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Training Parents to Treat Noncompliance in Children with Developmental Disabilities Using Guided Compliance

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TRAINING PARENTS TO TREAT NONCOMPLIANCE IN CHILDREN WITH DEVELOPMENTAL DISABILITIES USING GUIDED COMPLIANCE

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TRAINING PARENTS TO TREAT NONCOMPLIANCE IN CHILDREN WITH DEVELOPMENTAL DISABILITIES USING GUIDED COMPLIANCE

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Noncompliance with parental directions is a critical target for children with developmental disabilities for several reasons, including the frequency of the problem and its impact on caregivers. Three decades of research have shown the effectiveness of guided compliance with children with developmental disabilities; however, only a few studies have examined the effects of parent-implemented guided compliance with this population (Handen, Parrish, McClung, Kerwin, & Evans, 1992; Smith & Lerman, 1999; Tarbox, Wallace, & Penrod, 2003). Three children with developmental disabilities and one primary caregiver for each participated in the present study. Parents were trained in three-step guided compliance (i.e., command, gestural prompt, and physical prompt) via a PowerPoint® presentation with embedded video models. They rehearsed the procedure with a confederate until mastery and then implemented it. Results showed that following parent training, all three parents implemented the procedure with a high degree of treatment integrity. The physical prompt step was the most difficult to implement. Children's compliance levels increased significantly from baseline for 2 of the 3 children. Recommendations regarding the content and format of computerized instruction and clinician-delivered parent training of the guided compliance procedure are discussed.

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INTRODUCTION

Treating Noncompliance

Noncompliance is a critical target for children with developmental disabilities for several reasons, including the frequency of the problem and the impact noncompliance has on caregivers (Lutzker & Steed, 1998). Charlop, Parrish, Fenton, and Cataldo (1987) found noncompliance to be the leading reason for seeking behavioral services among parents of children with developmental disabilities. Noncompliance with parental directions can produce parent-child conflicts, child skill deficits, and child motivational deficits (Handen et al., 1992). McMahon and Forehand (2003) acknowledged the potential development of severe behavior disorders when noncompliant children enter adolescence and when noncompliant adolescents become adults, making treatment of noncompliance at a young age vital. The stress associated with parenting a noncompliant child and the potential for poor child outcomes have motivated behavior analysts to develop an array of interventions to address noncompliance.

In the past 30 years, a variety of interventions for noncompliance have been studied with children with autism and other developmental disabilities (Smith & Lerman, 1999; Van Hasselt, Sisson, & Aach, 1987). Most behavioral interventions for noncompliance have included multiple components presented as a treatment package. Some of the most common components include effective requests and consequence-based procedures (Ducharme & Popynick, 1993; Rickert et al., 1988).

Consequences can be provided for noncompliance (e.g., punishment/time-out, physical guidance), for compliance (e.g., reinforcement such as praise), or for both in the form of differential attention (i.e., reinforcement for compliance and extinction for noncompliance; Sajwaj & Dillon, 1977). Of these components, differential attention and time-out have received substantial research attention.

Differential attention has not always proven effective for noncompliance (McMahon & Forehand, 2003). Roberts, Hatzenbuehler, and Bean (1981) evaluated the effects of differential attention and time-out on decreasing noncompliance in 32 preschool-aged children. The study was conducted in a clinic setting with mothers serving as the intervention agents. Each mother-child pair was randomly assigned to one of four experimental groups: attention, time-out, attention plus time-out, and control. Their results indicated that increased compliance was strongly associated with the use of a time-out contingency; however, attention manipulations did not have a measurable effect on child behavior. Ducharme, Harris, Milligan, and Pontes (2003) investigated the effectiveness of using differential attention to treat noncompliance in four children diagnosed with developmental disabilities and severe oppositional behavior. The researchers used a multiple-baseline design across participants to examine the effects of reinforced compliance (i.e., differential attention). However, for each participant the intervention produced only modest results and a second intervention of reinforced compliance plus graduated request delivery was implemented. Differential attention by itself yielded negligible improvements in child compliance over baseline. Conversely, the use of a graduated

hierarchy of requests in addition to differential attention resulted in substantial improvements in compliance.

Several factors may account for the relatively weak effects of differential attention for noncompliance. First, compliance must occur before attention can be delivered as a consequence and compliance is a very low probability response for children with severe noncompliance. Additionally, differential attention is a non-function based intervention in that the probable functional reinforcer for noncompliance (i.e., escape from demands) is potentially still available and in direct competition with attention, which may be a relatively weak reinforcer. Finally, differential attention is sometimes viewed by parents as a less acceptable treatment technique than other approaches such as positive reinforcement and response cost (Jones, Eyberg, Adams, & Boggs, 1998) and lower acceptability may result in poor procedural integrity.

Time-out as a means of addressing noncompliance has also yielded some ambiguous results. As indicated above, Roberts et al. (1981) found time-out to be more effective than differential attention in decreasing noncompliance but other studies have indicated that children may exhibit strong physical resistance to time-out. Roberts (1984) explored the effects of training children in time-out contingencies prior to intervention on child resistance to time-out. Twenty mother-child pairs were assigned to experimental and control groups based on age and baseline compliance. Members of the experimental group experienced a demonstration/model of the time-out contingency for target behaviors prior to

implementation of the intervention. Children in both conditions were equally likely to resist time-out and children in the experimental group generally experienced longer time-outs than their matched control subjects.

Time-out as a consequence for noncompliance has at least two major drawbacks (Handen et al., 1992). First, time-out delivered contingent upon noncompliance may inadvertently increase noncompliance via a negative reinforcement function (i.e., removal from the instructional situation may serve as escape from a difficult or bothersome task). Second, time-out does not include an educational component (e.g., modeling), which may be important if the child's noncompliance results from skill deficits or lack of history with the required task. Although time-out has been shown to be effective in various investigations, some researchers caution that time-out in isolation is not as effective as time-out combined with social reinforcement for compliance (Roberts et al., 1981).

Guided Compliance: Procedural Variations, Benefits, and Limitations

In contrast to the mixed findings with differential reinforcement and time-out, three decades worth of research have shown the effectiveness of guided compliance with children with developmental disabilities (Horner & Keilitz, 1975; Neef, Shafer, Egel, Cataldo, & Parrish, 1983; Smith & Lerman, 1999; Whitman, Zakaras, & Chardos, 1971). Guided compliance incorporates antecedent components such as effective requests with consequences for child behavior. The first step of guided compliance is the delivery of a clear, concise command. This approach to request delivery has been shown to result in better compliance in children with developmental

disabilities as opposed to vague interrupted commands and instructions (Breiner & Beck, 1984). Following the command, reinforcement (e.g., praise) is delivered if the child initiates and completes the desired behavior independently. If the child fails to comply with an instruction, the child is guided through the requested behavior. Several variations of guided compliance have been implemented over the years but all include these three critical components.

One common variant of guided compliance includes three different types of prompts (Smith & Lerman, 1999). The first, a vocal prompt, includes either repeating the command or rephrasing or elaborating on it during a second delivery (typically 10 s after the initial request). The second type of prompt is gestural and includes pointing at relevant materials or motioning towards the desired response. Another form of this step in the guided compliance procedure is a model prompt that consists of showing the learner how to do the desired behavior from start to finish without any physical manipulation of the learner. The final prompt type, a physical prompt, involves direct physical contact with the learner in some form (e.g., a tap, holding the learner by the shoulders and walking the learner to the materials, hand-over-hand guiding the learner through the desired behavior) until task completion is achieved.

Some studies have called guided compliance “three-step compliance”, in which the vocal, gestural, and physical prompts represent the three steps (Tarbox et al., 2003). However, variation is evident in the literature regarding how many steps make up a trial. Some studies have considered the initial delivery of the command the vocal prompt, while others have used the three-prompt hierarchy after the initial

command. Another variation in guided compliance is the use of partial physical prompts (e.g., nudging the learner's arm, lightly touching the learner's back to set him/her in motion) followed by more complete physical guidance. A final variant has used the initial command followed directly by physical guidance without intermediate steps of gestural prompts or models (Handen et al., 1992).

Guided compliance may have several benefits over basic differential attention or time-out, as well as its own limitations. First, guided compliance avoids the extended delay in achieving compliance and task completion that parents must endure with a differential attention or time-out procedure. Guided compliance promotes immediate task completion by showing the child exactly what to do. Second, guided compliance is often viewed as a milder or less intrusive consequence than time-out (Handen et al., 1992), which may mean higher treatment acceptability for parents. A potential limitation of guided compliance is that the procedure may operate via a punishment effect if physical manipulation is aversive to the learner because physical guidance occurs as a consequence for noncompliance. Guided compliance shares a limitation encountered with time-out when a child is severely oppositional and resists physical interventions in that the parent may have difficulty physically managing the child. Researchers have recommended using less intrusive interventions (e.g., errorless compliance) with children who exhibit additional problem behavior when physically manipulated by others (Ducharme & Popynick, 1993; Mace et al., 1988).

Parent-implemented Guided Compliance with Children with Developmental Disabilities

Several studies have compared parent-implemented guided compliance with other behavioral interventions in increasing compliance of children with various disabilities (Handen et al., 1992; Smith & Lerman, 1999) and the most recent studies are reviewed here. Handen et al. compared guided compliance to time-out in reducing noncompliance for 5 children with mild developmental disabilities using a counterbalanced ABAC design. Trained therapists implemented each procedure until the generalization phase when parents began implementation. Results showed that time-out (i.e., removal of the child from a play environment) was more effective for decreasing noncompliant behavior in 4 of the 5 participants. Potential explanations for these results include avoidance learning resulting from the time-out interval lasting 20 s longer than the guided compliance interval, and easier discrimination of the time-out procedure due to its clear difference from ongoing play interactions. The most likely explanation was that time-out resulted in less adult attention for oppositional behavior than guided compliance (Handen et al.). No functional analysis was conducted in this study, and the researchers suggested that child noncompliance might have been maintained by adult attention, which would result in better success of the time-out procedure compared to guided compliance.

