit into the family social structure. T F

11. Sometimes I avoid taking __________ out in public. T F

12. In the future, our family’s social life will suffer because of increased responsibilities and financial stress. T F

13. It bothers me that __________ will always be this way. T F
Appendix A: (Continued)

   T  F

15. I can go visit with friends whenever I want.  
   T  F

16. Taking ________ on a vacation spoils the pleasure for the whole family.  
   T  F

17. ________ recognizes his//her own name.  
   T  F

18. The family does as many things together now as we ever did.  
   T  F

19. ________ is aware of where he/she lives..  
   T  F

20. I get upset with the way my life is going.  
   T  F

21. Sometimes I feel very embarrassed because of ________.  
   T  F

22. ________ doesn’t do as much as he/she should be able to do.  
   T  F

23. It is difficult to communicate with ________ because he/she has difficulty understanding what is being said to him/her.  
   T  F

24. There are many places where we can enjoy ourselves as a family when ________ comes along.  
   T  F

25. ________ is overprotected.  
   T  F

26. ________ is able to take part in games or sports.  
   T  F

27. ________ has too much time on his/her hands.  
   T  F

28. I am disappointed that ________ does not lead a normal life.  
   T  F

29. Time drags for ________, especially free time.  
   T  F

30. ________ can’t pay attention very long.  
   T  F

31. It is easy for me to relax.  
   T  F

32. I worry about what will be done with ________ when he/she gets older.  
   T  F

33. I get almost too tired to enjoy myself.  
   T  F
Appendix A: (Continued)

34. One of the things I appreciate about _______ is his/her confidence. T  F

35. There is a lot of anger and resentment in our family. T  F

36. _______ is able to go to the bathroom alone. T  F

37. _______ cannot remember what he/she is doing from one moment to the next. T  F

38. _______ can ride a tricycle. T  F

39. It is easy to communicate with _______. T  F

40. The constant demands to care for _______ limit my growth and development. T  F

41. _______ accepts himself/herself as a person. T  F

42. I feel sad when I think of _______. T  F

43. I often worry about what will happen to _______ when I no longer can take care of him/her. T  F

44. People can’t understand what _______ tries to say. T  F

45. Caring for _______ puts a strain on me. T  F

46. Members of our family get to do the same kinds of things other families do. T  F

47. _______ will always be a problem to us. T  F

48. _______ is able to express his/her feelings to others. T  F

49. _______ is still in a diaper. T  F

50. I rarely feel blue. T  F

51. I am worried much of the time. T  F

52. _______ can dress himself/herself without help. T  F
Appendix B: Scales of Independent Behavior Revised (SIB-R)

Calculation of Age

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<th>Month</th>
<th>Day</th>
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Date of Testing

Date of Birth

Difference

Age

(Scored to the nearest month)

Suggested Starting Points

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<tbody>
<tr>
<td>Item</td>
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<td>Item</td>
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Broad Cognitive Ability Score (optional)

<table>
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<tr>
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<th>Basso R</th>
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<tbody>
<tr>
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</table>

SS 68% Band

Date of Testing

SS to

AE

FR

Boxed Rule

Begin testing at the suggested starting point. If the first four consecutive items submitted are not scored ≥, return to the starting point and test backward until four consecutive items have been scored ≥ or until Item 1 has been administered. Return to the highest item administered.

Ceiling Rule

Test until four consecutive items are scored ≥ or until the last item in the subscale or scale has been administered.

Calculation of Cluster RMIs, SSs, and PRs

Broad Independence

<table>
<thead>
<tr>
<th>Column</th>
<th>BI W</th>
<th>REF W</th>
<th>SEM (SG)</th>
<th>Column DIFF</th>
<th>DIFF</th>
<th>RMI</th>
<th>SS</th>
<th>-1 SEM</th>
<th>+1 SEM</th>
<th>PR</th>
<th>Skill Level</th>
<th>Age Equivalent</th>
</tr>
</thead>
</table>

Standard Score/Percentile Rank Profile

- Broad Independence

- WJR Broad Cognitive Ability
Appendix B: (Continued)

ADAPTIVE BEHAVIOR/Early Development Form

Instructions
- Mark how well the individual does (or could do) each task completely without any help or supervision.
- If you have not seen the individual do the task (or if he or she never has the chance to do the task), mark how well you think he or she could do the task now (without any help).
- Mark the highest rating (3—Does very well) for tasks that are now too easy for the individual.

Does (or could do) task completely without help or supervision:

0 — NEVER OR RARELY—even if asked
1 — DOES, BUT NOT WELL—or about \( \frac{1}{2} \) of the time—may need to be asked
2 — DOES FAIRLY WELL—or about \( \frac{3}{4} \) of the time—may need to be asked
3 — DOES VERY WELL—always or almost always—without being asked

1. Makes sounds or gestures to get attention.
2. Reaches for a person whom he or she wants.
3. Picks up small objects with hand.
4. Turns head toward speaker when name is called.
5. Swallows soft foods.
6. Sits without support for 30 seconds with head and back held straight and steady.
7. Transfers small objects from one hand to the other hand.
8. Picks up and eats foods such as crackers.
9. Pulls self into a standing position.
10. Treats at least two people outside the family as friends, different from strangers.
11. Imitates actions when asked, such as waving or clapping hands.
12. Puts small objects into containers and takes them out again.
13. Stands alone and walks for at least 6 feet.
15. Shakes head or otherwise indicates "yes" or "no" in response to a simple question such as, "Do you want some milk?"
16. Holds hands under running water to wash them when placed in front of a sink.
17. Holds and drinks from a glass with little spilling.
18. Points to familiar pictures in a book on request.
19. Says at least 10 words that can be understood by someone who knows him or her.
20. Eats solid foods with a spoon with little spilling.

\[
\text{Sum A} + \text{Sum B} \times \text{Sum C} = \text{Raw Scores}
\]

Page 2
Appendix B: (Continued)

Early Development Form/Adaptive Behavior

<table>
<thead>
<tr>
<th>Does (or could do) task completely without help or supervision:</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 — NEVER OR RARELY—even if asked</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1 — DOES, BUT NOT WELL—or about 1/2 of the time—may need to be asked</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2 — DOES FAIRLY WELL—or about 2/3 of the time—may need to be asked</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3 — DOES VERY WELL—always or almost always—without being asked</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

- 21. Asks simple questions (for example, "What's that?").
- 22. Turns knob and opens a door.
- 23. Walks up and down stairs by alternating feet from step to step (may hold handrail).
- 24. Uses the toilet at regular times when placed on the toilet or a toilet chair or when taken to the bathroom.
- 25. Counts from 1 to 5.
- 26. Says last name when asked.
- 27. Uses the toilet, including removing and replacing clothing, with no more than one accident per month.
- 28. Follows two-part directions in the right order after they are spoken once (for example, "Hang up your coat and then find the book").
- 29. Puts gloves on correct hands and fingers.
- 30. Takes appropriate-size portions from serving dishes.
- 31. Prints first name, copying from an example.
- 32. Changes clothing that is dirty from normal wear.
- 33. Covers the mouth or nose when coughing or sneezing.
- 34. Ties shoelaces and keeps them tied.
- 35. Adjusts the water faucets for proper temperature in the bathtub or shower.
- 36. Goes at least 4 blocks (or 1/2 mile) from home, school, or work alone or with friends of the same age.
- 37. Reads and understands materials such as books, comics, or magazines.
- 38. Increases work speed, when necessary or desirable, to finish a routine job in less time than usual.
- 39. Prints or writes complete and correct home address (including ZIP code) without an example.
- 40. Finds a telephone number in the white pages.

