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Using a Behavioral Skills Approach to Train a Mother to Teach Basic Learning and Self-Help Skills to Her Daughter Diagnosed with Rett Syndrome

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USING A BEHAVIORAL SKILLS APPROACH TO TRAIN A MOTHER TO TEACH
BASIC LEARNING AND SELF-HELP SKILLS TO HER DAUGHTER WITH RETT
SYNDROME

by

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M.S., Philadelphia College of Osteopathic Medicine, 2009

B.S., Southern Illinois University, 2007

A Research Paper

Submitted in Partial Fulfillment of the Requirements for the
Master of Science Degree

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RESEARCH PAPER APPROVAL

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in the field of Behavior Analysis and Therapy

Approved by:

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AN ABSTRACT OF THE RESEARCH PAPER OF

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TITLE: USING A BEHAVIORAL SKILLS APPROACH TO TRAIN A MOTHER TO TEACH BASIC LEARNING AND SELF-HELP SKILLS TO HER DAUGHTER WITH RETT SYNDROME

MAJOR PROFESSOR: Brandon F. Greene

The family of focus in this paper included a single mother, Sabrina, and her daughter, Hope, who had been diagnosed with Rett syndrome. Baseline observations revealed that Hope had not mastered self-help tasks (e.g., brush hair) and lacked basic learning skills (e.g., following instructions). Sabrina completed many self-help tasks for Hope in baseline observations and used an ineffective teaching style during discrete trial teaching with Hope. The intervention consisted of the experimenter conducting behavioral skills training (BST) with Sabrina to improve her ability to teach basic learning (i.e., imitation, following instructions) and self-help skills. A multiple baseline across response classes was used to evaluate the effects of BST on Sabrina's teaching abilities and generalization to untrained skills. Sabrina demonstrated generalization of teaching of skills within the same response class, but did not demonstrate generalization of teaching skills across response classes. Following BST, Sabrina became proficient in implementing both discrete trial teaching of basic learning skills and self-help skill teaching. Similar increases in Hope's level of independence were also recorded.

Keywords: parent training, behavioral skills training, discrete trial teaching, self-help

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Pervasive developmental disorders are a class of disorders characterized by “severe and pervasive impairment in several areas of development” (American Psychiatric Association, 2001, p. 69). Children diagnosed with a pervasive developmental disorder experience difficulty in social interaction, communication, and/or display restricted, repetitive and stereotypic behaviors. Pervasive developmental disorders include five major diagnoses: Autistic disorder, Asperger’s disorder, Childhood disintegrative disorder, Rett syndrome, and Pervasive developmental disorder, not otherwise specified (American Psychiatric Association). Of these disorders, Autistic disorder, Asperger’s disorder and Pervasive developmental disorder, not otherwise specified, affect nearly 1 in 150 children (National Institutes of Mental Health, 2009). While the remaining disorders, childhood disintegrative disorder and Rett syndrome, are far less common (National Autism Center, 2009).

Rett Syndrome

Rett syndrome is extremely rare, affecting only 1 in 10,000 births, and is almost exclusively diagnosed in females (International Rett Syndrome Association, 2007; Medical Research Council, 2001). In approximately 80% of cases, Rett syndrome is caused by a mutation on the MECP 2 (e.g., methyl-CpG-binding protein 2) gene, which occurs at the time of conception (International Rett Syndrome Association, 2007). This MECP 2 gene is responsible for signaling other genes to function properly and it is believed that a mutation on this gene can disturb proper development of the central nervous system. This disturbance results in an improper amount of a protein or enzyme that is necessary for normal development. When this occurs, certain areas of the brain involved in cognitive, sensory, emotional, motor, and autonomic functioning are affected.

It is uncertain why this mutation occurs or specifically how a mutation on the MECP2 gene leads to Rett syndrome (International Rett Syndrome Association, 2007). Typically, this genetic mutation can be identified during the first year of life through deoxyribonucleic acid (DNA) testing (National Autism Center, 2009).

The presentation of Rett syndrome varies significantly from other pervasive developmental disorders (National Autism Center, 2009) and is considered more severe. Rett syndrome is characterized by normal development for the first 6 to 18 months of life, then the child's development begins to decelerate. The age at which Rett syndrome begins and the range of symptoms expressed vary from child to child (International Rett Syndrome Association, 2007). There may be severe physical and mental regression with some autism-like features (Medical Research Council, 2001). Children with Rett syndrome may lose purposeful hand movements, communication skills and begin displaying stereotypic hand mannerisms (International Rett Syndrome Association, 2007). In addition, medical complications may arise such as seizures, irregular breathing patterns, and stagnate head growth. Over time, these individuals experience systemic problems in systems such as gastrointestinal, sensory, and motor (e.g., poor gait coordination)(National Autism Center, 2009).

Diagnostic Criteria

According to the Diagnostic and Statistical Manual (American Psychiatric Association, 2001), in order to meet diagnostic criteria for Rett syndrome, there must be a normal prenatal and perinatal development; normal psychomotor development for the first five months of life, and normal head circumference. In addition, there must be an onset of at least one of the following: (a) deceleration of head growth between 5 and 48

months; (b) loss of purposeful hand skills between 5 and 48 months with appearance of stereotyped hand movements (e.g., hand wringing); (c) loss of social engagement; (d) poorly coordinated gait or trunk movements; and (e) severely impaired expressive and receptive language accompanied by significant psychomotor retardation (American Psychiatric Association).

Treatments

Currently, there are a number of medications that are aimed at ameliorating conditions such as seizures, acid reflux, and constipation that are associated with Rett syndrome (International Rett Syndrome Association, 2007). Other therapies such as occupational and physical therapy focus on strengthening gross and fine motor movement as well as improving function. In addition to medical and physical complications, Rett syndrome is often associated with severe to profound intellectual disability or mental retardation (American Psychiatric Association, 2001). They experience significant social, communication, and learning disabilities (Freeman, 2009).

The best treatments for individuals with developmental disabilities are those that have demonstrated effectiveness in scientific research. Specifically, in the care of developmental disabilities, treatment is focused on intensive behavioral and educational strategies (Freeman, 2009). Applied Behavior Analysis (ABA) is a science of behavior and has a significant amount of research supporting its application as a treatment for individuals with disabilities. ABA is the application of behavioral principles that have been derived from experimental research and has documented effectiveness in scientific literature (Myers, Johnson, and the Council on Children With Disabilities, 2007). In the context of developmental disabilities, ABA seeks to define behavior in precise terms,

utilize objective measurement, and produce reliable data (Myers, Johnson, and the Council on Children With Disabilities, 2007).

ABA can be considered an umbrella term encompassing various interventions and procedures. Within the broader context of ABA, discrete trial training (DTT) is an effective teaching strategy. There is extensive support for ABA-based interventions in teaching children with a developmental disability. Use of ABA interventions has led to improvements in communication, social skills, and adaptive functioning (Johnson et al., 2007). There is a lack of research on educational and/or behavioral interventions for children diagnosed with Rett syndrome. Within the field of ABA, much of the research conducted and the effectiveness of ABA methods has been with children with autism.