Smith and Lerman (1999) also conducted a comparative study on guided compliance. Two noncompliant children with developmental disabilities were referred to an outpatient clinical setting, and their parents were trained in two

procedures: guided compliance and high-probability (high-*p*) instructional sequences. High-*p* instructional sequences involve the presentation of several instructions with which the child is likely to comply prior to the presentation of an instruction with which the child is not likely to comply (Mace et al., 1988). The guided compliance procedure consisted of the initial command followed by a gestural and physical prompt contingent upon noncompliance. The researchers used a multi-element design and a multiple-baseline design across participants to compare the effects of treatment on child compliance. The two procedures were analyzed in terms of treatment effectiveness, procedural integrity, and parent satisfaction. Results of the parent satisfaction questionnaire yielded equal satisfaction with the two procedures. However, mean percentage of child compliance to parental demands was higher under the guided compliance procedure. Smith and Lerman did not expect this high-*p* procedural ineffectiveness and caution that interaction effects may have contributed to these lower levels of compliance. Parent behavioral measures showed high levels of treatment integrity for both procedures, ruling out the potential for parent behavior being responsible for the difference in treatment effectiveness.

Tarbox et al. (2003) analyzed the effectiveness of caregiver implemented guided compliance (i.e., three-step compliance) using a multiple-baseline design across dyads with an embedded multiple-baseline within participant across caregivers. The procedure consisted of the initial command, a model prompt, and physical prompt. Two participants were diagnosed with a pervasive developmental disorder (autism and Asperger's Syndrome), and one had a diagnosis of Attention-

Deficit/Hyperactivity Disorder (ADHD). Mothers of the participants with ADHD and Asperger's Syndrome were trained in the procedure in the home environment, whereas sessions with the child with autism were conducted in school with his teacher, summer teacher, and aide. Baseline data revealed that all caregivers displayed high levels of prompts per demand and all 3 children engaged in a low percentage of compliance. After caregiver training, percent compliance increased and prompts per demand decreased for every child and caregiver. Generalization was tested for the child with autism, and effects generalized to novel demands for all 3 of his caregivers. A one-year follow-up for the participant with Asperger's Syndrome demonstrated maintenance of treatment gains.

To summarize, many studies have targeted the effectiveness of guided compliance with children with developmental disabilities (Horner & Keilitz, 1975; Smith & Lerman, 1999; Whitman et al., 1971) primarily as a skill acquisition tool rather than as a treatment for noncompliance (Tarbox et al., 2003). Few of these studies have focused on parent training and parent implementation of the procedure, and only one published study has reported data on parental treatment integrity (Smith & Lerman). The current study aims to address each of these limitations (see Purpose and Rationale) using a detailed parent training procedure based on the training literatures reviewed below.

Parent Training Procedures

When targeting noncompliance in children, parents often make the ideal primary intervention agents because they usually have the most opportunities to teach their children in a variety of settings (Marcus, Swanson, & Vollmer, 2001). Throughout the past several decades, a variety of approaches to teaching parents skills to alter their children's behavior have been developed and investigated (Forehand et al., 1979). One of these approaches commonly used in the field of applied behavior analysis is "behavioral skills training" (BST) which refers to an intervention package used to train caregivers to implement behavioral procedures (Miltenberger & Thiesse-Duffy, 1988). The BST model consists of four components: instructions, modeling, rehearsal, and feedback. Package interventions incorporating these instructional components have been used for several decades, and its effectiveness in training parents is widely documented (Allen & Warzak, 2000; Kuhn, Lerman, & Vorndran, 2003; Lutzker & Steed, 1998; Parrish, 1986). Research analyzing the use of only a few BST components (e.g., verbal and written instructions only) for cost-efficiency purposes have yielded inconclusive results, and some researchers have warned against such practices until further studies are conducted (Lerman, Swiezy, Perkins-Parks, & Roane, 2000).

Training sessions typically begin with the instructions and modeling components. Instructions can be verbally or visually presented and describe the appropriate behavior for the caregiver. Miltenberger (2003) stresses the importance of detailed instructions that specify expected caregiver behavior(s), each procedural

component, and appropriate circumstances in which the caregiver should implement the reductive procedure. Modeling and role-playing allows the therapist to demonstrate the proper execution of the procedure. For generalization purposes, the procedure should be modeled in various ways and in a variety of contexts.

After careful observation of the model, the caregiver should experience the rehearsal and feedback components of the BST package. Rehearsal gives the caregiver the opportunity to practice implementing the procedure with praise for correct performance and corrective feedback for any errors (Miltenberger, 2003). If substantial errors are observed, the therapist can model again and repeat the modeling, rehearsal, and feedback components until the caregiver can correctly execute the procedure in several contexts or in response to several scenarios that simulate the actual situations the caregiver is likely to encounter with the child. Miltenberger stresses the importance of including praise during every instance of feedback delivery even if performance is completely incorrect. Also, corrective feedback should be descriptive, phrased in a positive manner, and should focus on one aspect of the performance at a time.

When the caregiver has graduated through all four steps of BST, the therapist can bring the child into the setting and begin the treatment phase of the parent training. At that point, the caregiver is ready to implement the procedure with the child in the clinical setting. Evaluation of the caregiver's performance is critical at this stage. This portion of parent training may be viewed as an extension of the

rehearsal component, but with the child instead of a therapist acting in the child's role. The behaviors of both the parent and the child should then be recorded.

BST has been shown to be effective in many contexts for many targets (Allen & Warzak, 2000; Kuhn & Vorndran, 2003; Lutzker & Steed, 1998; Miltenberger, 2003; Parrish, 1986), but several interesting questions about BST remain.

Technology-based Innovations in Parent Training

Technology-based interventions in the form of video modeling and computer-based instruction have been incorporated into a few studies of parent training procedures. Video technology has been incorporated to enhance the modeling aspect of parent training throughout the past 2 decades (Webster-Stratton, 1981; Webster-Stratton & Hancock, 1998). In a comparative study, Webster-Stratton (1984) used a standardized video modeling program with both individual therapy and group therapy to train 35 mothers of children with conduct disorder how to alter their attitudes and interactions with their children. Reductions in noncompliance and deviant behavior were observed with both video modeling/group discussion participants and individual therapy program participants. In addition, there were no significant differences on any of the behavioral measures between the two approaches at the immediate and 1 year follow-up. However, parents who participated in individual therapy were more likely to seek additional therapy during the one-year follow-up, suggesting that these parents valued the training and therapy more than parents who participated in video modeling/group discussion.

The utility of video modeling has also been investigated and supported with parents of children with developmental disabilities. Reamer, Brady, and Hawkins (1998) investigated ways to improve interactions between two children with autism and their parents using video technology. Using a multiple-baseline design across families, researchers taught parents guided compliance (i.e., a verbal, model, and physical prompt hierarchy) to teach social-play skills and decrease assistance in self-care tasks. To help the parents improve interactions with their child, video self-modeling was used during the intervention (i.e., treatment phase). Results indicated increased parent-child social interactions and decreased parental assistance of self-help tasks in both families. However, the primary concern for these children was their skill deficits rather than noncompliance with tasks that could be independently completed.

A second way that technology has been incorporated into parent training is through the use of computer-based delivery of behavioral skills training components such as instructions, modeling, and feedback. In an unpublished dissertation, Munneke (2001) used two different technological components: video modeling and a Microsoft® Office PowerPoint® presentation. The presentation replaced direct clinician-parent contact during procedural training in an attempt to improve and make more enticing parent training of noncompliance treatment procedures. Three families of typically-developing children used the computer-based program to learn how to implement request making and tracking, positive point program, and time-out. The consumer satisfaction results were quite high for the computer program. All

participants enjoyed the video-based demonstrations and the ability to practice the instructional content with novel video scenarios (Munneke).

Video modeling and computer-based interventions are two technology-based approaches that have been proven effective in teaching parents to master intervention strategies with their children. Reamer et al. (1998) and Munneke (2001) added technology to enhance their interventions, and both found the technology-based components to be effective in training and intervention enhancement. Until recently, studies that have investigated the effectiveness of using technology-based interventions with parent training were scarce. This literature is relatively undeveloped when compared to the guided compliance literature, and the Reamer et al. (1998) study is the only known investigation that has used technology to supplement a guided compliance intervention. Considering the enormous impact technology has on today's society and the crisis of extensive waiting lists for clinician-delivered behavioral therapy, it is very important for behavior analysts to incorporate technology into their interventions as much as possible.

Rationale and Purpose

The previous literature reviews indicate three studies that have specifically examined the effectiveness of parent-implemented guided compliance with children with developmental disabilities. However, only one of these studies incorporated technology with the BST model (Reamer et al., 1998), and Smith and Lerman (1999) were the only investigators to include procedural integrity data to provide detailed information regarding parent implementation of the procedure (e.g., procedural

integrity, trials to criterion for parent performance). A robust literature indicates that BST can be effectively used to teach parents to implement a variety of behavioral procedures, and recent studies incorporating technology indicate that video and computer-based instructions may also prove valuable in parent training. The current study aimed to investigate the utility of a clinician-delivered parent training package aided with computerized instruction to teach parents to implement guided compliance with their children with disabilities. A PowerPoint® presentation was used during the instructions portion of the BST package, and video models of simulated noncompliance situations and implementation of the guided compliance procedure were used during the modeling component of BST.

Thus, the purpose of this study was threefold. First, this study was conducted to add to the guided compliance literature on the effectiveness of the procedure when implemented by parents of children with a developmental disability. Secondly, this study included data on treatment integrity of guided compliance in order to examine if any components of the procedure are particularly challenging for parents to learn and may require additional attention during parent training. Lastly, this study examined whether a computerized instructional program with embedded video models can effectively supplement traditional clinician-delivered parent training of the guided compliance procedure.

METHOD

Participants and Setting

Three children and one primary caregiver for each child participated in the study. All children had a primary diagnosis of a developmental disability (e.g., mental retardation, autism). Parents provided documentation of diagnosis by a doctor or private agency. Inclusion criteria were similar to that of Handen et al. (1992) in that all participants demonstrated ability to respond adequately to one-step requests during a pre-baseline screening which demonstrated compliance with each target request at least once. Additionally, children demonstrated substantial noncompliance defined as less than 50% mean compliance during pre-baseline screening and baseline.