Are there any developmental skills that should be improved at this time?
**Appendix B: (Continued)**

### PROBLEM BEHAVIOR

**Instructions**
Some of the following behaviors are common at certain ages and are not of concern. Sometimes they cause a problem. If an individual does not exhibit problem behaviors in a category, check "No" and score the item "Never" (0) for frequency and "Not serious" (0) for severity. If you check "Yes," describe the major problem and check its frequency and severity.

#### 1. Hurtful to Self
Does [name] injure his/her own body—for example, by hitting self, banging head, scratching, cutting or puncturing, biting, rubbing skin, pulling out hair, picking on skin, biting nails, or pinching self?

| NO | YES | If yes, describe the major problem:

  a. FREQUENCY: How often does this behavior usually occur? (check one)
     | 0. Never
     | 1. Less than once a month
     | 2. One to 3 times a month
     | 3. One to 6 times a week
     | 4. One to 10 times a day
     | 5. One or more times an hour

  b. SEVERITY: How serious is the problem usually caused by this behavior? (check one)
     | 0. Not serious; not a problem
     | 1. Slightly serious; a mild problem
     | 2. Moderately serious; a moderate problem
     | 3. Very serious; a severe problem
     | 4. Extremely serious; a critical problem

What do you or others typically do when this behavior occurs?

#### 2. Hurtful to Others
Does [name] cause physical pain to other people or to animals—for example, by hitting, kicking, biting, pinching, scratching, pulling hair, or striking with an object?

| NO | YES | If yes, describe the major problem:

  a. FREQUENCY: How often does this behavior usually occur? (check one)
     | 0. Never
     | 1. Less than once a month
     | 2. One to 3 times a month
     | 3. One to 6 times a week
     | 4. One to 10 times a day
     | 5. One or more times an hour

  b. SEVERITY: How serious is the problem usually caused by this behavior? (check one)
     | 0. Not serious; not a problem
     | 1. Slightly serious; a mild problem
     | 2. Moderately serious; a moderate problem
     | 3. Very serious; a severe problem
     | 4. Extremely serious; a critical problem

What do you or others typically do when this behavior occurs?

#### 3. Destructive to Property
Does [name] deliberately break, deface, or destroy things—for example, by hitting, tearing or cutting, throwing, burning, or marking or scratching things?

| NO | YES | If yes, describe the major problem:

  a. FREQUENCY: How often does this behavior usually occur? (check one)
     | 0. Never
     | 1. Less than once a month
     | 2. One to 3 times a month
     | 3. One to 6 times a week
     | 4. One to 10 times a day
     | 5. One or more times an hour

  b. SEVERITY: How serious is the problem usually caused by this behavior? (check one)
     | 0. Not serious; not a problem
     | 1. Slightly serious; a mild problem
     | 2. Moderately serious; a moderate problem
     | 3. Very serious; a severe problem
     | 4. Extremely serious; a critical problem

What do you or others typically do when this behavior occurs?

#### 4. Disruptive Behavior
Does [name] interfere with the activities of others—for example, by clinging, pestering or teasing, auming or complaining, picking fights, laughing or crying without reason, interrupting, or yelling or screaming?

| NO | YES | If yes, describe the major problem:

  a. FREQUENCY: How often does this behavior usually occur? (check one)
     | 0. Never
     | 1. Less than once a month
     | 2. One to 3 times a month
     | 3. One to 6 times a week
     | 4. One to 10 times a day
     | 5. One or more times an hour

  b. SEVERITY: How serious is the problem usually caused by this behavior? (check one)
     | 0. Not serious; not a problem
     | 1. Slightly serious; a mild problem
     | 2. Moderately serious; a moderate problem
     | 3. Very serious; a severe problem
     | 4. Extremely serious; a critical problem

What do you or others typically do when this behavior occurs?
### Appendix B: (Continued)

#### 5. Unusual or Repetitive Habits

Does (name) have any unusual behaviors that he/she may do over and over—for example, pacing, rocking, twirling fingers, sucking hands or objects, twitching (nerve tics), talking to self, grinding teeth, eating dirt or other objects, eating too much or too little, staring at an object or into space, or making odd faces or noises?

- **NO**
- **YES** If yes, describe the major problem:
  a. FREQUENCY: How often does this behavior usually occur? (check one)
     - 0. Never
     - 1. Less than once a month
     - 2. One to 3 times a month
     - 3. One to 6 times a week
     - 4. One to 10 times a day
     - 5. One or more times an hour
  b. SEVERITY: How serious is the problem usually caused by this behavior? (check one)
     - 0. Not serious; not a problem
     - 1. Slightly serious; a mild problem
     - 2. Moderately serious; a moderate problem
     - 3. Very serious; a severe problem
     - 4. Extremely serious; a critical problem

What do you or others typically do when this behavior occurs?

#### 6. Socially Offensive Behavior

Does (name) behave in ways that are offensive to others—for example, talking too loudly, swearing or using vulgar language, lying, standing too close or touching others too much, threatening, talking nonsense, spitting at others, picking nose, belching, expelling gas, touching genitals, or urinating in inappropriate places?

- **NO**
- **YES** If yes, describe the major problem:
  a. FREQUENCY: How often does this behavior usually occur? (check one)
     - 0. Never
     - 1. Less than once a month
     - 2. One to 3 times a month
     - 3. One to 6 times a week
     - 4. One to 10 times a day
     - 5. One or more times an hour
  b. SEVERITY: How serious is the problem usually caused by this behavior? (check one)
     - 0. Not serious; not a problem
     - 1. Slightly serious; a mild problem
     - 2. Moderately serious; a moderate problem
     - 3. Very serious; a severe problem
     - 4. Extremely serious; a critical problem

What do you or others typically do when this behavior occurs?

#### 7. Withdrawal or Inattentive Behavior

Does (name) have difficulty being around others or paying attention—for example, keeping away from other people, expressing unusual fears, showing little interest in activities, appearing sad or worried, showing little concentration on a task, sleeping too much, or talking negatively about self?