Discrete Trial Teaching

Discrete trial teaching (DTT) is one of the most well-researched and empirically supported treatments for children with a developmental disability (Tarbox and Najdowski, 2008). It is often chosen as the main instructional method to teach a wide variety of skills, especially skills that are not inherently motivating. This can include pre-academic skills, receptive language tasks and self-help skills (Smith, 2001). DTT focuses on a specific skill or skill component. DTT is characterized by repeated trials, short and clear instructions, and reinforcement for correct responses (Tarbox and Najdowski, 2008). DTT involves breaking down a complex skill into small teachable and measurable units. Trials are delivered repeatedly to increase acquisition and mastery of a skill. They are called discrete because each trial has a clear beginning and end. A discrete trial includes five major components: (a) an antecedent stimulus, which becomes a discriminative stimulus (S^D); (b) a prompt; (c) a response; (d) a consequence; and (e) an

intertrial interval. The antecedent stimulus (vocal or non vocal) is intended to occasion the response. Additional antecedent stimuli for prompts may be added to the procedure to produce the desired response. Depending on the child's response, a particular consequence is delivered. If the response is correct, praise, toys, preferred items or other stimuli are delivered that are likely to serve as positive reinforcers. If the response is incorrect or fails to occur within 3-5 seconds, the trainer will withhold reinforcement and/or attempt to suppress the incorrect response (e.g., firmly stating "no"). The intertrial interval is a brief period of time that immediately follows the consequence and typically lasts a few seconds before the next trial begins. The intertrial interval can last long enough for the trainer to record data or for the child to have access or consume the reinforcer before the next trial begins.

To illustrate a discrete trial, assume a child, Jack, wants the red car. The trainer holds the car in front of Jack and says "What color?" (S^D). Trainer waits 3 to 5 seconds for Jack to respond. If he says, "Red" (response), he gets the car (consequence) for 30 seconds (intertrial interval). If he says "green" or fails to respond, the trainer may prompt with a partial verbal (e.g., "Re_") and eventually fade this verbal prompts to transfer stimulus control to the original instruction or S^D so the learner is responding without a prompt (Tarbox and Najdowski, 2008).

Compared to other teaching paradigms such as a natural language paradigm (see Koegel, O'Dell, and Koegel, 1987) and incidental teaching (see Hart and Risley, 1975), DTT is highly structured. Typically, trials are "massed" such that the S^D is presented 5, 10, or more times in a session. Successive approximations to the target response and correct responses are reinforced (Tarbox and Najdowski, 2008). DTT also incorporates

“errorless learning” procedures that aim to block and prevent the learner from making an error (Weiss, 2008). For example, a learner was instructed, “touch the apple,” from an array of two picture cards containing an apple and a tree. After the instruction was delivered, the child moves his hand towards the tree, the incorrect choice. The trainer immediately blocks the learner’s hand from making an incorrect choice. The child then can be prompted to make the correct selection.

Discrete trial teaching can be successfully applied by various individuals such as parents, teachers, and staff (Sturmey, 2008). There is a substantial amount of literature on parent delivered ABA-based treatment, such as DTT, for children diagnosed with a developmental disability (Johnson et al., 2007). In addition, comprehensive treatment programs have included a parent training component and have demonstrated desirable results.

For example, Lovaas, Koegel, Simmons, and Long (1977) highlighted the significance of parent involvement in increasing and maintaining their child’s improvement associated with center-based treatment where training was conducted by professionals. Thirteen children received behavior therapy to address different behaviors such as echolalia, self-stimulation, and appropriate play. All the children made similar improvements during treatment; however, only seven children whose parents received training from the therapists maintained or increased their children’s gains. This demonstrates the benefit and need for parents to serve as intervention agents or trainers.

Parents of children diagnosed with a developmental disability are encouraged to play an active role in their child’s education by conducting interventions at home. The goal of parent training programs is to improve the quality of their children’s life by

teaching parents to be effective trainers. Accordingly, parent training programs have been designed to teach parents effective strategies for increasing their child's skills (Crockett, Fleming, Doepke, and Stephens, 2007).

Behavioral Skills Training

One approach to training parents is behavioral skills training (BST). BST encompasses four parts to teach skills: instructions, modeling, rehearsal, and feedback (Sturmey, 2008). BST training begins with instructions. That is, a trainer may provide a parent with a verbal and/or written description of the skill being taught and the procedures involved in teaching that skill. These instructions are typically followed by a demonstration. That is, the trainer models how to teach a skill. This can be conducted through a live role-play or with videotape. The main goal of modeling is to show the parent how to conduct a teaching strategy. The parent is then given the opportunity to practice the skill under the guidance of the trainer. This rehearsal component can be conducted live, through role-plays, or a combination. Rehearsal periods often are short, lasting no more than 30 minutes during which the trainer observes the parent and provides brief feedback interspersed between practice periods. The last component of BST is feedback, which entails the trainer providing the parent with corrective feedback and positive statements about their performance. BST has been used to teach various skills such as incidental teaching, mand training, and discrete trial teaching (Sturmey, 2008).

Lafasakis and Sturmey (2007) used BST to teach parents to implement DTT with their children with developmental disabilities. A multiple baseline across parents was implemented to evaluate the effects of BST on teaching DTT to parents; generalization of

parent's teaching to untrained skills; and the changes in the child's responding. First, parents were taught to implement DTT for gross motor imitation, then generalization of their DTT skills for vocal imitation was assessed. The parent's performance was evaluated following the 10 components of discrete trial teaching and the child's responses were also recorded. During baseline the parents were instructed, "Do discrete trial teaching to the best of your ability." Parent's performance of DTT and the child's responses were recorded. Training consisted of BST to teach DTT. Initially, the parents were given a list of the 10 DTT components and each one was explained. Next, the parents reviewed graphs of their baseline performance and data sheets. Following this, the experimenter modeled 3 discrete trials, then the parent performed 3 discrete trials. Immediately after the parents performed 3 trials, verbal feedback was provided, which included positive comments and areas that needed improvement. The experimenter then again modeled 3 discrete trials, focusing on the areas that the parents needed to improve. The parents then conducted 3 discrete trials. This continued until 10 minutes had elapsed. Training ceased when parents met a criterion of 90% correct implementation of DTT across two consecutive sessions. A follow-up phase was included in which the parents were given the same instruction, but training was not conducted. Results showed that parents scored low on their DTT performance during baseline. After training, their implementation of DTT increased. Similarly, the children emitted few to no correct responses during baseline, but correct responding increased after parent training. This study demonstrated that BST was effective and efficient in teaching parents to implement DTT for their developmentally disabled children. In addition, proficient use of DTT

increased the child's percent of correct responding. Lastly, parents were able to generalize their skills to untrained teaching programs.