Andrew was 5-years old with a primary diagnosis of Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS) rendered by a pediatrician. Andrew's receptive and expressive skills were age-appropriate. Andrew's mother, Amy, was a 42-year-old stay-at-home mother in an intact marriage. Her educational background included a Masters degree and the family's SES was upper-middle class.

Tony was 7-years old with a primary diagnosis of PDD-NOS provided by a private agency, the WMU Center for Autism. Tony's receptive and expressive verbal skills were advanced and he was in a general education classroom placement. His mother, Terri, also participated in the study. Terri was 36-years old and a stay-at-home mother in an intact marriage. Terri's other child was diagnosed with autism.

Her educational background included an Associate's degree and the family's socio-economic status (SES) was middle class.

Patrick was 5-years old with a medical diagnosis of Asperger's Syndrome from a neurodevelopmental pediatrician and supported by a neurologist. Patrick had also received a diagnosis of ADHD from a clinical psychologist and sensory integration disorder from an occupational therapist. His receptive and expressive verbal skills were the most advanced of the three participants. His kindergarten placement was a general education classroom with a one-on-one aide. Patrick's mother, Pam, was a 43-year-old stay-at-home mother of two adopted children. Pam's education background included a Bachelors degree. She was in an intact marriage, and the family's SES was lower-middle class. Pam's other adopted child was a 4-year-old daughter (Phoebe) with developmental, speech, and socio-emotional delays and sensory integration disorder.

Sessions with Tony and Andrew were conducted in a 3.1 m by 2.4 m therapy room on the Western Michigan University campus. Sessions with Patrick were conducted in a 4.5 m by 3.9 m therapy room on the University of Washington main campus. All sessions were recorded via a mounted video camera. The therapy rooms contained a table and chairs for the therapist and parent, in addition to materials necessary for specific target behaviors (e.g., toys, toy chest, clothes). A laptop computer was also present during the first session of the parent training phase for purposes of computerized instruction presentation.

Response Measurement and Data Collection

Operational definitions were similar to that of Smith and Lerman (1999). A command was defined as the first time an instruction was given in a trial, and was scored as correct if it was clear, stated word-for-word, and not phrased as a question. Child compliance consisted of initiating the requested action within 5 s and completing it within 30 s of delivery of either a command or prompt. A prompt was defined as a response designed to evoke compliance to the command. Prompts could be gestural (restating the command while pointing or motioning towards the desired outcome within 5 s of the command) or physical (restating the command while providing hand-over-hand guidance through the desired behavior within 5 s of the gestural prompt). Reinforcement for compliance was defined as a praise statement directed towards the child within 5 s of compliance with either the command or the gestural prompt.

Problem behavior was operationally defined for each child based on the parent's report of negative behaviors other than noncompliance. Tony's problem behaviors were defined as any negative vocalization (e.g., whining, yelling) above conversational level, crying, throwing materials, elopement (attempting to leave or leaving), any type of aggression, and self-injury. Andrew's problem behaviors were defined as any negative vocalization (e.g., whining, yelling) above conversational level, crying, throwing materials (excluding tossing), elopement or attempts to elope, aggression (i.e., hitting, kicking, smacking, kicking objects), spitting or attempting to spit, and self-injury. Patrick's problem behaviors included the following: any

negative vocalization above conversational tone (e.g., whining, yelling), crying, displaying any aggressiveness towards an object (e.g., throwing an object), kicking, hitting, poking or attempting to poke parent's eye, and stomping on or attempting to stomp on his mother's broken toe. Every child participant was screened for severe aggression or self-injury resulting in tissue damage, problem behaviors that would have resulted in exclusion from the study. No child had severe forms of aggression or self-injury. In addition, each parent was asked if she was comfortable having the research team observe her respond to her child's various problem behaviors. Every parent said she felt comfortable and would not feel embarrassment.

Four dependent measures were graphed. The two measures of child behavior were the percentage of trials with immediate compliance and the percentage of trials with an occurrence of problem behavior. The two measures of adult behavior were the percentage of trials accurately implemented (i.e., parent procedural integrity) and the average number of prompts provided per trial. Percentage of trials with compliance was calculated by dividing the number of compliant responses by the total number of trials and multiplying by 100%. Percentage of trials with problem behavior was calculated by dividing the number of trials with problem behavior by the total number of trials and multiplying by 100%.

Accuracy of treatment implementation was coded during all training and treatment phases. Each trial was coded as correctly or incorrectly executed by the parent. During every trial, the parent had to 1) issue the correctly worded command, and 2) provide an accurate level of reinforcement. If prompts were necessary during

a trial, the parent had to do the following: 1) issue prompts at a 5-s delay, 2) issue prompts in the correct order (i.e., gestural before physical), 3) restate the command during prompts, and 4) immediately issue a physical prompt following problem behavior. The percentage of trials accurately implemented was calculated by dividing the number of correctly executed trials by the total number of trials and multiplying by 100%. Finally, data were collected on the average number of prompts per trial for each 10-trial block during all phases. (See Appendix A for the primary data sheet).

Interobserver Agreement (IOA)

Two trained independent observers collected data on at least 30% of sessions to determine IOA. For the three dependent measures that use percentage-of-trials as their unit of measurement, agreement was calculated by scoring each trial as an agreement or disagreement and dividing the total number of agreements by the total number of agreements plus disagreements and multiplying by 100%. For the average number of prompts measure, the smaller tally was divided by the larger tally and multiplied by 100%. For Andrew and his mother, IOA was collected for 33.9% of sessions in all phases of participation. Agreement was 96.67% for percentage of trials with compliance, 81.67% for percentage of trials with problem behavior, 76.67% for percentage of trials with correct implementation, and 86.92% for the number of prompts delivered. For Tony and his mother, IOA was collected for 66% of sessions across all phases. Agreement was 98% for percentage of trials with compliance and percentage of trials with problem behavior, 94% for percentage of trials with correct implementation, and 97.97% for the number of prompts delivered.

For Patrick and his mother, IOA was collected for 63.32% of sessions across all phases. Agreement was 95.96% for percentage of trials with compliance, 96.97% for percentage of trials with problem behavior, 86.74% for percentage of trials with correct implementation, and 94.16% for the number of prompts delivered.

Research Design

A nonconcurrent multiple-baseline design across participants was used to evaluate the four dependent measures. Baseline lengths were staggered (three, five, and seven sessions), and baseline duration for each participant was determined by stability of compliance data. Treatment effectiveness was determined via visual inspection of the data (Kazdin, 1982). The design demonstrates experimental control over the independent variables by controlling for maturation and potential confounding events that could have occurred simultaneously with phase change (Carr, 2005; Kazdin, 1982).

Preliminary Assessment Procedures

The initial meeting with the parent included explanation of all procedures, obtaining parental consent (see Appendix B for form), parent description of any child problem behaviors, and completion of a compliance checklist. Children who exhibited severe forms of aggression (e.g., hitting, kicking, head butting, using objects as weapons which resulted in bruising or more severe injury) and self-injurious behavior that resulted in tissue damage would have been excluded consistent with other published studies on noncompliance only (Ducharme & Popynick, 1993); however, no children met this criterion. Parents completed a

checklist to provide information about the commands that most typically result in child noncompliance (see Appendix C). Target tasks were simple enough to be completed in 15 s or less and be could be completed in the therapy room (i.e., no sink or bedroom furniture required). Based on the checklist results, 3 one-step requests were selected and directly attempted with the child for 10 trials per target. The parent was instructed to provide a target command and wait 5 s for compliance (i.e., initiation of completing the target behavior; see Appendix D for data sheet).

Andrew rarely complied with "sit down", "clean up the toys", and "put on your socks." The desired behavior with "clean up the toys" was placing between 3 and 6 toys scattered on the floor inside a large storage container (resulted in 12.5% compliance during pre-baseline screening trials). The desired behavior for "sit in the chair" was walking over to a child-size chair and sitting down on it (resulted in 33% compliance during pre-baseline screening trials). The desired behavior for "put on your socks" was picking up each sock off the floor and placing each one on his feet in the proper direction (i.e., heel portion over heel; resulted in 12.5% compliance during pre-baseline screening trials).

The tasks for Tony were "clean up your toys", "put on your jacket", and "get your jacket and your shoes." The desired behavior with "clean up your toys" was placing 8-10 toys scattered on the floor inside a large storage container (resulted in 40% compliance during pre-screening trials). The desired behaviors with "put on your jacket" were retrieving a jacket from a hook and putting it on, and zipping it up (resulted in 0% compliance during pre-baseline screening trials). The desired

behavior with “get your jacket and your shoes” included retrieving both a jacket and a pair of shoes and independently putting them on as described above (resulted in 0% compliance during pre-baseline screening trials).

Three problematic commands identified by Patrick’s mother included “put your shirts/pants away”, “clean up your toys”, and “sit down in the chair/at the table.” The desired behavior with “clean up your toys” was placing between 3 and 20 toys inside a large storage container or in the appropriate “cubby” of a large wooden storage unit (occurred 20 % of pre-screening trials). The desired behavior with “put your shirts/pants away” was putting between 2 and 4 pairs of the target clothes inside a drawer (occurred 40% of pre-screening trials). The desired behavior with “sit down in the chair/at the table” included sitting down in a chair at an adult-sized table or sitting in a child-sized armchair (occurred 40% of pre-screening trials).

Procedure

The study consisted of five phases: (1) baseline, (2) parent training, (3) parent-implemented guided compliance, (4) transfer-of-training probe, and (5) follow-up.

Phase 1: Baseline. The parent was instructed to deliver a target command then respond to the noncompliance in his/her usual manner (see Appendix E for data sheet). The therapist used the following verbal instructions to begin this phase: “I need you to give your child three simple commands one at a time. Have him _____, _____, and ____. We will keep rotating through them until we get enough data. Do whatever you typically do when giving your child a task".