- **NO**
- **YES** If yes, describe the major problem:
  a. FREQUENCY: How often does this behavior usually occur? (check one)
     - 0. Never
     - 1. Less than once a month
     - 2. One to 3 times a month
     - 3. One to 6 times a week
     - 4. One to 10 times a day
     - 5. One or more times an hour
  b. SEVERITY: How serious is the problem usually caused by this behavior? (check one)
     - 0. Not serious; not a problem
     - 1. Slightly serious; a mild problem
     - 2. Moderately serious; a moderate problem
     - 3. Very serious; a severe problem
     - 4. Extremely serious; a critical problem

What do you or others typically do when this behavior occurs?

#### B. Uncooperative Behavior

Does (name) have any behavior that is uncooperative—for example, refusing to obey, do chores, or follow rules; acting defiantly or pouting; refusing to attend school or go to work; arriving late at school or work; refusing to take turns or share; cheating; stealing; or breaking laws?

- **NO**
- **YES** If yes, describe the major problem:
  a. FREQUENCY: How often does this behavior usually occur? (check one)
     - 0. Never
     - 1. Less than once a month
     - 2. One to 3 times a month
     - 3. One to 6 times a week
     - 4. One to 10 times a day
     - 5. One or more times an hour
  b. SEVERITY: How serious is the problem usually caused by this behavior? (check one)
     - 0. Not serious; not a problem
     - 1. Slightly serious; a mild problem
     - 2. Moderately serious; a moderate problem
     - 3. Very serious; a severe problem
     - 4. Extremely serious; a critical problem

What do you or others typically do when this behavior occurs?
Appendix B: (Continued)

MALADAPTIVE BEHAVIOR WORKSHEET

Instructions

Step 1. Transfer the frequency and severity ratings for each of the eight problem behavior categories to the corresponding line in the Problem Behavior column.

Step 2. Circle the Part Score (PS) corresponding to each of the individual’s Frequency and Severity ratings.

Step 3. Circle the Part Score corresponding to the individual’s age in years.

Step 4. Total the circled Part Scores for each index and record in the space labeled “Sum.”

Step 5. Subtract this sum from 100 to obtain the Maladaptive Index. Indicate a “+” or “-” with the difference as appropriate.

Step 6. Transfer these scores to the Maladaptive Behavior Indexes Profile on page 8.

Interpretation

The Indexes have a mean of zero for normal clients of the same age. Negative scores indicate problem behavior toward the maladaptive end of the scale. The typical standard deviation observed in various clinical samples at several age levels is 10 points. Nonhandicapped groups typically have standard deviations of about 8 points. Evaluating the clinical significance of the Maladaptive Behavior Indexes may be aided by using the levels of seriousness in the following table. These levels of seriousness also appear at the bottom of the Maladaptive Behavior Indexes Profile on page 8.

<table>
<thead>
<tr>
<th>Level of Seriousness</th>
<th>Index Value</th>
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<tr>
<td>Normal</td>
<td>+10 to +10</td>
</tr>
<tr>
<td>Marginally Serious</td>
<td>-11 to -20</td>
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<tr>
<td>Moderately Serious</td>
<td>-21 to -30</td>
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<tr>
<td>Serious</td>
<td>-31 to -40</td>
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<td>Very Serious</td>
<td>-41 and below</td>
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<tr>
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<th>Internalized Maladaptive Index</th>
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<tr>
<td>1. Hurtful to Self</td>
<td>Ratings: 1 2 3 4 5</td>
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<tr>
<td>Frequency rating</td>
<td>PS: 16 18 20 22 23 24</td>
</tr>
<tr>
<td>Severity rating</td>
<td>PS: 16 19 22 25 28</td>
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</table>

| 2. Hurtful to Others | Rating: |
| Frequency rating | PS: |
| Severity rating | PS: |

| 3. Destructive to Property | Rating: |
| Frequency rating | PS: |
| Severity rating | PS: |

| 4. Disruptive Behavior | Rating: |
| Frequency rating | PS: |
| Severity rating | PS: |

| 5. Unusual or Repetitive Habits | Rating: |
| Frequency rating | PS: 16 17 18 20 21 22 |
| Severity rating | PS: 16 19 21 24 27 |

| 6. Socially Offensive Behavior | Rating: |
| Frequency rating | PS: |
| Severity rating | PS: |

| 7. Withdrawal or Inattentive Behavior | Rating: |
| Frequency rating | PS: 16 18 20 21 23 24 |
| Severity rating | PS: 16 19 22 25 29 |

| 8. Uncooperative Behavior | Rating: |
| Frequency rating | PS: |
| Severity rating | PS: |

Part Scores for Age in Years

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Individual’s Age

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Sum of Part Scores

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Maladaptive Behavior Indexes

Internalized Maladaptive Index

114
### Part Scores for Frequency and Severity Ratings

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<th>Externalized Maladaptive Index</th>
<th>General Maladaptive Index</th>
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<td>6 7 8 9 10 —</td>
</tr>
<tr>
<td>0 1 2 3 4 5</td>
<td></td>
<td>6 6 7 8 9 10</td>
</tr>
<tr>
<td>1-7 8-10 11-12 13-15 16-18 19-21 22+</td>
<td>1-6 7-10 11 12-13 14-15 16 17-18 19+</td>
<td>0 1 2 3 4</td>
</tr>
<tr>
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<td></td>
<td>6 7 8 8 9 10</td>
</tr>
<tr>
<td>0 1 2 3 4 5</td>
<td></td>
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<tr>
<td>100</td>
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</tr>
<tr>
<td>+ or —</td>
<td></td>
<td>+ or —</td>
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<td>Asocial Maladaptive Index</td>
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<tr>
<td>Externalized Maladaptive Index</td>
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</table>
Appendix B: (Continued)

Maladaptive Behavior Indexes Profile

(Plot indexes from pp. 6–7)

Instructions
1. Record scores for each of the Maladaptive Behavior Indexes from pp. 6-7 in column a. Record the “+” or “-” as appropriate.
2. Subtract the SEM in column b from each score in column a, and record this difference in column c.
3. Add the SEM in column b to each score in column a, and record the sum in column d.
4. Draw a bar in the plot below from the -1SEM value (c) to +1SEM value (d) for each index.
5. Draw a vertical line through the profile at the point corresponding to the GMI score in column a.

<table>
<thead>
<tr>
<th></th>
<th>Very Serious (-41 and below)</th>
<th>Serious (-40 to -31)</th>
<th>Moderately Serious (-30 to -21)</th>
<th>Marginally Serious (-20 to -11)</th>
<th>Normal (-10 and above)</th>
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<td>3</td>
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<td>3</td>
<td>3</td>
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<tr>
<td>Externalized (EMI)</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<td>4</td>
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<td>General (GMI)</td>
<td>5</td>
<td>5</td>
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<td>5</td>
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</tbody>
</table>

Support Score

Instructions
1. Record the Broad Independence W Score here: __________
2. Record the General Maladaptive Index (pp. 7) here: __________
3. Utilizing these two numbers, obtain the corresponding Support Score from Table I and record it here: __________
4. Using the table at the right, locate this individual’s Support Level and record it here: __________

Test Scoring Table: Broad Independence (ED)

Circle the entire raw (Raw Score, W, and Age Equivalent).