Similarly, Crockett, Fleming, Doepke, Stevens (2005) determined the effects of a parent-training program on the acquisition and generalization of DTT with two mothers of children with autism. A multiple baseline across child skills was used. In baseline, the parents were instructed to teach one of the four skills to their child and their responses were recorded. The children's responses were also recorded to determine if the parent's correct use of DTT increased skill acquisition. Training initially began with a 20-minute lecture describing and explaining the components of DTT. Next, the trainer showed a video of herself implementing DTT, both correctly and incorrectly, and asked the parents questions. Following this, the parent role-played DTT with the trainer and played the role of both the parent and child. Feedback was provided about correct use of DTT and areas that needed more practice. When the parent completed DTT correctly for four consecutive trials, she conducted DTT with their child. Feedback was provided throughout and continued until the parent completed DTT correct for four consecutive trials. Parents were then videotaped conducting DTT with all four skills with their child. No feedback was provided during video tapings. Training of the next skill followed the same format except there was no lecture component. Training of skills occurred sequentially until each skill had been directly trained unless the parent's implementation of DTT to other skills did not warrant direct training (e.g. they generalized DTT to untrained skills). The results showed that there was a slight improvement in the acquisition of the skills for each child. The authors suggested that acquisition of skills for these children can be slower and may not emerge for months. The results also showed

that both parents improved their teaching across skills without direct training. This supports assessing for generalization throughout parent training.

Previous research on parent training shows that parents most often show generalization within the same class. For example, if a parent is trained to implement DTT for color discriminations with their child, then correctly applies their teaching to another skill within the same class, such as shape discrimination, the parent's teaching is said to have "generalized". When the parent demonstrates generalization of teaching skills, there is a decrease in the amount of direct parent training provided. Compared to generalization within similar classes, generalization of teaching across skills occurs less often. For example, if a parent is trained to implement DTT for color discrimination with their child, then fails to correctly apply this procedure to a skill of a dissimilar class, such as motor imitation, the parent has failed to generalize (Crockett, Fleming, Doepke, Stevens, 2005). When the parent fails to generalize their teaching to other skills, they may require direct training on those skills. This can increase the amount of direct parent training necessary, which can be problematic if the parent demonstrates multiple deficits in teaching a variety of skills.

Similar to Crockett, Fleming, Doepke, Stevens (2005), this study will examine the effect of behavioral skills training on a mother's ability to implement discrete trial teaching and self-help skill training with her daughter diagnosed with Rett Syndrome. The effectiveness and utility of BST with a mother who had a mild cognitive impairment was evaluated. The extent of generalization both within and across classes of behavior was examined. Both similar and non-similar responses classes were created and generalization of the mother's teaching was assessed within and across these response

classes. In addition, the daughter's performance on discrete trial and self-help tasks with her mother were also recorded and graphed. This will determine the extent to which improving the mother's ability to teach affected her daughter's skill acquisition. Lastly, this study will examine the effects of parent-implemented DTT on the skill acquisition of a child diagnosed with Rett syndrome.

Method

Participants

The family consisted of a single mother, Sabrina (age 42) and her daughter, Hope (age 11). They resided in southern Illinois. Hope's biological father had never been involved in her care. According to the Department of Children of Family Services (DCFS) record, Sabrina had mild cognitive impairment and bipolar disorder. She also suffered from a number of medical issues including diabetes, high blood pressure, high cholesterol, and headaches. In addition, Sabrina admitted to abusing methamphetamines during the first three months of her pregnancy, but reported quitting when she realized she was pregnant. Shortly after quitting, she reported attending substance abuse treatment for her methamphetamine abuse. Also according to DCFS records, Sabrina had a history of being severely sexually abused as an adolescent. Sabrina was unemployed, but received Social Security Disability Income for Hope and food stamps.

Hope was born to term and delivered via Cesarean section. Hope was born healthy and was reported by Sabrina as initially developing normally. Sabrina did not feel she had the most accurate recollection of Hop's early developmental milestones, but reported Hope having a few words by 12 months. As an infant, Hope was administered

nutritional therapy because of her failure to thrive and constipation. She had episodes of vomiting and dehydration, which resulted in frequent hospitalizations.

At 2 years of age, Hope displayed significant deficits in adaptive functioning, communication, and motor skills. At this time, she was noted to have 10 words and to use gestures to communicate. Hope was evaluated by a pediatric neurologist for suspected autism. Hope was suspected to have Rett syndrome and was referred for genetic testing. The results of the genetic testing show that that Hope has an abnormal, but rare mutation on the MECP 2 gene. According to Hope's pediatric neurologist, she had Rett syndrome.

Hope also suffered from grand mal seizures and was taking medication (Diastat) during the study. She also suffered from frequent urinary tract infections and bowel problems (e.g., constipation). Sabrina reported that Hope "gets into everything" and has eloped from her residence. In addition, she had a history of shoving small objects up her nasal passages, which on occasion required surgery to remove. Due to these challenges, Sabrina contacted her local DCFS office to obtain help in managing and caring for Hope. In turn, DCFS referred the family to Project 12-Ways for intensive parent training to address Sabrina's skill deficits.

Setting

All sessions were conducted at the family residence. Imitation tasks and compliance to "give me" tasks were conducted at a table with two chairs. All self-help tasks were conducted in their naturally occurring context.

Materials

Staff materials for sessions included pens, data sheets, and folders. Task-specific materials for compliance to "give me" included laminated pictures of a dog and a red

square. Self-help materials were various household items necessary to complete the corresponding task and included the following: coat with zipper, long pants with no zipper or buttons, hair brush, tooth brush, tooth paste, large drink container with lid/cap, plates/bowls, cups, eating utensils, shoes with laces or Velcro straps, socks, soap, and a towel. Both tangible and social reinforcers (e.g., praise) were available and provided to Hope upon completion of academic-related and self-help tasks. Her preferences included the following: swing, walking outside, car rides, baby dolls, bears, singing, pretend play, and occasionally edibles.

Target Behaviors: Definition and Measurement

Child Behavior. Based on staff observations, an extensive skills assessment was conducted. Hope was administered the Assessment of Basic Language and Learning Skills (ABLLS; Partington and Sundberg, 1998), which is “an assessment, curriculum guide, and skills tracking system for children diagnosed with autism and other developmental disabilities” (p. i). The ABLLS assesses skills within four main domains: basic learning, academic skills, self-help, and motor skills. Basic learning included a variety of skills such as receptive language, imitation, and visual performance. The results of this assessment revealed that Hope had significant deficits across skill domains, particularly basic learning and self-help skills. Based on these results, several skill areas were targeted for development.

Imitation. The first skill area was imitation. Specifically, three imitation tasks were targeted: clap hands, tap table, and touch nose. Imitation was defined as immediately performing the targeted skill after the trainer stated, “Do this” and immediately performed the targeted motor action. Staff recorded a correct response if

Hope imitated the targeted motor action within 3 seconds. An incorrect response was recorded if Hope failed to respond within 3 seconds or responded incorrectly. A prompted response was scored if a prompt was delivered. Responses were recorded on the Trial data sheet (Appendix A).