Phase 2: Parent Training. During this phase, Behavioral Skills Training (instruction, modeling, rehearsal, and feedback) was used to teach the guided compliance procedure. Visual aids in the form of a Microsoft® Office PowerPoint® presentation and video models were incorporated into parent training. The PowerPoint® presentation also included a programmed instruction component. Throughout the slideshow, parents were asked four "pop quiz" questions regarding the content and clicked on true or false to respond. Immediate computerized feedback regarding their response was provided. The PowerPoint® presentation would have been repeated for any parent who scored less than 75% on the pop quiz; however, every parent scored 75% or above.

After the instruction and modeling components were completed, a probe was conducted in which the parent practiced the procedure 10 times with no immediate feedback. The purpose of the probe was to see if the parent needed the rehearsal and feedback components of parent training, two components that a recent parent training study on feeding suggested are not always necessary to achieve great treatment integrity (Mueller et al., 2003). Every parent failed the probe, so every parent rehearsed the procedure with an undergraduate therapist acting as the child and received constructive feedback from the primary researcher on specific aspects of the caregiver's performance. With Tony's mother, target commands were rehearsed one at a time, and a new target was not introduced until 100% procedural integrity for one session was achieved. Parent training with Tony's mother was very lengthy (140 trials), so the researchers withdrew the one-at-a-time procedure for the other mothers.

Amy and Pam rehearsed the targets in random rotation throughout all of parent training. This procedural modification reduced the parent training phase for Andrew's mother (100 trials) but had no impact on the length of parent training for Patrick's mother (140 trials). The data sheet used for the parent training probe and rehearsal trials is located in Appendix F.

The intervention procedure taught was guided compliance, which included a prompt hierarchy culminating in physical guidance and differential reinforcement. Each trial began with issuing a command (step 1) that was stated in the form of a statement, not a question. The child had 5 s to comply, after which a gestural prompt (step 2) was delivered. Gestural prompts were delivered correctly if the command was restated while motioning towards or pointing to the materials and/or desired outcome. The child again had 5 s to comply, after which a physical prompt (step 3) was delivered. Physical prompts were delivered with restatement of the command while physically prompting the child to complete the task using hand-over-hand guidance. The guided compliance procedure also included differential reinforcement (i.e., praise) for compliance occurring at any step before physical prompting. The greatest level of enthusiastic praise was reserved for trials during which compliance immediately followed the command with no additional prompts required. One additional stipulation taught during parent training was to respond to problem behavior by immediately skipping to step 3 (physical guidance).

Phase 3: Parent-implemented Guided Compliance. When the parent successfully rehearsed the procedure with a confederate using target alternation and

achieved either two consecutive 100% procedural integrity sessions or a mean of 93% integrity across three consecutive sessions (i.e., two 90%s and one 100%), phase 3 began. This phase included parental implementation of the procedure with the child using the three targets issued in rotation for each 10 trial block with a termination criterion of 80% compliance across two consecutive sessions (similar to Tarbox et al., 2003; see Appendix A for data sheet). Parents were asked to avoid implementing the guided compliance procedure outside of treatment sessions until the conclusion of this phase. Researchers explained the importance of having a clinician monitor progress and assist if any problems occurred.

Immediate corrective feedback was reduced significantly compared to the parent training phase. Detailed feedback was provided when parent implementation dropped below 70% of trials implemented correctly or three incorrectly implemented trials in a row. Specific corrective feedback was delivered quickly between trials (e.g., "remember to deliver the gestural prompt after only 5 s").

Phase 4: Transfer-of-Training Probe. Tony and Patrick participated in this phase. Andrew did not enter this phase due to treatment failure. A transfer-of-training probe was conducted to assess how well the parents could transfer the procedure to requests not included in training. Previous parent training literature highlights the importance of targeting such stimulus transfer (Breiner, 1989; Breiner & Beck, 1984; Ducharme & Popynick, 1993; McMahon & Forehand, 1984). After a child met the mastery criterion in phase 3, the parent was asked to use the intervention procedure and issue a command that was identified in the preliminary

assessment but was not one of the three trained target commands. The command used with Tony was “put your jacket and shoes away”. The commands used with Patrick were “put your socks/shoes on” and “take your socks/shoes off”.

Phase 5: Follow-up. The final phase, follow-up, took place in the home one month following the transfer-of-training probe. The purpose of this follow-up phase was to test for maintenance of this intervention over time (Ducharme & Worling, 1994) and generalization to a new setting. One home visit was conducted during which two sessions occurred with the three initial target behaviors in rotation. Tony and Patrick participated in this phase.

RESULTS

The results of two measures, percentage of trials with compliance and percentage of trials accurately implemented, are located in Figure 1. The average number of prompts issued per trial measure is depicted in Figure 2. The percentage of trials with problem behavior measure is depicted in Figure 3.

Andrew and Amy

Results of Andrew and Amy's participation are depicted in the top panel of Figures 1-3. After the shortest baseline of the three participants (three sessions), Amy began parent training. Amy spent 11 min watching the instructional PowerPoint® and answered three of four quiz questions correctly. Amy's procedural integrity during the parent training probe was 20%, so she needed the rehearsal and feedback components of parent training. It took Amy 1 hr 58 min to meet the proficiency criterion. Amy's overall procedural integrity throughout parent training (mean: 79%) is depicted in Figure 4. Treatment integrity means of the individual steps were the following: 99% for command, 93.9% for gestural prompt, 78.3% for physical prompt, and 99% for reinforcement.

During a baseline of three sessions, Andrew had a mean of 11.1% of trials with compliance. The first four treatment sessions yielded a similar compliance mean (12.5%). Prior to the study, researchers decided to allow an additional reinforcer (i.e., a toy or an edible) to be used if enthusiastic praise and affection (i.e., hugs, kisses, tickles) proved to be insufficient in producing independent compliance. Because of Andrew's low levels of compliance, Amy was asked to pair her praise with an

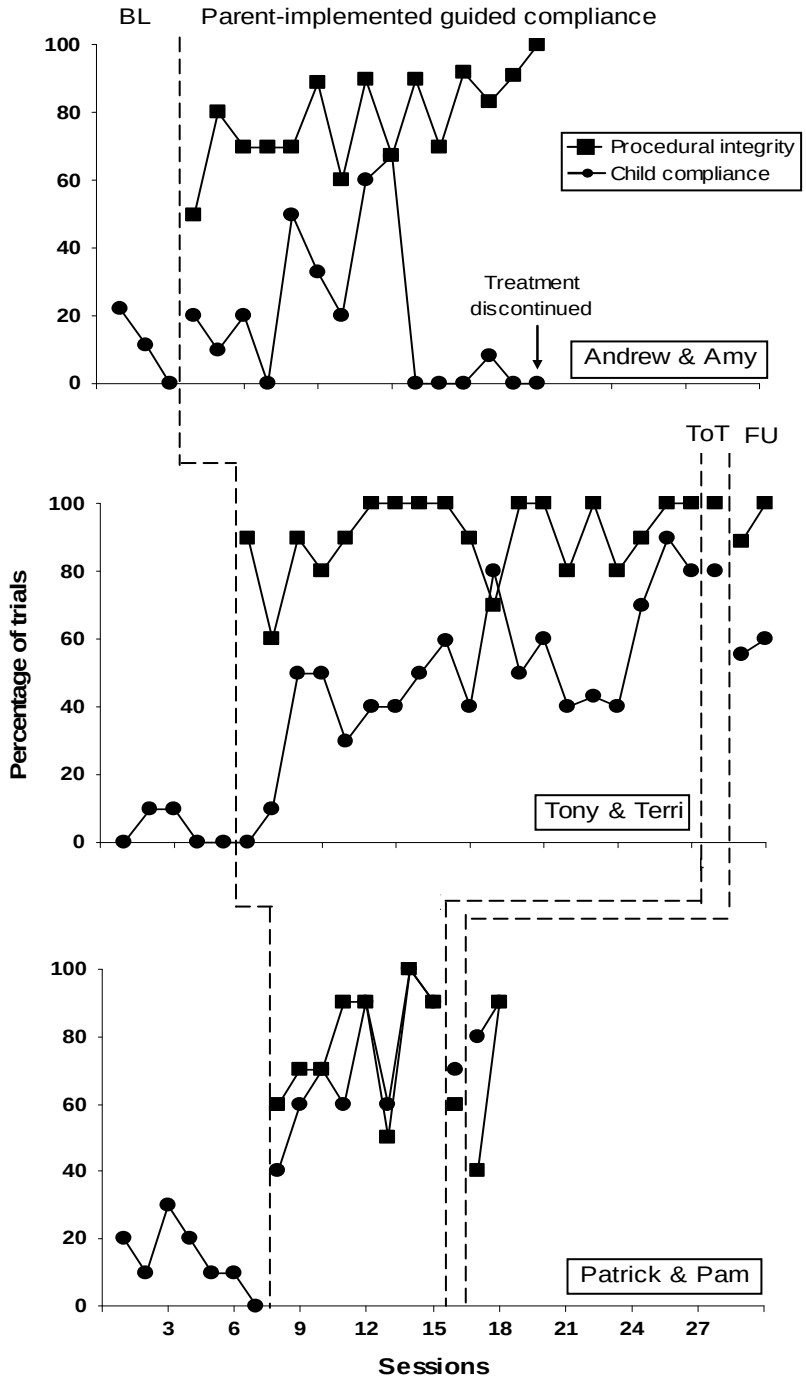

Figure 1. Percentage of trials with child compliance and accurate procedural implementation. Child compliance is depicted as closed circles and parent procedural implementation is depicted as closed squares.