<table>
<thead>
<tr>
<th>Raw Score W AE</th>
<th>Raw Score W AE</th>
<th>Raw Score W AE</th>
<th>Raw Score W AE</th>
<th>Raw Score W AE</th>
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</thead>
<tbody>
<tr>
<td>0  291 &lt;0.3</td>
<td>21  426 &lt;0.3</td>
<td>41  442 &lt;1.1</td>
<td>61  469 &lt;3.1</td>
<td>81  489 &lt;3.1</td>
<td>101 489 &lt;3.1</td>
</tr>
<tr>
<td>1  299 &lt;0.3</td>
<td>22  427 &lt;0.3</td>
<td>42  443 &lt;1.1</td>
<td>62  470 &lt;3.1</td>
<td>82  470 &lt;3.1</td>
<td>102 489 &lt;3.1</td>
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<tr>
<td>2  304 &lt;0.3</td>
<td>23  429 &lt;0.3</td>
<td>43  444 &lt;1.1</td>
<td>63  470 &lt;3.1</td>
<td>83  470 &lt;3.1</td>
<td>103 489 &lt;3.1</td>
</tr>
<tr>
<td>3  307 &lt;0.3</td>
<td>24  430 &lt;0.3</td>
<td>44  445 &lt;1.1</td>
<td>64  471 &lt;3.1</td>
<td>84  471 &lt;3.1</td>
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<td>45  445 &lt;1.1</td>
<td>65  472 &lt;3.1</td>
<td>85  472 &lt;3.1</td>
<td>105 489 &lt;3.1</td>
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<tr>
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<td>26  430 &lt;0.3</td>
<td>46  446 &lt;1.1</td>
<td>66  473 &lt;3.1</td>
<td>86  473 &lt;3.1</td>
<td>106 489 &lt;3.1</td>
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<tr>
<td>6  412 &lt;0.3</td>
<td>27  431 &lt;0.3</td>
<td>47  446 &lt;1.1</td>
<td>67  474 &lt;3.1</td>
<td>87  474 &lt;3.1</td>
<td>107 489 &lt;3.1</td>
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<tr>
<td>7  414 &lt;0.4</td>
<td>28  432 &lt;0.4</td>
<td>48  447 &lt;1.4</td>
<td>68  475 &lt;4.0</td>
<td>88  475 &lt;4.0</td>
<td>108 489 &lt;3.1</td>
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<tr>
<td>8  415 &lt;0.4</td>
<td>29  432 &lt;0.4</td>
<td>49  447 &lt;1.4</td>
<td>69  476 &lt;4.0</td>
<td>89  476 &lt;4.0</td>
<td>109 489 &lt;3.1</td>
</tr>
<tr>
<td>9  416 &lt;0.4</td>
<td>30  432 &lt;0.4</td>
<td>50  448 &lt;1.4</td>
<td>70  477 &lt;4.0</td>
<td>90  477 &lt;4.0</td>
<td>110 489 &lt;3.1</td>
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<tr>
<td>10 417 &lt;0.4</td>
<td>31  435 &lt;0.5</td>
<td>51  449 &lt;1.5</td>
<td>71  478 &lt;4.0</td>
<td>91  478 &lt;4.0</td>
<td>111 489 &lt;3.1</td>
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<tr>
<td>11 418 &lt;0.5</td>
<td>32  435 &lt;0.5</td>
<td>52  449 &lt;1.5</td>
<td>72  479 &lt;4.0</td>
<td>92  479 &lt;4.0</td>
<td>112 489 &lt;3.1</td>
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<td>33  435 &lt;0.5</td>
<td>53  450 &lt;1.6</td>
<td>73  479 &lt;4.0</td>
<td>93  479 &lt;4.0</td>
<td>113 489 &lt;3.1</td>
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<tr>
<td>13 420 &lt;0.5</td>
<td>34  437 &lt;0.6</td>
<td>54  450 &lt;1.6</td>
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<td>94  479 &lt;4.0</td>
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<td>14 420 &lt;0.5</td>
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<td>55  451 &lt;1.6</td>
<td>75  479 &lt;4.0</td>
<td>95  479 &lt;4.0</td>
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<td>56  452 &lt;1.7</td>
<td>76  479 &lt;4.0</td>
<td>96  480 &lt;5.2</td>
<td>116 489 &lt;3.1</td>
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<tr>
<td>16 422 &lt;0.6</td>
<td>37  439 &lt;0.7</td>
<td>57  452 &lt;1.7</td>
<td>77  479 &lt;4.0</td>
<td>97  480 &lt;5.2</td>
<td>117 489 &lt;3.1</td>
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<td>38  440 &lt;0.7</td>
<td>58  453 &lt;1.8</td>
<td>78  479 &lt;4.0</td>
<td>98  480 &lt;5.2</td>
<td>118 489 &lt;3.1</td>
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<td>18 424 &lt;0.6</td>
<td>39  441 &lt;0.8</td>
<td>59  454 &lt;1.9</td>
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<td>99  480 &lt;5.2</td>
<td>119 489 &lt;3.1</td>
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<td>19 425 &lt;0.7</td>
<td>40  441 &lt;0.8</td>
<td>60  454 &lt;1.9</td>
<td>80  479 &lt;4.0</td>
<td>100 480 &lt;5.2</td>
<td>120 489 &lt;3.1</td>
</tr>
</tbody>
</table>

Do these SIBR results provide a fair representation of this individual’s present functioning? Yes ______ No ______

If not, what is the reason for questioning the results? ______
Appendix C: Video Protocol

Code: ______ Name of Child: __________________________ Name of Parent(s): __________

Phone Number(s): ________________________________________________________________

Address: ______________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

(Staple map/directions to this form, if available)

Description of Routine:

______________________________________________________________________________

Time of Day: __________ Location: ________________________________________________

Sequence of Activities/Steps:

Expectations for Child Behavior:

Expectations for Parent Behavior:

Other Notes (e.g., camera set up):

______________________________________________________________________________

______________________________________________________________________________

(date, initial) Video 1: ________ Video 2: ________ Video 3: ________

Reminders: Call ahead prior to going to the family home to insure the parent and child’s availability and readiness for videotaping. Review the routine you will be videotaping on the phone. If the parent cancels, ask them for possible dates to reschedule. Have parent suggest where you should position yourself during videotaping and minimize interaction with the child and parent during the taping. After the videotaping, email supervisor informing him/her that the taping has been completed (or if it was cancelled) and how it went. Return the camera and tape to the office within 48 hours.
Appendix D: Informed Consent Agreement

Positive Family Intervention
Consent Agreement

The purpose of the Positive Family Intervention study is to compare different approaches to parent education for families of children with disabilities and challenging behavior. The study is being conducted as a collaborative effort involving the College of Arts and Sciences at the University of South Florida, St. Petersburg and Center for Autism and Related Disabilities in Tampa, Florida/Albany, New York. Participants in this study will be randomly assigned to one of two groups, however each group will receive a treatment proven to be very effective.