Compliance to “Give me”. The second skill area was compliance to the request “give me”. Specifically, the trainer sat a table across from Hope and place one of three items (a dog picture, a red card, and a spoon) in front of her and said, “Give me ...[item].” Compliance to the request “give me” was defined as placing the target stimulus in the trainer’s hand within 3 seconds. An incorrect response was recorded if Hope failed to respond within 3 seconds or responded incorrectly or responded incorrectly (e.g., did not hand target stimulus). A prompted response was scored if a prompt was delivered. Responses were recorded on the Trial data sheet.

Self-Help. The third skill area was self-help. Individual self-help skills were derived from the dressing, eating, and grooming skills sections in the self-help assessment portion of the ABLLS (Partington and Sundberg, 1998). These tasks included brushing hair, brushing teeth, pouring a drink, putting on coat, putting on pants, putting on shoes, setting a table, and washing hands. A task analysis was developed for each of these skills (Appendices B-I). Hope’s performance was scored for each specific step of the task analysis. Staff recorded the number of steps Hope completed independently. Independent performance was defined as Hope completed the step without any prompts. This was graphed as percent correct.

Experimenter and Parent Behavior. Both the experimenter and parent (e.g., trainer) were evaluated on the same dependent measures. Both were scored based on the task analyses for discrete trial teaching and self-help skill training.

Discrete Trial Teaching. Proficiency at teaching imitation and “give me” tasks were evaluated following a discrete trial teaching format. A task analysis for DTT (Table 1) was developed to assess the trainer’s proficiency at conducting DTT (Appendix J). Staff scored each step on the form with a “+” if the step was completed independently; “—” if the step was not completed; “+p” if the step was completed following a prompt; or “NA” if the step was not applicable. The DTT observation form was divided into two sections: pre-session and session. The pre-session section listed behaviors necessary before teaching began. The session section of the DTT observation form listed behaviors that occurred during a structured teaching session.

Self-help Training. The trainer was scored on her ability to teach Hope eight self-help tasks. In addition to the individual steps of each self-help skill, each task analysis contained general teaching steps (Table 2). A total-task chaining procedure with a least-to-most prompt hierarchy was used to teach all self-help skills. The trainer was scored on her ability to complete teaching steps and to follow the least-to-most prompt hierarchy for each individual step of the task analysis. Each step of the task analysis followed a least-to-most prompt hierarchy: independent (I), verbal (V), gestural (G), model (M), and physical (P).

A verbal prompt was defined as delivering a specific verbal instruction to Hope that assisted in the completion of a specific step. For example, if Hope was instructed, “Brush the back of your hair” or “Put on your socks” these were considered verbal

prompts. Repeating of the initial instruction such as “Brush your hair” or “Put on your shoes” were not considered verbal prompts. A gestural prompt was defined as any hand motion such as a point to complete a specific step. A model prompt was defined as the trainer modeling a specific step of the skill. A physical prompt was defined as any manual guidance provided by the trainer to help Hope complete a step.

The trainer was scored on each step of the task analysis with a “+”, “—“, “+p”, or “NA”. A “+” was recorded if she waited three to five seconds for Hope to attempt the step independently before prompting and followed the prompt hierarchy from least-to-most. A “—“ was recorded if she did not wait the appropriate length of time or failed to follow the least-to-most prompt hierarchy. Also, if the trainer completed a step without any physical involvement from Hope, this was not considered a physical prompt and was scored as a “—“. A “+p” was recorded if the trainer completed the step following a prompt. A “NA” was recorded if the step was not applicable. Pre-teaching and after teaching steps were scored with “+” if completed independently; a “—“ if it was not completed, or a “NA”.

Observation and Interobserver Agreement

Trainer behavior. Interobserver agreement data was collected across baseline and training phases with the Experimenter and Sabrina for implementation of DTT and self-help teaching (Table 3). Agreement was calculated by dividing the total number of agreements by the total number of agreements plus disagreements and multiplying by 100.

Child behavior. Interobserver agreement (IOA) data was collected across baseline and training phases for imitation, compliance to “give me” and self-help skills.

IOA was calculated for Hope's responses with the experimenter and Sabrina (Table 4). Agreement was calculated by dividing the total number of agreements for independent responses divided by the total number of agreements plus disagreements.

Experimental Procedures

Baseline performance with experimenter. The experimenter assessed all targets within the imitation, compliance to "give me", and self-help skill areas with Hope prior to collecting baseline data with Sabrina.

Imitation. The experimenter conducted 10 massed trials of each imitation task (clap hands, tap table, touch nose). For all imitation tasks, staff stated "Do this" and immediately performed the targeted motor action. Staff recorded Hope's responses on the trial data sheet as correct or incorrect. No prompts were provided. The percent of correct responses per session were graphed. Treatment integrity was also scored and the percent of correct steps were graphed.

Compliance to "Give me". The experimenter conducted 10 massed trials of each "give me" task (dog, red, spoon). For each "give me" task, staff stated, "Give me...[item]" and held out one hand. Staff recorded Hope's responses on the trial data sheet as correct or incorrect. No prompts were provided. The percent of correct responses per session were graphed. Treatment integrity was also scored and the percent of correct steps were graphed.

Self-help. The experimenter assessed all self-help skills using forward chaining. She gave the instruction once (e.g., "Put on shoes.") and allowed Hope three to five seconds to respond to complete the step. If Hope did not respond within the allotted time, staff completed the step. No prompts were provided. After staff completed the step, Hope

was allotted three to five seconds to complete the next step. This continued until the task was completed. Hope's percent of correct steps were graphed.

Baseline performance with parent. During this phase Sabrina was instructed to complete imitation, compliance to "give me" task, and self-help skill teaching. No prompts or feedback were provided to Sabrina during baseline phases.

Imitation. For imitation tasks Sabrina was instructed by the experimenter to "Show us how you would teach Hope to...[imitation task]." Sabrina completed 10 trials with each imitation task. Sabrina was scored on her implementation of discrete trial teaching using the DTT observation form. Hope's performance was recorded using the trial data sheet.

Compliance to "Give me". For compliance to "give me" tasks, Sabrina was instructed by the experimenter to "Show us how you would teach Hope to give you the...[item]." Sabrina completed 10 trials with each item. Sabrina was scored on her implementation of discrete trial teaching using the DTT observation form. Hope's performance was recorded using the trial data sheet.

Self-help. For self-help tasks Sabrina was instructed, "Show us how you would teach Hope to...[skill]." Hope's independent performance and Sabrina's percent correct for self-help teaching were graphed.

Intervention

Training by experimenter. The experimenter conducted training with Hope on imitation and compliance to "give me" tasks.

Imitation and compliance to "give me". Training consisted of the experimenter conducting blocks of 10 massed trials of each imitation task following the DTT

observation form. The experimenter initiated training on all imitation tasks. Once Hope began emitting an increased percentage of correct responses, training was initiated with Sabrina with regards to clap hands only. After Sabrina met criteria for DTT proficiency with regards to clap hands, the experimenter began training compliance to “give me” tasks. Hope’s responses and the experimenter implementation of DTT were recorded.