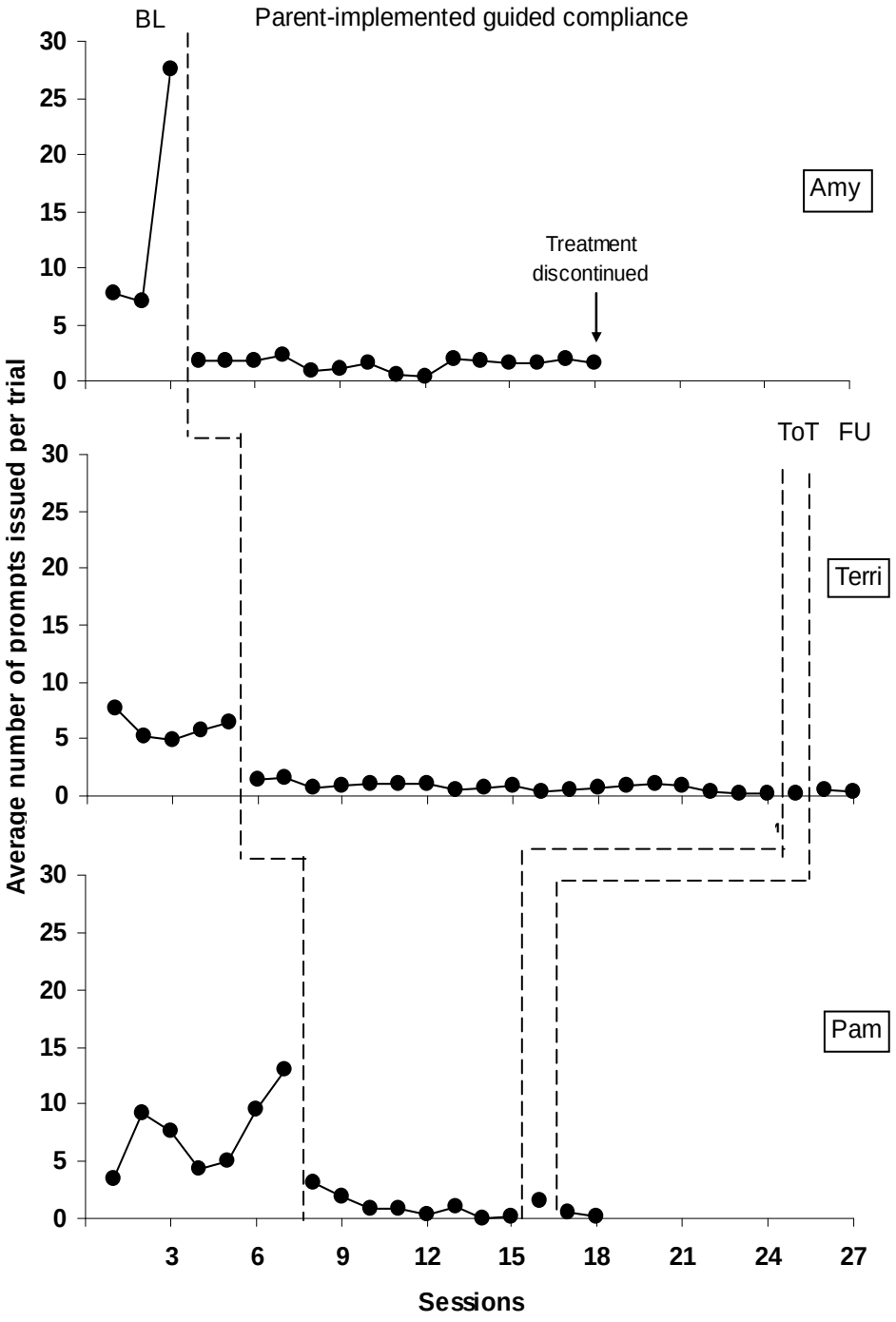

Figure 2. Average number of prompts issued per trial. Results depicted for Amy (top panel), Terri (middle panel), and Pam (bottom panel).

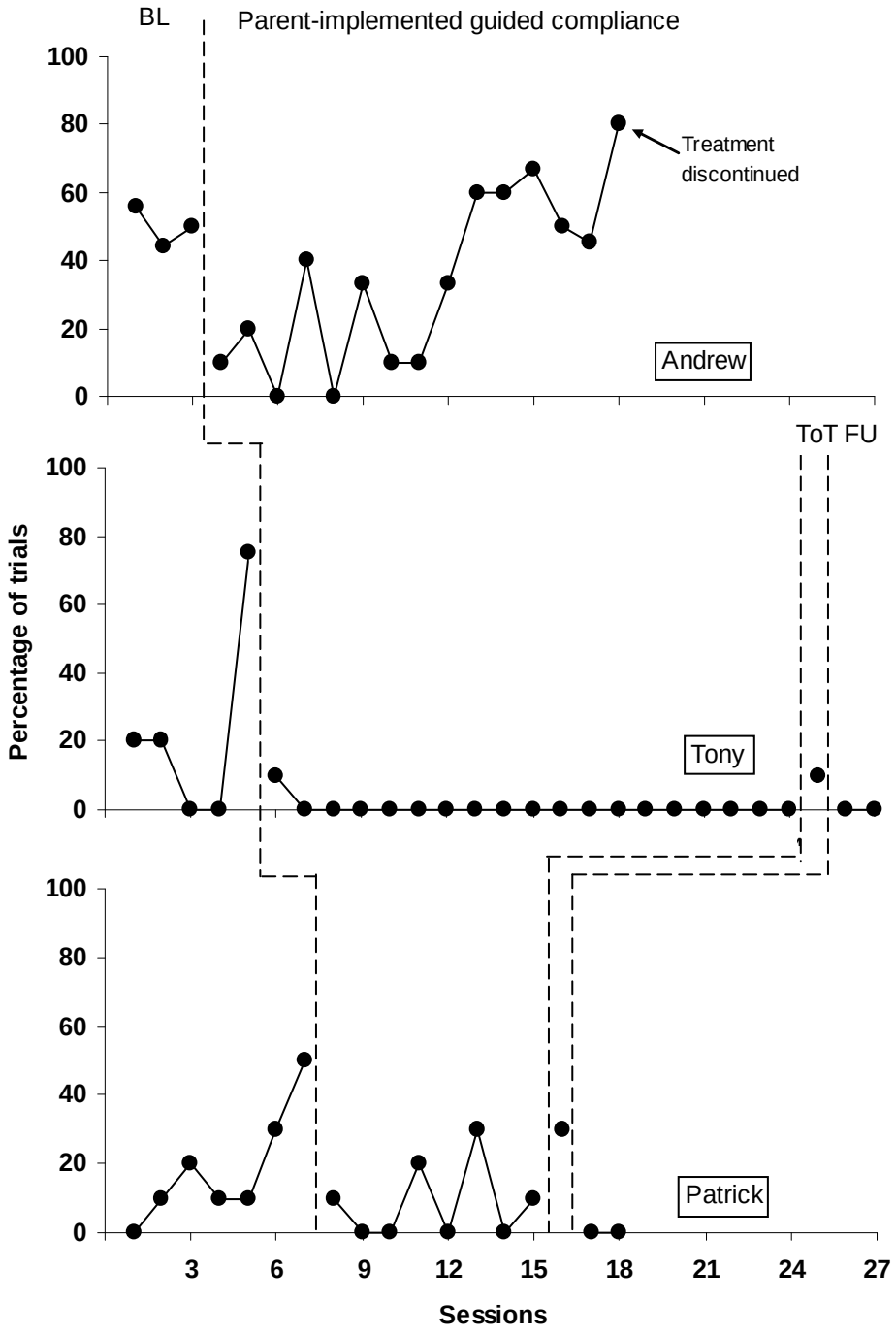

Figure 3. Percentage of trials with problem behavior. Results depicted for Andrew (top panel), Tony (middle panel), and Patrick (bottom panel).

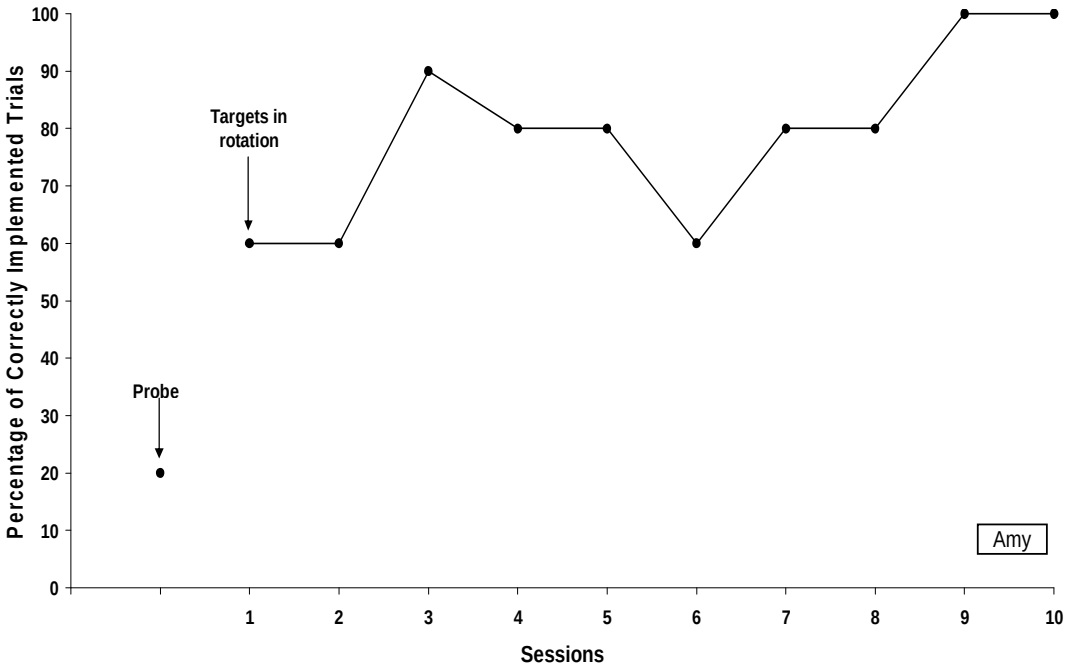

Figure 4. Percentage of trials accurately implemented for during Amy's probe prior to rehearsal/feedback and throughout Amy's rehearsal/feedback.

additional potential reinforcer. She chose Skittles. During the fifth treatment session, she gave Andrew three Skittles when he was independently compliant and one Skittle paired with praise when he responded to a gestural prompt. For the next 6 sessions, Andrew received two or three Skittles for immediate compliance only. The added edible reinforcer positively impacted his compliance for 5 sessions (mean 46%; range 20% to 67%). During a visit held on a different day, Andrew's compliance during sessions surprisingly returned to baseline levels. When this happened, the mother was instructed to use Skittles to reward compliance with gestural prompts as well. Unfortunately, this had no impact on Andrew's compliance. The researchers hypothesized that the reinforcing effectiveness of Skittles plus praise may have declined; therefore, a preference assessment of edibles and toys was conducted prior to session 18. The use of new, highly-preferred reinforcers during session 18 had no impact on Andrew's compliance. Several additional modifications were made to the protocol. None of them proved to be effective. After 15 treatment sessions, the researchers discontinued the protocol because it was ineffective.