This study will require you to attend 8 sessions with trained therapists, and will focus on helping you deal with your children’s behavior problems. Each of the sessions will last a maximum of 1 ½ hours and will be arranged to accommodate your schedule and that of the therapist conducting the training. With your permission, these sessions will be videotaped so that the integrity of the intervention can be verified by the research staff at USF St. Petersburg.

In addition to attending training sessions, you will be asked to complete certain assessments that will allow the researchers to evaluate the impact of the training on your children’s behavior and how you are addressing them. These assessments will include questionnaires on parenting and your child’s behavior and observations, and videotaping of your child at home. They will be conducted prior to initiating the training sessions and following their completion.

There are no known risks associated with participating in this study, and the possible benefits include improvements in your parenting skills and child’s behavior at home and school. Your privacy and the research records will be kept confidential to the extent of the law. In accordance with USF policy, authorized research personnel, employees of the Department of Health and Human Services, the USF Institutional Review Board and its staff, and other individuals, acting on behalf of USF may inspect the records from this research project. The confidentiality of your records will be maintained unless: 1) you express intent to harm yourself or others or 2) you report that you have abused a child.

If you have any questions about this research study, contact Dr. Meme Hieneman or Dr. Mark Durand at USF St. Petersburg (727-553-4814). If you have questions about your rights as a person who is taking part in a research study, you may contact the Division of Research Compliance at the University of South Florida at 813-974-5638.
If you wish to be considered for participation in the Positive Family Intervention study, please read and sign the following statement:

I understand that my participation in this study is voluntary and that I may change my mind at any time and withdraw my consent. My agreement or lack of agreement to participate will in no way affect my ability to seek future services from the Center for Autism and Related Disabilities or USF. I understand that only the Center for Autism and Related Disabilities staff and research site at USF St. Petersburg will have access to any records kept during the study and that my name and my child’s name will not be used in record keeping or dissemination. I understand that I can contact the Center for Autism and Related Disabilities for referrals to alternative services.

I understand that participation in this study will require weekly attendance at individual meetings with Center therapists for 8 weeks. I agree to complete the required assessments prior to and following the training sessions and understand that I may refuse to answer any or all of the questions. I provide consent for my child to be observed and data recorded on his or her behavior at previously scheduled times. I also provide my permission for my 8 sessions with the therapists to be videotaped.

Signed ___________________________ Date ________________
Signature of Subject

Signed ___________________________ Date ________________
Signature of Investigator
Confirmation of Videotaping

I ______________________ agree to be videotaped as part of the research study on Positive Family Intervention.

I understand that the researcher(s) in this study will videotape 1) my child’s behavior in our home during difficult routines and 2) my sessions with the therapist. The reason for videotaping my child is to document the frequency and severity of his or her behaviors of concern and to provide a starting point for comparison during follow-up. The reasons for videotaping the sessions are to insure that the therapist adheres to the study protocol and observe our interactions (e.g., to evaluate my responsiveness to the sessions). Care will be taken to avoid videotaping other children and family members not participating in the study. If such individuals are inadvertently taped, either those tapes will not be used or consents will be obtained from those individuals prior to using the tapes. I have been informed that the videotape may be shown to other professionals at research meetings.

____________________________________  ______________________
Signature of Subject                  Date

____________________________________  ______________________
Signature of Investigator              Date
Appendix E: Partial Interval Scoring Sheets

Date: _______ Time: ________ Participant: __________________________ Pre Post 1 2

Setting/Activity:
__________________________________________________________________________

& Secondary Observers: ______________________________________________________

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<th>AGG VOC</th>
<th></th>
<th>AGG VOC</th>
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</table>
Appendix F: Sample of Specific Child Behaviors

Date: ________ Time: __________ Participant: __________ Pre Post 1 2

Setting: ______________________________________ Data Collector: __________

<table>
<thead>
<tr>
<th>Child Behavior</th>
<th>Definition</th>
<th>Description From Video</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggression</td>
<td>Striking or attempting to strike or injure another person with any part of their body or an object (e.g., hitting, kicking, biting, pushing, throwing object at a person).</td>
<td></td>
</tr>
<tr>
<td>Vocalization</td>
<td>Crying or screaming involving high-pitched sounds which exceeds normal conversational volume.</td>
<td></td>
</tr>
<tr>
<td>Destruction</td>
<td>Slamming, striking, or throwing with risk of damage to those items (i.e., versus tossing a ball during play).</td>
<td></td>
</tr>
<tr>
<td>Opposition</td>
<td>Refusing to follow a direct request by saying or shaking head “no,” turning or pulling away from the adult, actively resisting physical guidance (e.g., dropping to the ground, running away, struggling to retain an item), or engaging in behavior again immediately after being told no.</td>
<td></td>
</tr>
<tr>
<td>Self-Stimulation</td>
<td>Repetitive movements including flapping, rocking, manipulating fingers, or flipping items.</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Behaviors of concern specific to child.</td>
<td></td>
</tr>
<tr>
<td>Engagement</td>
<td>Participating in an activity by manipulating the items or completing steps in the tasks for the majority of the interval (even if accompanied by problem behavior).</td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td>Initiating or responding to another person verbally (words, sounds) or non-verbally (gestures, movement, contact); that interaction results in a positive response from the other person.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix G: Motivation Assessment Scale (MAS)

Motivation Assessment Scale
by V. Mark Durand and Daniel Crimmins

Name ________________________________  Today's Date ___/___
Rater ________________________________
Behavior Description ________________________________

Setting Description ________________________________

GENERAL INSTRUCTIONS

Name: Enter the name of the individual with the problem behavior.

Rater: Enter the name of the person filling out the scale or being interviewed.

Behavior Description: Enter a specific behavior (e.g., hits his head) rather than a more general description of the individual's behavior (e.g., he gets upset).

Setting Description: Specify the situation where the behavior is a problem (e.g., at home after dinner, during lunch, during one-on-one teaching).