Self-help. Training of this skill area occurred only in the context of modeling for Sabrina during her parent-training portion. Hope displayed challenging behaviors such as laying on the floor when she was instructed to repeat tasks. The experimenter modeled with a second staff in order to make training more efficient.

Training by parent. Once Hope began emitting an increased percentage of correct responses, training was initiated with Sabrina. Behavioral skills training (BST) was used to teach Sabrina imitation, compliance to “give me”, and self-help skills. In general, BST followed this sequence: explain, model, perform, and feedback. A ‘parent-friendly’ version of the descriptions for each component was provided. This ‘parent-friendly’ was written in easy to understand terms due to Sabrina’s cognitive impairment.

Imitation and compliance to “give me”. Both of these tasks were conducted at the table and followed the same teaching format. First, the experimenter explained the components of DTT and reviewed ‘parent-friendly’ with Sabrina. Next, the experimenter showed Sabrina how to teach Hope a specific skill by modeling three discrete trials. After the experimenter modeled DTT, Sabrina was instructed to conduct three discrete trials. The experimenter provided feedback throughout the three trials. The feedback included the experimenter prompting Sabrina to complete a step on the DTT observation form and positive statements. After Sabrina completed the three trials, the experimenter provided

specific feedback on her performance, which included positive comments and quick review of errors made and how to correct them. If Sabrina did not complete three trials successfully (e.g., without prompts), the experimenter modeled another three trials. Sabrina was then instructed to complete three discrete trials. This continued until Sabrina reached 100% correct DTT implementation independently for three trials. After she successfully completed the three trials, Sabrina was instructed to complete 7 more to fill a 10 trial block. The skills that were directly trained occurred in the following order: clap hands, dog and red, and touch nose. Once Sabrina met criteria for proficient DTT, the next skill was directly trained. The criteria for proficient discrete trial teaching was 100% correct on the DTT observation form across two consecutive sessions.

Self-help. Behavioral skills training with Sabrina on how to teach Hope self-help skills varied from DTT. In addition to the explain component mentioned above, Sabrina was also provided a copy of the individual steps on the task analyses. Next, the experimenter modeled teaching by conducting training of the entire self-help skill with a second staff. Then, the experimenter instructed Sabrina to repeat the same self-help skill with staff. After Sabrina practiced teaching the self-help skills with staff, she was instructed to complete the skill with Hope. The self-help skill task analyses were followed and scored for experimenter and Sabrina. Self-help skills that were directly trained occurred in the following order: putting on pants, putting on coat, brushing hair, pouring a drink, washing hands, setting the table, putting on shoes, and brushing teeth. Hope's performance was scored during teaching by the experimenter and Sabrina. The criteria for self-help teaching was 90% or better across 2 consecutive sessions.

Experimental Design

The dependent variable included the percentage of steps performed independently for DTT and self-help teaching for Sabrina and the percentage of independent responses for Hope. A multiple baseline across response classes was used to examine the effects of parent training. Specifically, the effects of BST on Sabrina's ability to implement DTT and self-help teaching. Within this design, generalization was assessed or probed for throughout training. That is, after being directly trained on one skill within a response class (e.g., clap hands in the imitation class), Sabrina's teaching ability was assessed for other skills (e.g., touch nose in the imitation class) in that same class and across response classes (e.g., self-help).

During generalization probes, the same baseline instruction was provided and both parent and child responses were recorded. Generalization was first assessed for Sabrina after she received training on DTT for clap hands. To assess generalization within the imitation class, Sabrina's ability to implement DTT for other imitation tasks (tap table, touch nose) with Hope was assessed. To assess for generalization across response classes, Sabrina was assessed on her ability to implement DTT with regards to compliance to "Give me" (dog, red, spoon) and all self-help skills. After training Sabrina on compliance to "Give me" (dog, red), generalization was assessed within the compliance to "give me" response class (spoon) and across response classes. Sabrina's ability to implement DTT for spoon and all self-help skills were assessed. After training a few self-help skills, generalization within this response class was assessed by assessing Sabrina's performance on the remaining self-help skills.

Treatment Integrity

Treatment integrity data was collected across baseline and training phases with the experimenter for imitation and compliance to “give me” tasks, respectively. All skills within each skill area were recorded on the DTT observation form. The experimenter was expected to implement training protocols with at least 90% integrity. In reference to DTT implementation, treatment integrity for imitation skills averaged 92% across baseline and 100% across training phases (Table 3). In reference to DTT implementation, treatment integrity for compliance to “give me” skills averaged 100% across baseline and 99% (range 95% to 100%) across training phases (Table 3). The experimenter did not conduct direct training with Hope on self-help skills. No treatment integrity data was collected.

Results

In general, Sabrina’s implementation of both discrete trial teaching (DTT) and self-help skill teaching increased only when BST was applied directly to that response class. That is, as Sabrina’s skills in conducting DTT improved, she did not generalize her ability to conduct self-help teaching. In addition, Hope’s performance in each skill area tended to improve only after Sabrina was trained to address that area specifically. There was no criteria for Hope’s independent performance.

Performance with Experimenter.

As previously stated, the experimenter was expected to implement training protocols (e.g., DTT) with at least 90% fidelity. Most of the training sessions occurred in the context of modeling for Sabrina during BST. Hope received direct training on all imitation skills and compliance to “give me” skills, except “give me” spoon. No direct training was conducted with Hope on self-help skills. Refer to Table 5 for Hope’s mean

performances with the experimenter across baseline and training phases for imitation and compliance to “give me” skills.

Imitation. The experimenter first initiated training with Hope on imitating clap hands. Treatment integrity for DTT averaged 96% (range 92% to 100%) across baseline and training phases. Hope’s independent performance of clap hands increased from a mean baseline of 5% (range 0% to 10%) to a mean of 32% (range 6% to 80%) for training.

The experimenter then initiated training with Hope on imitating tap table. No treatment integrity data was collected on DTT for this skill. Hope’s independent performance of tap table increased from a mean baseline of 0% to a mean of 21% (range 0% to 40%) for training.

The experimenter finally initiated training with Hope on imitating touch nose. No treatment integrity data was collected on DTT for this skill. Hope’s independent performance of touch nose remained stable from a mean baseline of 0% to a mean of 2% (range 0% to 10%) for training.

Compliance to “give me”. The experimenter first initiated training with Hope on “give me” dog. Treatment integrity for DTT averaged 99% (95% to 100%) across baseline and training phases. Hope’s independent performance of compliance to “give me” dog remained stable across a mean baseline of 65% (range 40% to 85%) to a mean of 66% (range 50% to 78%) for training.

The experimenter next began training with Hope on “give me” red. Treatment integrity for DTT averaged 100% across baseline and training phases. Hope’s

independent performance of compliance to “give me” red increased from a mean baseline of 37% (range 0% to 70%) to a mean of 66% (range 50% to 78%) for training.

In regards to “give me” spoon, the experimenter did not conduct direct training with Hope. The skill remained in baseline. Treatment integrity for DTT averaged 100%. Hope’s independent performance of compliance to “give me” spoon during baseline averaged 71% (range 50% to 95%).