Amy's procedural integrity with her son throughout treatment averaged 78.12%, resulting in some corrective feedback from the researcher. Treatment integrity means of the individual steps were the following: 97.93% for command, 87.93% for gestural prompt, 77.33% for physical prompt, and 98.67% for reinforcement.

Tony and Terri

Results of Tony and Terri's participation are depicted in the middle panel of Figures 1-3. After baseline, Terri spent 8 min watching the instructional PowerPoint® and answered all four quiz questions correctly. Terri's procedural integrity during the parent training probe was 50%, which did not meet criterion (100%) to skip the rehearsal and feedback portions of training. During rehearsal and feedback, it took Terri 3 hr 6 min to meet the proficiency criterion, the longest parent training duration of the three mothers. The extensive parent training length was partially the result of original procedures that included rehearsal of targets one-at-a-time until criterion before random rotation of targets, a procedure that was removed for the other two mothers (i.e., Amy and Pam rehearsed rotated targets from the start). Terri's overall procedural integrity throughout parent training (mean: 87.69%) is depicted in Figure 5. Treatment integrity means of the individual steps were the following: 99.29% for command, 91.79% for gestural prompt, 90.36% for physical prompt, and 93.57% for reinforcement.

During a baseline of 5 sessions, Tony had a mean of 4% of trials with compliance. During the parent-implemented guided compliance phase, Tony's compliance increased to a mean of 48.56% (range 0% to 90%). It took Tony 19 sessions to meet the criterion (i.e., two consecutive sessions of 80% or above). Terri's overall procedural integrity with her son throughout treatment averaged 90.53%, resulting in very little corrective feedback from the researcher. Treatment integrity means of the individual steps were the following: 99.47% for command,

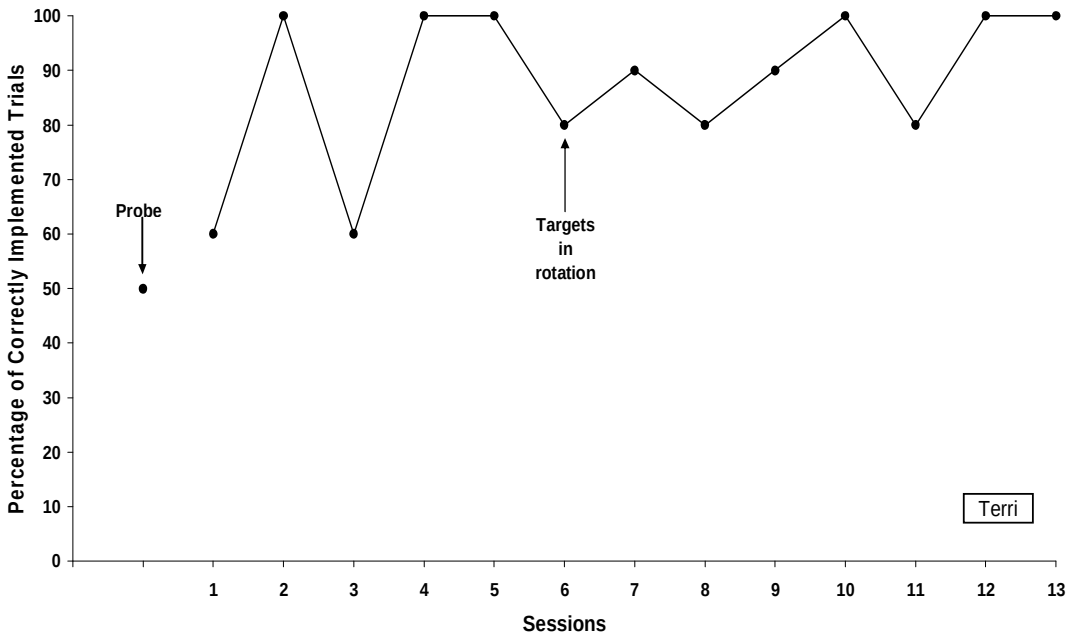

Figure 5. Percentage of trials accurately implemented for Terri during a probe prior to rehearsal/feedback and throughout rehearsal/feedback.

90.79% for gestural prompt, 88.06% for physical prompt, and 97.14% for reinforcement. During the transfer-of-training probe, Terri executed the untrained target with 100% accuracy. Procedural integrity remained high (mean: 95%) during the two follow-up sessions. Tony's compliance decreased to a mean of 57.8% during the home follow-up observation; however, his compliance was still a significant improvement from baseline levels.

As with Andrew, praise and affection proved to be insufficient in producing independent compliance during a portion of the treatment phase. Although Tony's compliance initially increased significantly from baseline, the trend of Tony's compliance leveled off between sessions 8 and 11. Therefore, Terri was asked to pair her praise and affection with a tangible reinforcer. She chose to use Tony's favorite candy, M&Ms. She gave him one M&M paired with praise to reinforce independent compliance from session 12 until the end of the fifth phase.

Patrick and Pam

Results of Patrick and Pam's participation are depicted in the bottom panel of Figures 1-3. Patrick's baseline was the longest (7 sessions). Pam spent 10 min watching the instructional PowerPoint® and answered all four quiz questions correctly. Pam's parent training probe performance of 11.11% of trials implemented correctly did not meet criterion, so she entered the rehearsal and feedback portions of the phase, which lasted 2 hr 39 min. Pam's overall procedural integrity throughout parent training (mean: 69.23%) is depicted in Figure 6. Treatment integrity means for the individual steps were the following: 85.21% for command, 80.38% for gestural

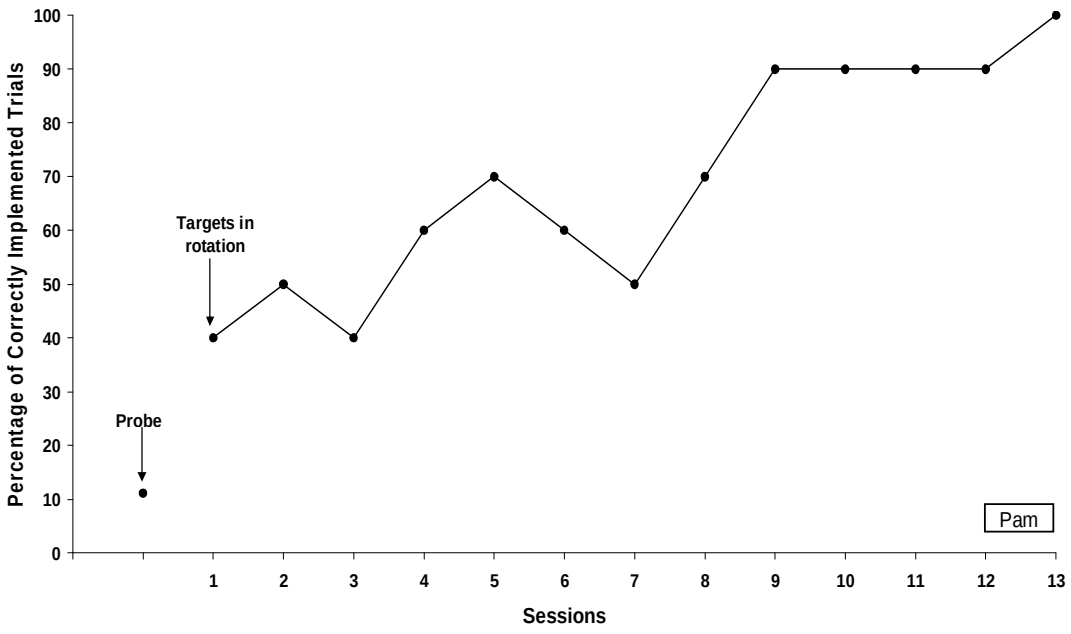

Figure 6. Percentage of trials accurately implemented for Pam during a probe prior to rehearsal/feedback and throughout rehearsal/feedback.

prompt, 72.26% for physical prompt, and 88.14% for reinforcement.

During baseline, Patrick had a mean of 14.29% of trials with compliance. During the parent-implemented guided compliance phase, Patrick's compliance increased to a mean of 71.25% of trials (range: 40% to 100%). It is important to note that following a steady increase in compliance to 90%, a sudden decrease in compliance and increase in problem behavior during session 13 took place immediately following an inter-trial incident during which Pam attempted to target a challenging skill (turn taking with a highly preferred activity). Patrick became upset and his compliance decreased dramatically following the incident. Compliant responding recovered and increased to criterion levels during the next session, which took place on a different day. In total, it took Patrick only 8 sessions to meet the treatment success criterion. Pam's procedural integrity with her son throughout treatment averaged 77.5%, resulting in some corrective feedback from the researcher. Treatment integrity means for the individual steps were the following: 93.75% for command, 76.14% for gestural prompt, 10% for physical prompt, and 91.25% for reinforcement. Pam's most common misapplication of physical prompts was repeating the instruction (between 1 and 7 times) instead of remaining silent. During the transfer-of-training probe, Pam executed the untrained target with 60% accuracy (two errors during physical prompts and two errors during reinforcement). Her procedural integrity during the two follow-up sessions was slightly better (average 65%), with the majority of errors taking place during commands (i.e., adding a point).

During follow-up, Patrick's compliance increased to a mean of 85%, well above his baseline average of 14.29%.

Unlike the other two participants, Patrick responded well to praise, hugs, and kisses throughout all of treatment so no edibles or toys were added.

Pam and Phoebe

After follow-up with Patrick, researchers asked Pam if they could observe her implement the guided compliance procedure with her 4-year-old daughter, Phoebe, who also had developmental delays and compliance problems. Pam consented, and this additional transfer-of-training probe took place in the home. The three target behaviors used were "put the toy away", "sit in the chair/on the couch", and "bring me the (object)". In the 10-trial session, Pam implemented the procedure with 70% accuracy. All three errors were minor (i.e., pointing during the command), thus proving that this parent was able to transfer the procedure she had learned and rehearsed with one child to use with another child.