INSTRUCTIONS TO RATERS

Rate each of the 16 items on the following two pages by circling the number that corresponds to about how often the individual engages in the behavior indicated, in the setting which has been selected.
Appendix G: (Continued)

Motivation Assessment Scale

<table>
<thead>
<tr>
<th>ITEM</th>
<th>RESPONSE</th>
</tr>
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<tbody>
<tr>
<td>Would the behavior occur continuously, over and over, if this person was left alone for long periods of time? (For example, several hours.)</td>
<td>Never</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Does the behavior occur following a request to perform a difficult task?</td>
<td>Never</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Does the behavior seem to occur in response to your talking to other persons in the room?</td>
<td>Never</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Does the behavior ever occur to get a toy, food or activity that this person has been told that he or she can’t have?</td>
<td>Never</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Would the behavior occur repeatedly, in the same way, for very long periods of time, if no one was around? (For example, rocking back and forth for over an hour.)</td>
<td>Never</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Does the behavior occur when any request is made of this person?</td>
<td>Never</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Does the behavior occur whenever you stop attending to this person?</td>
<td>Never</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Does the behavior occur when you take away a favorite toy, food, or activity?</td>
<td>Never</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
Appendix G: (Continued)

<table>
<thead>
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<th>RESPONSE</th>
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</thead>
<tbody>
<tr>
<td>9. Does it appear to you that this person enjoys performing the behavior? (It feels, tastes, looks, smells, and/or sounds pleasing.)</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>10. Does this person seem to do the behavior to upset or annoy you when you are trying to get him or her to do what you ask?</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>11. Does this person seem to do the behavior to upset or annoy you when you are not paying attention to him or her? (For example, if you are sitting in a separate room, interacting with another person.)</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>12. Does the behavior stop occurring shortly after you give this person the toy, food or activity he or she has requested?</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>13. When the behavior is occurring, does this person seem calm and unaware of anything else going on around him or her?</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>14. Does the behavior stop occurring shortly after (one to five minutes) you stop working or making demands of this person?</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>15. Does this person seem to do the behavior to get you to spend some time with him or her?</td>
<td>0 1 2 3 4 5 6</td>
</tr>
<tr>
<td>16. Does this behavior seem to occur when this person has been told that he or she can't do something he or she had wanted to do?</td>
<td>0 1 2 3 4 5 6</td>
</tr>
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</table>
### SCORING

Transfer the numeric **Response** for each **Item** to the blanks below. Scores are organized into columns by type of motivation. Total each column of numbers (**Total Score**) and calculate the **Mean Score** (**Total Score** divided by 4) for each motivation. Determine the **Relative Ranking** for each motivation by assigning the number “1” to the motivation with the highest **Mean Score**, “2” to the motivation with the second-highest **Mean Score**, and so forth.

<table>
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<tr>
<th>Sensory</th>
<th>Escape</th>
<th>Attention</th>
<th>Tangible</th>
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<td>7.</td>
<td>8.</td>
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<td>10.</td>
<td>11.</td>
<td>12.</td>
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<tr>
<td>13.</td>
<td>14.</td>
<td>15.</td>
<td>16.</td>
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</table>

**Total Score** = 

**Mean Score** = 

**Relative Ranking** =
Appendix H: Sample Procedural Fidelity Checklist

**Procedural Fidelity Checklist**

Session 3: Analysis and Plan Design

Therapist: _____________   Code: _________   Participant(s): _____________________

*During the session, the therapist*

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<th>No</th>
<th>Criterion</th>
<th>Notes</th>
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<tr>
<td></td>
<td></td>
<td>I. A. Reviewed and provided feedback on homework (i.e., information gathered, MAS, current hypotheses) and collected weekly progress report</td>
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<td></td>
<td>Asked participant(s) to share a success and thoughts/feelings associated with event and the consequences of their self-talk</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Asked participant(s) to share a difficulty and thoughts/feelings associated with event and the consequences of their self-talk</td>
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<tr>
<td></td>
<td></td>
<td>I. B. Explained the disputation process, including evaluating evidence, alternative explanations, and the usefulness of the belief they described when relaying their success/difficulty</td>
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<tr>
<td></td>
<td></td>
<td>Asked participant to use disputation process to evaluate a negative belief</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>II. A. Explained the purpose of analyzing information to figure out the patterns affecting behavior (i.e., 4 Ws, outcomes/reactions, broader issues) and provided examples</td>
<td></td>
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<td></td>
<td>II. B. Practiced analyzing patterns using videotaped examples and/or interviews and observations (identified at least one antecedent/consequence)</td>
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<td>III. Explained and provided examples of hypothesis statements</td>
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<td>Guided participant to review the information they have collected and develop at least one hypothesis statement</td>
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<td>IV. Described how summary statements provide the foundation for intervention and shared examples; introduced 3 categories of intervention: preventing problems, replacing behaviors, and managing consequences</td>
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<tr>
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<td></td>
<td>Practiced identifying intervention strategies to prevent problems, teach skills, and manage consequences based on an example of a summary statement</td>
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Appendix H: (Continued)

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<th>No</th>
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<tr>
<td><strong>Helped participant brainstorm ideas for intervention for their child based on one of the hypotheses they generated (at least one to prevent problems, teach skills, and manage consequences)</strong></td>
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<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>V. Provided instructions and reviewed forms for completing homework (i.e., work with family and others to develop summary statements and continue gathering data; continue to identify thoughts and feelings associated with successes and difficulties, consequences of self-talk, and efforts at using the disputation process)</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td><strong>Prompted discussion of self-talk within the session through questioning, probing, and rephrasing (e.g., “What were you thinking when that happened? In that situation, what do you say to yourself? How did you react as a result? Do you think the belief is true/useful? What other ways could you explain what happened?”) – during PFI sessions, this should have been done a minimum of three times</strong></td>
<td></td>
</tr>
</tbody>
</table>

Session Date: _____________________________   Total Time: _______:________ (rounded to minute)

Rater’s Initials: ________  primary  secondary
Appendix I: Behavioral Adherence Rating Scale (BARS)

Behavioral Adherence Rating Scale (BARS)

Parents Name: ___________________________ Date: ______________________

Provide the hypothesis statement parents developed during sessions.

Hypothesis Statement: ____________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

Describe each of the specific techniques below that were used with this parent’s child.

a. Functional assessment: ___________________________________

_________________________________________________________________

_________________________________________________________________

b. Prevention Strategies: ________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

c. Replacement Strategies: _________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

d. Managing Consequences: ________________________________

_________________________________________________________________

_________________________________________________________________
Appendix I: (Continued)

With these specific strategies in mind, how would you answer the following questions about how you used them during treatment and afterward?

**Functional Assessments**

1. Did you use or refer to one or more functional assessment tools (for example, ABC chart, Motivation Assessment Scale) as described in the treatment sessions

   a. during the time you received sessions with the therapist?
      
      1 2 3 4 5 6 7
      Never Almost Never Seldom Sometimes Usually Almost always Always

   b. during the time you received sessions with the therapist?
      
      1 2 3 4 5 6 7
      Never Almost Never Seldom Sometimes Usually Almost always Always

   c. during the time of the one-year follow-up?
      
      1 2 3 4 5 6 7
      Never Almost Never Seldom Sometimes Usually Almost always Always

**Treatment Components**

2. Did you use prevention strategies for your child's problem behavior as described in the treatment sessions

   a. during the time you received sessions with the therapist?
      