Performance with Parent.

Criteria for mastery for Sabrina on DTT for both imitation (clap hands, touch nose, tap table) and compliance to “give me” skills (dog, red, spoon) was 100% across two consecutive sessions for Sabrina. Generalization was assessed throughout training of each skill area. Refer to Table 5 for Hope’s mean independent performance with Sabrina across baseline and training phases for imitation, compliance to “give me” and self-help skills.

Imitation. The experimenter first initiated BST with Sabrina on imitation of clap hands. Figure 1 shows the percentage of steps completed independently for DTT of clap hands for Sabrina and the percentage of independent responses for Hope. Sabrina’s independent performance for DTT of clap hands increased from a mean baseline of 13% to a mean of 91% (range 67% to 100%) for training. Hope’s independent performance for clap hands increased from a mean baseline of 0% to 21% (range 0% to 80%) for training.

After direct training with Sabrina on imitation of clap hands, Sabrina demonstrated some generalization. For teaching imitation of touch nose, baselines scores increased, but did not satisfy criteria for mastery. Figure 2 shows the percentage of steps completed independently for DTT of touch nose for Sabrina and the percentage of

independent responses for Hope. Her independent performance for DTT of touch nose increased from a mean baseline of 83% (range 14% to 100%) to a mean of 100% for training. Hope's independent performance for touch nose slightly increased from a mean baseline of 3% (range 0% to 10%) to 13% (range 0% to 30%) for training.

In regards to teaching imitation of tap table, Sabrina was able to generalize and meet criteria for mastery without direct training; therefore the skill remained in baseline. Figure 3 shows the percentage of steps completed independently for DTT of tap table for Sabrina and the percentage of independent responses for Hope. Sabrina's independent performance for DTT of touch nose averaged 84% (range 14% to 100%) for baseline. Hope's independent performance averaged 25% (range 0% to 70%) for baseline.

Compliance to "Give me". Following direct training of imitation skills, Sabrina's ability to implement DTT for compliance to "give me" skills was assessed. She did not demonstrate generalization of teaching across response classes. Therefore, the experimenter initiated BST with Sabrina on "give me" dog and red. Figure 4 shows the percentage of steps completed independently for DTT of "give me" dog for Sabrina and the percentage of independent responses for Hope. Sabrina's independent performance for DTT of "give me" dog increased from a mean baseline of 58% (range 25% to 82%) to a mean of 95% (range 87% to 100%) for training. Hope's independent performance for compliance to "give me" dog increased from a mean baseline of 50% (range 20% to 90%) to 77% (range 50% to 96%) for training.

Figure 5 shows the percentage of steps completed independently for DTT of "give me" red for Sabrina and the percentage of independent responses for Hope. Sabrina's independent performance for DTT of "give me" red increased from a mean baseline of

64% (range 25% to 83%) to a mean of 98% (range 92% to 100%) for training. Hope's independent performance for compliance to "give me" red increased from a mean baseline of 52% (range 20% to 90%) to 68% (range 20% to 100%) for training.

In regards to "give me" spoon, Sabrina was able to generalize and meet criteria for mastery without direct training; therefore the skill remained in baseline. Figure 4 shows the percentage of steps completed independently for DTT of "give me" spoon for Sabrina and the percentage of independent responses for Hope. Sabrina's independent performance for DTT of "give me" spoon averaged 67% (range 25% to 100%) for baseline. Hope's independent performance averaged 70% (range 10% to 100%) for baseline.

Self-help skills. Criteria for mastery for Sabrina on teaching self-help skills (brushing hair, brushing teeth, pouring a drink, putting on a coat, putting on pants, putting on shoes, setting a table, washing hands) was 90% across two consecutive sessions. After directly training imitation and compliance to "give me" skills, generalization of teaching to self-help skills were assessed. Sabrina did not demonstrate generalization across response classes. Therefore, the experimenter initiated BST with Sabrina on self-help skills in the following order: putting on pants, putting a on coat, brushing hair, pouring a drink, washing hands, setting a table, putting on shoes, and brushing teeth. Generalization was assessed throughout training; however, although Sabrina's ability to teach Hope self-skills improved across some self-help skills, she did not meet criteria for self-help skill teaching. She did not demonstrate within or across response class generalization. All self-help skills were directly trained. Refer to Figures 7 through 14 for all self-help skill data for Sabrina and Hope across baseline and training phases.

Sabrina's independent performance for teaching putting on pants increased from a mean baseline of 57% (range 29% to 94%) to a mean of 89% (range 75% to 100%) for training. Hope's independent performance for putting on pants increased from a mean baseline of 40% (range 18% to 82%) to 83% (range 40% to 100%) for training. Figure 7 shows the percentage of steps completed independently for self-help teaching of putting on pants for Sabrina and the percentage of independent responses for Hope.

Sabrina's independent performance for teaching putting on a coat increased from a mean baseline of 59 % (range) to a mean of 89% (range 37% to 83 %) for training. Hope's independent performance for putting on a coat increased from a mean baseline of 46% (range 31% to 69%) to 67% (range 46% to 92%) for training. Figure 8 shows the percentage of steps completed independently for self-help teaching of putting on coat for Sabrina and the percentage of independent responses for Hope.

Sabrina's independent performance for teaching brushing hair increased from a mean baseline of 73% (range 21% to 93%) to a mean of 93% (range 87% to 100%) for training. Hope's independent performance for brushing hair decreased from a mean baseline of 54% (range) to 43% (range) for training. Figure 9 shows the percentage of steps completed independently for self-help teaching of brushing hair for Sabrina and the percentage of independent responses for Hope.

Sabrina's independent performance for teaching pouring a drink increased from a mean baseline of 45% (range 23% to 77%) to a mean of 90% (range 81% to 100%) for training. Hope's independent performance for pouring a drink increased from a mean baseline of 29% (range 0% to 65%) to 51% (range 42% to 71%) for training. Figure 10

shows the percentage of steps completed independently for self-help teaching of pouring a drink for Sabrina and the percentage of independent responses for Hope.

Sabrina's independent performance for teaching washing hands increased from a mean baseline of 58% (range 19% to 76%) to a mean of 91% (range 81% to 100%) for training. Hope's independent performance for washing hands increased from a mean baseline of 25% (range 8% to 58%) to 32% (range 27% to 36%) for training. Figure 11 shows the percentage of steps completed independently for self-help teaching of washing hands for Sabrina and the percentage of independent responses for Hope.

Sabrina's independent performance for teaching setting a table increased from a mean baseline of 43% (range 16% to 65%) to a mean of 84% (range 71% to 91%) for training. Hope's independent performance for setting a table increased from a mean baseline of 27% (range 0% to 47%) to 39% (range 35% to 44%) for training. Figure 12 shows the percentage of steps completed independently for self-help teaching of setting a table for Sabrina and the percentage of independent responses for Hope.