Procedural Integrity

Procedural integrity data were analyzed across all participants and all phases (except baseline). Results of parental implementation of each step of the procedure across all phases were recorded and analyzed to determine how challenging the steps were to the parents. The command and reinforcement steps of the procedure both proved to be easy for parents to execute. The command step yielded an overall mean of 95.2% (range: 87.72% to 99.44%). Reinforcement yielded an overall mean of 94.82% (range: 88.96% to 98.85%). The gestural prompt step was fairly easy to

implement, yielding an overall mean of 86.9% (range: 77.43% to 91.39%). The physical prompt step was the most challenging to implement, yielding an overall mean of 75.05% (range: 53.08% to 89.48).

Social Validity Assessment

At the conclusion of the final phase, a parent satisfaction questionnaire was given to the parents to return anonymously in a pre-stamped envelope addressed to the faculty member on the study. This questionnaire served as the consumer satisfaction measure. The measure was based on the Treatment Evaluation Inventory—Short Form (TEI-SF; Kelley, Heffer, Gresham, & Elliott, 1989) with some questions individually tailored to obtain specific information about this particular parent training package and treatment. One satisfaction questionnaire was returned. Responses are included in Table 1. These responses indicate that the participant found the procedure to be acceptable and appropriate for use with her child. She felt that the intervention was effective, resulted in permanent improvement, and she was willing to continue to use guided compliance at the study's conclusion. She rated the procedure as "neutral" in terms of ease of implementation and agreed that her child "experienced discomfort during this treatment". The parent reported that the PowerPoint presentation, video vignettes, and feedback all helped her learn the procedure. Regarding overall social validity of the procedure, the parent believed that it is acceptable for adults to use guided compliance with a child, but only if parental consent is obtained.

Table 1

Responses to Satisfaction Questionnaire	
Statement	**Response**
I found this treatment to be an acceptable way of dealing with my child's problem behavior.	Strongly agree
I am still willing to use this procedure to change my child's problem behavior.	Strongly agree
I believe that it is acceptable to use this treatment without a parent's consent.	Disagree
I liked the procedures used in this treatment.	Strongly agree
I found it was easy to use guided compliance.	Neutral
I found the behaviors targeted in this treatment to be appropriate for my child.	Strongly agree
I believe this treatment was effective.	Strongly agree
I believe my child experienced discomfort during this treatment.	Agree
I believe this treatment will result in permanent improvement.	Agree
I believe it would be acceptable to use this treatment with individuals who cannot choose treatments for themselves.	Agree
Overall, I had a positive reaction to this treatment.	Strongly agree
I believe the PowerPoint® presentation helped me learn the procedure.	Agree
I believe the video vignettes helped me learn the procedure.	Agree
I found the feedback provided during the parent training helped me learn the procedure.	Strongly agree

DISCUSSION

The current investigation adds to the small literature that examines the effects of parent-implemented three-step guided compliance with children with disabilities (Handen et al., 1992; Smith & Lerman, 1999; Tarbox et al., 2003) by incorporating technology-based instruction and closely examining procedural integrity. BST, enhanced by computerized instruction and video models, was used to teach three parents to implement guided compliance with their children. In all instances, probes conducted immediately following the PowerPoint® presentation resulted in performance below our success criterion (average 27.03%; range 11.11% to 50%), suggesting that training consisting solely of computerized instructions and modeling is not sufficient for mastery of this skill. Parents needed opportunities to practice the skills with feedback before mastery criteria were met. Parents also needed opportunities to ask clarifying questions specific to their child and assistance in applying the procedures observed in the videos to their child's specific situation (e.g., specific commands, defining problem behaviors). In addition, parents seemed distracted by comparisons between their child and the person in the videos, suggesting that the use of video modeling to teach parents problem behavior intervention may not be as effective as in-vivo modeling. At this point, a computerized instructional program with embedded video models should only be considered a supplement to traditional clinician-delivered parent training of the guided compliance procedure. If such a program is added, the use of a variety of

children with a range of abilities (e.g., language) and problem behaviors may be beneficial in increasing parental acceptance of the procedure.

Each of the three caregivers mastered implementation of the procedures during training; however, implementation of the procedures with their own children resulted in lower and more variable performance for all three participants. Physical prompts proved most difficult to implement. Several aspects of the physical prompts challenged parents. First, the physical prompts typically took longer to implement than the other steps, introducing more opportunity for the parent to execute incorrectly (e.g., additional repetitions of the instructions, additional gestures, accidentally providing praise during the prompt). Second, the procedure included a stipulation that parents immediately skip to the physical prompt contingent upon problem behavior without commenting on the problem behavior. Parents typically erred by failing to immediately progress to the physical prompt or by adding a reprimand (e.g., “no hitting”, “(name)” in a harsh tone) to the physical prompt. Third, physical prompts sometimes occasioned additional problem behavior and physical struggle that required exertion and upset parents. Despite these challenges with the physical prompts, two of three parents executed the step with their child with over 75% accuracy. A potential explanation for Pam’s difficulty with this step is the fact Patrick was also diagnosed with sensory integration disorder. Because of his hyposensitivity to touch, he had the most averse reaction to physical prompts, which made accurate implementation more challenging.

Two families experienced significant increases in child compliance during implementation of guided compliance that generalized to an untrained target, generalized to the home environment, and maintained one month later. One of these two parents, Pam expressed apprehension and doubt about whether the procedure would work with her child due to his efforts at negotiating contingencies, history of failed planned ignoring, and sensory issues that might complicate physical guidance. However, intervention was successful and the parent requested training for her husband as well.

For a third family, Andrew and Amy, guided compliance was not successful in spite of Amy's increasingly accurate implementation of the procedures. Following an upward trend in compliance, an abrupt increase in problem behavior occurred concurrent with a drop in compliance to near zero levels. When Andrew's compliance suddenly decreased, the average number of trials in which he displayed problem behaviors increased from a mean of 17.33% to a mean of 60.37%. It is unclear why the procedure was unsuccessful for this family, but prior exposure to behavioral principles and frequency and learning history for problem behavior are two possible explanations.

Amy's exposure to behavioral principles before the study was quite limited compared to Terri and Pam who had participated in training related to her child's Applied Behavior Analysis (ABA) intervention programs. Lack of exposure to behavioral principles may have contributed to an extensive history of reinforcement for mild problem behavior in the form of reprimands and brief escape. During

baseline, Amy was the most likely to provide negative attention for mild problem behavior. Many of Andrew's problem behaviors appeared sensitive to reinforcement in the form of his mother's straight face and firm voice suggesting that this response became more reinforcing than edibles and/or positive attention. The increase in problem behavior was preceded by a comment by Andrew to his mother that he did not like her helping him and was not going to listen to her anymore. This comment suggests that physical prompts were aversive and occasioned problem behavior that may have functioned to produce brief escape from physical guidance. Children with escalating problem behavior may need an additional function-based intervention for problem behavior overload on top of guided compliance (e.g., Functional Communication Training).

The following limitations should be noted. First, the experimental research design was a non-concurrent multiple baseline design rather than a concurrent multiple baseline design. The nonconcurrent design is considered somewhat weaker though experimental control is still demonstrated. Second, the lack of intervention effects with Andrew limits the number of replications of demonstration of experimental control. Third, the addition of edible reinforcement with only Tony and Andrew makes it difficult to fully assess the impact of this modification for all participants. However, the decision to only add tangible reinforcers if needed to produce good effects is consistent with clinical practice making the results more applicable to general outpatient procedures. Additionally, data on the primary researcher's procedural integrity (i.e., delivery of pre-phase instructions, feedback on

performance) was not collected in spite of the extensive procedural integrity data taken for family members.

Future research evaluating parent-implemented guided compliance is needed, particularly to identify parent and child characteristics that predict the subsequent effects of guided compliance alone or as a component in a behavioral treatment package. With respect to parent training, further investigations of the necessity of all four steps of BST (Miltenberger, 2003; Miltenberger & Thiesse-Duffy, 1988) are warranted. Due to time constraints, parent training in clinical settings often needs to be brief, so deleting unnecessary BST components would allow clinicians to deliver training in a timelier manner. Computerized training is one means to reduce the number of clinical service hours required; however, the current investigation suggests that parents needed additional person delivered services with feedback to master the intervention. Future studies should look into critical aspects of computerized instruction for parents, such as children versus adult confederates in video-models, the importance of embedded quiz questions, and specificity of video-model situations.

Appendix A

Data Sheet for Treatment, Transfer-of-Training, and Follow-up Phases

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Participant No.:_____ **Session No.:**_____
Date:_____ **Data collector:** _____ **P / S**
Time: From_____ To_____

Command: Stating instruction word-for-word, not in question form
Child Compliant: Initiates desired behavior within 5 sec of command and completes task independently within 30 sec of either a command or prompt
Gestural Prompt: Restating the command while pointing or motioning towards the desired outcome within 5 sec of the command
Physical Prompt: Restating the command while completing hand-over-hand guidance through the desired behavior within 5 sec of the gestural prompt
Reinforcement: Praise statement directed towards the child within 5 sec of compliance with either command or gestural prompt
Problem Behavior: Any negative response by the child, other than noncompliance (operationally defined for each participant)

Trial	Target	Command delivered correctly?	Child compliant*?	Gestural prompt delivered correctly?**	Child compliant?	Physical prompt delivered correctly?**	S^{r+} delivered correctly?	Problem Behavior?	Prompt frequency count	No. of prompts issued	Correct Execution?
1		Y N	Y N	Y N S	Y N	Y N S	Y N	Y N			Y N
2		Y N	Y N	Y N S	Y N	Y N S	Y N	Y N			Y N
3		Y N	Y N	Y N S	Y N	Y N S	Y N	Y N			Y N
4		Y N	Y N	Y N S	Y N	Y N S	Y N	Y N			Y N
5		Y N	Y N	Y N S	Y N	Y N S	Y N	Y N			Y N
6		Y N	Y N	Y N S	Y N	Y N S	Y N	Y N			Y N
7		Y N	Y N	Y N S	Y N	Y N S	Y N	Y N			Y N
8		Y N	Y N	Y N S	Y N	Y N S	Y N	Y N			Y N
9		Y N	Y N	Y N S	Y N	Y N S	Y N	Y N			Y N
10		Y N	Y N	Y N S	Y N	Y N S	Y N	Y N			Y N
Total:											

% Compliance: Number of compliant* responses / Total number of trials = _____ / _____ x 100% = _____

Proc. Integrity: Number of correctly executed trials / Total number of trials = _____ / _____ x 100% = _____

Ave. # of Prompts Issued: Total number of prompts issued / Total number of trials = _____ / _____ = _____

%age of Trials with Prob. Beh: No. of trials with problem behavior / Total number of trials = _____ / _____ x 100% = _____

Appendix B

Consent Form

Training Parents to Treat Noncompliance in Children with Developmental Disabilities Using Guided Compliance

Western Michigan University
Department of Psychology

Principal Investigator: Linda A. LeBlanc, Ph.D.
Student Investigator: Christine M. Bennett, B.S.