      1 2 3 4 5 6 7
      Never Almost Never Seldom Sometimes Usually Almost always Always

   b. during the videotaping at the end of the sessions?
      
      1 2 3 4 5 6 7
      Never Almost Never Seldom Sometimes Usually Almost always Always

   c. one or more times after the sessions?
      
      1 2 3 4 5 6 7
      Never Almost Never Seldom Sometimes Usually Almost always Always

   d. during the time of the one year-year follow-up?
      
      1 2 3 4 5 6 7
      Never Almost Never Seldom Sometimes Usually Almost always Always

   e. during the videotaping at the one-year follow-up?
      
      1 2 3 4 5 6 7
      Never Almost Never Seldom Sometimes Usually Almost always Always
Appendix I: (Continued)

3. Did you use replacement strategies for your child's problem behavior as described in the treatment sessions
   a. during the time you received sessions with the therapist?
      1 2 3 4 5 6 7
      Never  Almost Never  Seldom  Sometimes  Usually  Almost always  Always
   b. during the videotaping at the end of the sessions?
      1 2 3 4 5 6 7
      Never  Almost Never  Seldom  Sometimes  Usually  Almost always  Always
   c. one or more times after the sessions?
      1 2 3 4 5 6 7
      Never  Almost Never  Seldom  Sometimes  Usually  Almost always  Always
   d. during the time of the one year-year follow-up?
      1 2 3 4 5 6 7
      Never  Almost Never  Seldom  Sometimes  Usually  Almost always  Always
   e. during the videotaping at the one-year follow-up?
      1 2 3 4 5 6 7
      Never  Almost Never  Seldom  Sometimes  Usually  Almost always  Always

4. Did you use behavioral consequences for your child's problem behavior as described in the treatment sessions
   a. during the time you received sessions with the therapist?
      1 2 3 4 5 6 7
      Never  Almost Never  Seldom  Sometimes  Usually  Almost always  Always
   b. during the videotaping at the end of the sessions?
      1 2 3 4 5 6 7
      Never  Almost Never  Seldom  Sometimes  Usually  Almost always  Always
   c. one or more times after the sessions?
      1 2 3 4 5 6 7
      Never  Almost Never  Seldom  Sometimes  Usually  Almost always  Always
   d. during the time of the one year-year follow-up?
      1 2 3 4 5 6 7
      Never  Almost Never  Seldom  Sometimes  Usually  Almost always  Always
   e. during the videotaping at the one-year follow-up?
      1 2 3 4 5 6 7
      Never  Almost Never  Seldom  Sometimes  Usually  Almost always  Always
Appendix I: (Continued)

**Barriers**

5. If you did not use behavioral consequences for your child's problem behavior as described in the treatment sessions, was it because
   a. you tried but it was unsuccessful?
      
      1  2  3  4
      Strongly Disagree  Disagree  Agree  Strongly Agree
   
   b. there was not enough time to do it?
      
      1  2  3  4
      Strongly Disagree  Disagree  Agree  Strongly Agree
   
   c. it was too difficult to carry out?
      
      1  2  3  4
      Strongly Disagree  Disagree  Agree  Strongly Agree
   
   d. your child resisted?
      
      1  2  3  4
      Strongly Disagree  Disagree  Agree  Strongly Agree
   
   e. it was no longer needed?
      
      1  2  3  4
      Strongly Disagree  Disagree  Agree  Strongly Agree

6. If you did not use prevention strategies for your child's problem behavior as described in the treatment sessions, was it because
   a. you tried but it was unsuccessful?
      
      1  2  3  4
      Strongly Disagree  Disagree  Agree  Strongly Agree
   
   b. there was not enough time to do it?
      
      1  2  3  4
      Strongly Disagree  Disagree  Agree  Strongly Agree
   
   c. it was too difficult to carry out?
      
      1  2  3  4
      Strongly Disagree  Disagree  Agree  Strongly Agree
   
   d. your child resisted?
      
      1  2  3  4
      Strongly Disagree  Disagree  Agree  Strongly Agree
   
   e. it was no longer needed?
      
      1  2  3  4
      Strongly Disagree  Disagree  Agree  Strongly Agree
Appendix I: (Continued)

7. If you did not use replacement strategies for your child's problem behavior as described in the treatment sessions, was it because
   a. you tried but it was unsuccessful?
      1  2  3  4
      Strongly Disagree Disagree Agree Strongly Agree
   b. there was not enough time to do it?
      1  2  3  4
      Strongly Disagree Disagree Agree Strongly Agree
   c. it was too difficult to carry out?
      1  2  3  4
      Strongly Disagree Disagree Agree Strongly Agree
   d. your child resisted?
      1  2  3  4
      Strongly Disagree Disagree Agree Strongly Agree
   e. it was no longer needed?
      1  2  3  4
      Strongly Disagree Disagree Agree Strongly Agree

8. Rank the following strategies as to how often you use them with your child (1= most used, 2= sometimes used, 3= least used):

   Prevention strategies: ________

   Replacement strategies: ________

   Behavioral consequences: ________
Appendix J: Gift Card Confirmation Form

Gift Card Confirmation Form
Positive Family Intervention Project, USF St. Petersburg

Participant Name: __________________________________________________________

Social Security Number: ____________________________________________________

Mailing Address: __________________________________________________________
________________________________________________________________________
________________________________________________________________________

Incentive for completing interview
Amount of gift card: $ __________

Note: The University of South Florida does not report research participants’ stipend to the I.R.S. unless the sum total of the stipends exceeds $600.00 in any given calendar year.

Participants Signature: _____________________________________________________

Researcher’s Signature: ____________________________________________________

Date: ____________________________________________________________________
Appendix K: Flow Chart for Proactive and Passive Strategies

Dinner Routine

Proactive

"It is time for dinner"

Child walks to the dinner table

"Sit on the chair and eat your food"

Child remains standing beside the table

Parent walks up to the child points to the chair and physically guides the child to the seat

Child completes the routine by eating the food

Passive

"It is time for dinner" (after 3 times)

No Interaction

Child delays or avoids task completion
## Appendix L: Partial Interval Recording for Prevention Strategies

<table>
<thead>
<tr>
<th>Date:</th>
<th>Time:</th>
<th>Participant:</th>
<th>Post</th>
<th>1-Year</th>
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</thead>
<tbody>
<tr>
<td>Setting/Activity:</td>
<td>Data Collector:</td>
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Appendix M: BARS Section 1

Completed example of section 1

Behavioral Adherence Rating Scale (BARS)

Parent's Name: Joe Doe  
Date: 11/21/09

Interviewer: Joe Doe

Provide the hypothesis statement parents developed during sessions.

Hypothesis Statement:

✓ When Joe Doe is requested to complete a task while he is engaged in a preferred activity, he will continue with what he is doing and ignore the request. This results in Joe Doe delaying the task completion, continuing preferred activity, receiving assistance, and receiving intermittent attention when mom raises her voice, which may serve as a signal that she will make him do it.