Sabrina's independent performance for teaching putting on shoes increased from a mean baseline of 49% (range 5% to 70%) to a mean of 97% (range 95% to 100%) for training. Hope's independent performance for putting on shoes decreased from a mean baseline of 31% (range 0% to 60%) to 29% (range 24% to 35%) for training. Figure 13 shows the percentage of steps completed independently for self-help teaching of putting on shoes for Sabrina and the percentage of independent responses for Hope.

Sabrina's independent performance for teaching brushing teeth increased from a mean baseline of 25% (range 10% to 40%) to a mean of 88% (range 70% to 94%) for training. Hope's independent performance for brushing teeth increased from a mean

baseline of 12% (range 0% to 25%) to 21% (range 17% to 28%) for training. Figure 14 shows the percentage of steps completed independently for self-help teaching of brushing teeth for Sabrina and the percentage of independent responses for Hope.

Discussion

Baseline assessments revealed that Hope had significant deficits in basic learning and self-help skills. In addition, Sabrina completed many self-help tasks for Hope and was not effective at teaching these skills with her daughter. Sabrina began with only a few of the skills involved in DTT and self-help teaching. Similarly, Hope also emitted few independent responses in both basic learning and self-help skills. As Sabrina's teaching improved, Hope's performance also improved. This suggests that a strong association between proficiency in teaching and Hope's percent of correct responding.

Although increases in Hope's performance were observed across nearly all targeted skills, not all of these increases were dramatic as Sabrina demonstrated proficient teaching for all targeted skill areas. Hope did not always show strong acquisition of these skills. There are several possible explanations for this. It is possible that certain response classes, such as imitation, are not the most appropriate to target due to Hope's significant impairments. Rett syndrome is characterized by severe physical and mental regression, which may have limited her acquisition of certain skills.

Another explanation is that throughout the course of this study, the family faced a number of difficulties that interrupted service delivery and may have impacted the results. They were evicted from their residence and placed in a homeless shelter, a less than ideal environment to conduct DTT. There were distractions and disruptions in the setting that could not be managed. Another factor that may have impacted services is that

both parent and child experienced health issues that interrupted training sessions. There were periods of inconsistent attendance that may have lead to training being longer than necessary.

There were several motivational issues that may have affected for Hope's performance. For a short period of time, one of Hope's preferred reinforcers, a swing, was not available. This seemed to have affected her motivation to complete tasks. More importantly, Hope had a rich history of Sabrina performing many tasks for her; thus she was allowed to escape the demands placed on her. This was especially evident during self-help skill training and may have made training of these skills more difficult for Sabrina. In addition, some tasks were not inherently motivating. Hope did not find pleasure in completing some of these tasks. Therefore reinforcement had to be contrived. It appeared to be a motivational issue rather skill deficit at times. In some of the self-help skills, such as brushing hair, there was a decrease in Hope's independent performance. Hope often displayed problem behavior and was highly reluctant to complete tasks more than once. This required Sabrina to initiate prompts in order for Hope to complete steps of each self-help skills.

Another limitation is there was no extended follow up conducted to determine if Sabrina's skills at teaching maintained and if Hope continued to demonstrate increased skill acquisition. Past research has reported significant gains in child behavior with 1 to 3 years after the parent received training (Crockett, Fleming, Doepke, Stevens, 2005). This suggests that gains may develop slowly and require months of training.

DTT is one of the most well-researched methods within the field of ABA for individuals with a developmental disability. It is especially useful in teaching new forms

of behaviors such as communication, academic skills, and self-help tasks (Smith, 2001). However, the largest gains are reported for those children who begin treatment between 2 to 3 years of age and receive intensive DTT for 15 to 40 hours per week (Smith, 2001). Hope did not receive early intensive intervention. In addition, direct parent training occurred approximately 2 to 3 days per week for approximately 60 minutes. Although Sabrina reported to conduct DTT outside of these sessions, it is unlikely that she conducted enough to reach 15 to 40 hours of intense instruction per week. Furthermore, much of the research on the effectiveness of DTT within the developmentally disabled population is on children with autism. There are very few studies on the application of DTT with individuals with Rett syndrome. Research on the effectiveness of DTT and other ABA methods with children with Rett syndrome is much needed.

Past research has demonstrated that parents are able to acquire teaching skills, but show little to no generalization of these skills (Crockett, Fleming, Doepke, Stevens, 2005). That is, when a parent is directly trained to implement a teaching strategy with one skill, they often do not correctly implement this same teaching strategy with other skills. Similar to previous findings from parent training programs (e.g., Crockett, Fleming, Doepke, and Stevens, 2007), generalization occurred within response classes, but did not occur across response classes. Sabrina demonstrated within response class generalization. After receiving training on teaching imitation on clap hands, her ability to teach the remaining imitation skills, touch nose and tap table, increased. Although she did not meet criteria for teaching imitation of touch nose, she met criteria for teaching tap table without direct training. This was also observed with regards to compliance to “give me” skills. After receiving training on “give me” dog, Sabrina’s ability to teach the remaining

“give me” skills, red and spoon, increased. She met criteria for teaching “give me” spoon without direct training, but required training on “give me” red. There was no generalization of teaching within the response class of self-help skills. Sabrina did not demonstrate generalization of teaching across response classes. That is, after receiving direct training on teaching imitation, she did not improve her ability to teach compliance to “give me” skills or self-help skills. Similarly, after receiving direct training on teaching compliance to “give me” skills, she did improve her ability to teach self-help skills. These results highlight a need to design parent training programs that better facilitate generalization of skills both within and across classes of behavior. This will decrease the amount of direct training overall and improve the cost effectiveness and utility of parent training programs.

Parent-delivered ABA interventions have shown promising results and are considered an important component in comprehensive treatment programs for children diagnosed with a developmental disability. The goal of parent training programs is to improve the quality of their children’s life by teaching parents to be effective trainers. Behavioral skills training (BST) represents an efficient and effective method for teaching parents to become skilled trainers with their children (Sturmey, 2008). The results of this study further support the existing literature on the effectiveness of BST in parent training programs. In addition, this approach was appropriate for a mother who had a mild cognitive impairment. Future research should conduct a component analysis to identify the most effective or necessary component of BST. This will serve to decrease the amount of direct training and increase the cost efficiency of parent training programs.

There are a number of strengths and limitations of parent training programs. One strength is repeated observations of parent's implementation of teaching procedures, which allows for evaluation of the child's skill acquisition over time. In addition, the parent is actively involved in their child's education and behavior management plans. One limitation is lack of generalization of teaching procedures across skills being taught. For example, if a parent is trained to teach his or her child a specific skill, they may not demonstrate proficient teaching of other skills, both those that are similar and dissimilar. When parent-training programs are seen as effective by the parents, they are likely to continue them (Matson, Mahan, and LoVullo, 2009).