Permission of Parent or Guardian

My child has been invited to participate in a research project entitled "Training Parents to Treat Noncompliance in Children with Developmental Disabilities Guided Compliance". This study will serve as a masters' thesis project for Christine Bennett, a graduate student in the Behavior Analysis program at Western Michigan University. The purpose of this study is to analyze the effectiveness of teaching parents a three-step prompt procedure to decrease child noncompliance.

The three-step prompt procedure is a form of guided compliance consisting of the following: 1) an instruction; 2) a gestural prompt (pointing or motioning towards the desired response); and 3) a physical prompt (physically guiding my child through the task). My participation in this study will include learning a behavioral method that I can use to help increase my child's compliance.

I will be taught to implement this procedure via a computer presentation and videos of people doing the procedure. After the presentation and a chance to ask the researcher questions, I will practice the skill with the researchers in a role-play. Once I can use the procedure well during practice sessions, I will use the procedure with my child.

Location

- This study occurs in therapy rooms in Wood Hall on the WMU main campus.
- I will be reimbursed by the primary researcher for on-campus parking.

Initial Screening

- Researchers will initially screen my child's receptive language and overall compliance to my commands to determine suitability for participation.
- The initial screening should last no more than 90 minutes.
- My child and I may participate if screening results indicate that my child is appropriate for this study.

Participation

- Participation will consist of 1-5 visits per week and no more that 1 visit per day
- Each visit will last 1-2 hours and consist of 5-10 brief 10-trial sessions.
- Sessions will include play breaks to reduce fatigue and any frustration that my child may experience.

Scheduling sessions

- Scheduling of visits will depend on my family schedule, and staff availability.
- My child and I will participate in 3 to 6 hours of research per week for 3 to 8 weeks, depending on child's progress and the number of visits per week.
- One follow-up visit occurs at my home 1 month after completion of on-campus visits.

Potential benefits for participation

- My child's compliance may increase.
- My child's ability to learn new skills may increase as a result of increased compliance with simple demands.
- The literature on parent training and guided compliance for children with developmental disabilities may be benefited.

Potential risks

As in all research, there may be unforeseen risks to me and my child. However, these risks should be no different from those associated with a typical parent training environment. If an accidental injury occurs, appropriate emergency measures will be taken. However, no compensation or treatment will be made to my family except as otherwise specified in this permission form.

- The primary risk: the possible frustration my child or I might experience when I first implement this new procedure.
    - To minimize this risk, sessions will be kept short (no longer than 10 minutes).
- Sessions will be terminated if my child's behavior leads to injury (kicking, screaming, hitting, etc. resulting in bruising).
- Our participation will be reevaluated (with the possibility that our participation will end) if three sessions in a row are terminated due to problem behavior.
- If three consecutive sessions are missed without notice or explanation, participation will be terminated.

Confidentiality

- Sessions will be videotaped for data collection and researcher training only.

- All videotaped and written information will be kept confidential and anonymous.
- Information collected in this study may be presented in professional journals and at conferences to assist other clinicians, educators, and researchers in their understanding of children with developmental disabilities.
    - Any presented information will be anonymous.
- All written information (e.g., data sheets, consent forms) and videotapes will be stored for at least three years in locked file cabinets in the WMU Autism and Developmental Disabilities Laboratory (1534 Wood Hall) and no identifying information will be included.

Right to withdraw

- At any time, I may withdraw my family from this study.
- Withdrawal from this study will not effect my family's affiliation with the agency/school through which I was contacted.

Contact information

- If I have any questions or concerns about this study, I may contact…
    - Dr. Linda LeBlanc: 269-387-4920
    - Christine Bennett: 269-387-4363
- If questions or problems arise during the course of the study, I may contact…
    - The Human Subjects Institutional Review Board: 269-387-8293
    - The Vice President for Research: 269-387-8298

This permission document has been approved for use for one year by the Human Subjects Institutional Review Board as indicated by the stamped date and signature of the board chair on the upper right corner of both pages. I should not sign this document if the stamped date is older than one year.

My signature below indicates that I agree to participate in the previously described experimental intervention. My signature also indicates that I, as parent or guardian, can and do give my permission for _____ (child's name) to participate in this intervention.

_____	(_____)_____
Parent's Printed Name	Phone Number
_____	_____
Parent's Signature	Date
_____	_____
Permission Obtained By	Date

Appendix C

Compliance Checklist

Compliance Checklist

Directions: Please read the list below. Mark any commands you deliver to which your child typically does not respond.

____ Give me a hug

____ Give me a kiss

____ Sit down in the chair

____ Hand me the (book, cup, _____)

____ Give me the (book, cup, _____)

____ Put (toy, book, _____) away

____ Hang up coat

____ Pick up toys

____ Clean up (toys, books, _____)

____ Put on your (socks, shoes, shirt, coat, _____)

____ Bring me your (socks, shoes, coat, pajamas, video, cup, _____)

____ Color

____ Other _____

____ Other _____

____ Other _____

From the requests that you have marked or listed, please rank the 3 that are most problematic.

1. _____

2. _____

3. _____

Appendix D

Data Sheet for Pre-baseline Phase

56

Participant No.:___________

Date:__________

Time: From________ To________

Data collector: ______ **P / S**

Child Compliant: Initiates desired behavior within 5 sec of command and completes task independently within 15 sec of the command

Target: ___________________________

Trial	compliant
1	Y N
2	Y N
3	Y N
4	Y N
5	Y N
6	Y N
7	Y N
8	Y N
9	Y N
10	Y N
Total:	

Percent Compliance:

No. of compliant responses / Total no. of trials = ☐ / ☐ x 100% = ☐

Target: ___________________________

Trial	compliant
1	Y N
2	Y N
3	Y N
4	Y N
5	Y N
6	Y N
7	Y N
8	Y N
9	Y N
10	Y N
Total:	

Percent Compliance:

No. of compliant responses / Total no. of trials = ☐ / ☐ x 100% = ☐

Target: ___________________________

Trial	compliant
1	Y N
2	Y N
3	Y N
4	Y N
5	Y N
6	Y N
7	Y N
8	Y N
9	Y N
10	Y N
Total:	

Percent Compliance:

No. of compliant responses / Total no. of trials = ☐ / ☐ x 100% = ☐

Appendix E

Data Sheet for Baseline Phase

58

Participant No.:_____
Date:_____
Time: From_____ To_____
Session No.:_____
Data collector: _____ **P / S**

Child Compliant: Initiates desired behavior within 5 sec of command and completes task independently within 15 sec of either a command or prompt
Prompt: Any response designed to evoke compliance to a command
Problem Behavior: Any negative response by the child, other than noncompliance (operationally defined for each participant)

Trial	Target	Child compliant with the command?	Prompt frequency count (recorded as hash marks)	Problem Behavior?	No. of prompts issued
1		Y N		Y N	
2		Y N		Y N	
3		Y N		Y N	
4		Y N		Y N	
5		Y N		Y N	
6		Y N		Y N	
7		Y N		Y N	
8		Y N		Y N	
9		Y N		Y N	
10		Y N		Y N	
Total:					

Percent Compliance: No. of compliant responses / Total No. of Trials = ____ / ____ x 100% = ____

Avg. No. of Prompts Issued: Total no. of prompts issued / Total No. of Trials = ____ / ____ = ____

Percentage of Trials with Prob. Beh.: No. of trials with problem behavior / Total no. of trials = ____ / ____ x 100% = ____

Appendix F

Data Sheet for Parent Training Phase

60

Participant No.:_____
Date:_____
Time: From_____ To_____
Session No.:_____
Data collector: _____ **P / S**

Command: Stating instruction word-for-word, not in question form
Gestural Prompt: Restating the command while pointing or motioning towards the desired outcome within 5 sec of the command
Physical Prompt: Restating the command while providing hand-over-hand guidance through the desired behavior within 5 sec of the gestural prompt
Reinforcement: Praise statement directed towards the child within 5 sec of compliance with either command or gestural prompt

Trial	Target	Command delivered correctly?		Gestural prompt delivered correctly?		Physical prompt delivered correctly?	S^{r+} delivered correctly?				Correct Execution?
1		Y N		Y N S		Y N S	Y N				Y N
2		Y N		Y N S		Y N S	Y N				Y N
3		Y N		Y N S		Y N S	Y N				Y N
4		Y N		Y N S		Y N S	Y N				Y N
5		Y N		Y N S		Y N S	Y N				Y N
6		Y N		Y N S		Y N S	Y N				Y N
7		Y N		Y N S		Y N S	Y N				Y N
8		Y N		Y N S		Y N S	Y N				Y N
9		Y N		Y N S		Y N S	Y N				Y N
10		Y N		Y N S		Y N S	Y N				Y N
											Y N
Total:											

Procedural Integrity: $\frac{\text{No. of correctly executed trials}}{\text{Total no. of trials}} = \frac{\square}{\square} \times 100\% = \square$

Appendix G

HSIRB Approval

HSIRB Approval

The HSIRB approval letters are on file with the Graduate College.

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