Describe each of the specific techniques below that were used with this parent's child.

a. Functional assessment:

✓ A-B-C behavior logs
✓ Interviewed team members (e.g., “wh” questions)
✓ MAS

b. Prevention strategies:

✓ remove preferred activity prior to giving the request
✓ provide Joe Doe with an advance notice (five min.)
✓ use a consistent neutral tone of voice and wording with questions and directions

c. Replacement strategies:

✓ remove preferred activity prior to giving the request
provide Joe Doe with an advance notice (five min.)

e. Behavioral consequences:

✓ if he follows instructions then Joe Doe may engage in a preferred activity; if he doesn’t follow instructions then he will not be allowed to engage in a preferred activity
✓ if he asks for help and is trying to follow a direction, assistance should be provided; if he doesn’t follow directions, help will not be provided
✓ praise him immediately after he follows directions and avoid repeating requests or raising your voice. Praise must have a larger impact than when correcting him.
Appendix N: Interview Protocol

A. Opening. The opening will include an introduction of the interviewer, a reminder of participant’s previous involvement in BPT sessions, purpose of the interview, incentive for completing the BARS, and provide assurance of confidentiality for the participant.

Introduction: “Hello, this is [interviewer’s name], from the Positive Family Intervention project at USF, St. Petersburg, the research study you participated about (length of time) ago. I’m calling you because you completed eight sessions with [therapist name], as well as paperwork and videotaping at least one-year after completing the sessions.

The purpose of this phone call is to interview you about the behavior plan you developed during the sessions with [therapist name]. As an incentive, we are offering you a $25.00 Wal-Mart gift card for participating in the interview. In order to receive the $25.00 Wal-Mart gift card, the university will require you to fill out a form, which includes your social security number. This interview will be placed on speakerphone for research purposes and may take approximately (ten to fifteen minutes). You may end the interview at any time. Would you be willing to participate in this interview?”

Allow the individual to answer. Respond to any questions the participant may have.

If no then continue by saying:

“Okay, thank you for your time, have a nice day.”

If yes then continue by saying:

“I appreciate you willingness to participate in this interview. Do you have time to complete the interview at this moment or would you like to schedule a time that is convenient for you?”

If the participant prefers to schedule the interview, set a time to call back.
Appendix N: (Continued)

B. Questions: During the interview review section 1 and inform the participants that specific parts of section 1 will be referred to throughout the remainder of the questionnaire. For example, if a question in section 2 includes the term “behavioral consequences,” participants must answer according to the information under “behavioral consequences” in section 1. Prompts in bold after each question serves as a reminder to refer back to a specific area of section 1. When introducing section 2 and 3 inform the participants to answer the question according to the rating or ranking scale.

Questions should be slightly modified to be consistent with language used during sessions. For example, if a multi-component treatment was frequently referred to as a behavior plan during sessions then the term “behavior plan” should substitute the term “multi-component treatment” when asking questions.

C. Closing: The closing will involve expressing appreciation to the participant for answering the questions. The interviewer will request for a current address and schedule a convenient time and place for the researcher to hand-deliver the $25.00 Wal-Mart gift.

"Thank you very much for taking the time to answer these questions. Let’s schedule a date and time to make sure you receive your $25.00 Wal-Mart gift card. Can you please give me an address where this can be hand-delivered to you? Again thank you for you time."
Appendix O: Procedural Fidelity Checklist for BARS Interview

Procedural Fidelity Checklist

Participant: ____________________ Reviewer: ____________________ Date: __________

During the interview the therapist completed the following items:

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reviewed the hypothesis statement the participant developed during</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sessions in section 1.</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Reviewed the functional assessment tools the participant used during the</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>sessions in section 1.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Reviewed the behavioral consequences the participant developed during</td>
<td>Yes</td>
<td></td>
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<tr>
<td>sessions in section 1.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Reviewed the prevention strategies the participant developed during</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>sessions in section 1.</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Informed participants that items in section 1 will be referred to</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>throughout the remainder of the questionnaire.</td>
<td>No</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Functional Assessment Category</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>When introducing the functional assessment category the interviewer</td>
<td></td>
<td></td>
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<tr>
<td>informed participants to answer questions according to the 7-point scale</td>
<td></td>
<td></td>
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<tr>
<td>(interviewer reviewed the scale and repeated as necessary).</td>
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<tr>
<td>Asked question 1:</td>
<td></td>
<td></td>
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<tr>
<td>Did you use or refer to one or more functional assessment tools (for</td>
<td></td>
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<tr>
<td>example, ABC chart, Motivation Assessment Scale) as described in the</td>
<td></td>
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<tr>
<td>treatment sessions</td>
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<tr>
<td>during the time you received sessions with the therapist?</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>one or more times after the sessions?</td>
<td>Yes</td>
<td></td>
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<tr>
<td>during the time of the one-year follow-up?</td>
<td>Yes</td>
<td></td>
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<tr>
<td>Yes</td>
<td>No</td>
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<tr>
<td><strong>Treatment Components Category</strong></td>
<td><strong>(Continued)</strong></td>
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</tbody>
</table>

When introducing the treatment components category the interviewer informed participants to answer questions according to the 7-point scale (interviewer reviewed the scale and repeated as necessary).

**Asked question 2:** Did you use behavioral consequences for your child’s problem behavior as described in the treatment sessions

- during the time you received sessions with the therapist?
- during the videotaping at the end of the sessions?
- one or more times after the sessions?
- during the time of the one-year follow-up?
- during the videotaping at the one-year follow-up?

**Asked question 3:** Did you use prevention strategies for your child’s problem behavior as described in the treatment sessions

- during the time you received sessions with the therapist?
- during the videotaping at the end of the sessions?
- one or more times after the sessions?
- during the time of the one-year follow-up?
- during the videotaping at the one-year follow-up?

**Asked question 4:** Did you use replacement strategies for your child’s problem behavior as described in the treatment sessions

- during the time you received sessions with the therapist?
- during the videotaping at the end of the sessions?
- one or more times after the sessions?
- during the time of the one-year follow-up?
- during the videotaping at the one-year follow-up?
Appendix O: (Continued)

<table>
<thead>
<tr>
<th>Barriers Category</th>
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Appendix O: (Continued)

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>your child resisted?</td>
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<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>it was no longer needed?</td>
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### Ranking of Components

<table>
<thead>
<tr>
<th></th>
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<th>No</th>
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<tbody>
<tr>
<td></td>
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<td></td>
<td>Read the final statement:</td>
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<tr>
<td></td>
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<td></td>
<td>Rank the following strategies as to how often you use them with your child (1=most used, 2=sometimes used, or 3=least used):</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Behavioral consequences</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Prevention strategies</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Replacement strategies</td>
</tr>
</tbody>
</table>

**Notes:**