Table 1
Discrete Trial Observation Form

Pre-session	Operational Definition
Has training materials ready	All necessary objects, pictures, or cards were present.
Has currently effective reinforcers present and available	At least two preferences were present to Hope and she was told, "Pick one". After she made a choice, the items were removed from her reach, but still visible.
Environment clear of distractions	Any distracting stimuli such as music, television, toys, teaching materials, reinforcers, or other items were removed.
Session	
Has attention before giving instruction	Hope needed to be sitting in a chair, oriented toward the trainer, and looking at the trainer.
Gives short and specific instruction once	Instructions were concise (e.g., "Give me red" rather than "Can I have the red one please.") and only stated once, but can be restated with a prompt.
Waits no more than 3 seconds before prompting	Trainer waited three seconds before prompting, which allowed Hope to respond independently.
Uses least intrusive prompt necessary	After waiting, the trainer prompted the correct response following a most-to-least prompt hierarchy.
Blocks and corrects errors	Trainer prevented incorrect responses during teaching trials by stopping or moving Hope's hands to the correct stimuli.
Delivers reinforcement for correct responding	Social reinforcement (e.g., "That is red!") was given after correct responses. More reinforcement was provided for independent responses and less for prompted trials.
Manages problem behavior	If Hope displayed problem behavior (e.g., getting out of the seat), the trainer redirected her to complete trials.
Represents preferences/reinforcer throughout	Trainer briefly represented preferences identified during the pre-session when Hope was distracted.

Table 2

*Self-help Teaching*Pre-teaching

All necessary materials within view and reach of Hope

Delivers instructions when Hope is attending

Delivers clear, concise instructions once

Has currently effective reinforcers ready

After teaching

Delivers reinforcement at end

Table 3

Interobserver Agreement for Trainer's Implementation of DTT and Self-help Teaching

	Baseline		Intervention	
	Experimenter	Parent	Experimenter	Parent
Discrete Trial Training for Imitation	92%	84% (14-100%)	100%	91% (39-100%)
Discrete Trial Teaching for Compliance to "Give me"	100%	82% (50-100%)	99% (95-100%)	93% (82-100%)
Self-help Teaching	-	82% (47-100%)	-	91% (60-100%)

Table 4

Interobserver Agreement for Hope's Independent Performance

	Baseline		Intervention	
	Experimenter	Parent	Experimenter	Parent
Clap Hands	100%	100%	97% (90-100%)	96% (75-100%)
Touch Nose	100%	99% (90-100%)	100%	93% (90-100%)
Tap Table	100%	96% (70-100%)	100%	-
Dog	88% (85-90%)	85% (70-100%)	99% (94-100%)	96% (90-100%)
Red	95% (90-100%)	95% (90-100%)	100%	96% (80-100%)
Spoon	100%	96% (80-100%)	-	-
Put on Pants	-	82% (64-92%)	-	93% (83-100%)
Put on Coat	-	94% (92-100%)	-	86% (69-100%)
Put on Shoes	-	86% (63-100%)	-	92% (88-100%)
Brush Hair	-	73% (50-90%)	-	67% (40-80%)
Brush Teeth	-	91% (77-100%)	-	93% (90-100%)
Wash Hands	-	84% (69-100%)	-	92% (87-100%)
Set Table	-	86% (62-100%)	-	87% (86-90%)
Pour a Drink	-	86% (76-100%)	-	73% (57-81%)

Table 5

Hope's Independent Performance with Trainers

	Baseline		Intervention	
	Experimenter	Parent	Experimenter	Parent
Clap Hands	5% (0-10%)	0%	32% (6-80%)	21% (21-80%)
Touch Nose	0%	3% (0-10%)	2% (0-10%)	13% (0-30%)
Tap Table	0%	25% (0-70%)	21% (0-40%)	-
Dog	65% (40-85%)	50% (20-90%)	66% (50-78%)	77% (50-96%)
Red	37% (0-70%)	52% (20-90%)	100%	68% (20-100%)
Spoon	71% (50-95%)	70% (10-100%)	-	-
Put on Pants	-	40% (18-82%)	-	83% (40-100%)
Put on Coat	-	46% (31-69%)	-	67% (46-92%)
Put on Shoes	-	31% (0-60%)	-	29% (24-35%)
Brush Hair	-	54% (20-78%)	-	43% (30-60%)
Brush Teeth	-	12% (0-25%)	-	21% (17-28%)
Wash Hands	-	25% (8-58%)	-	32% (27-36%)
Set Table	-	27% (0-47%)	-	39% (35-44%)
Pour a Drink	-	29% (0-65%)	-	51% (42-71%)

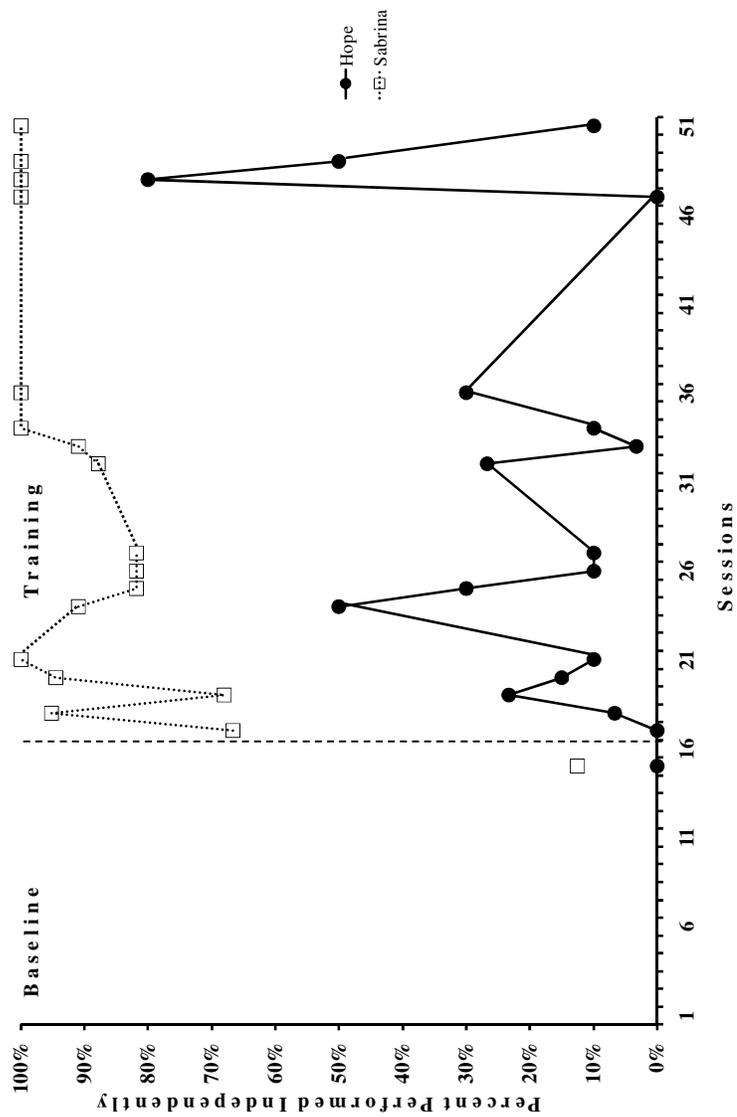


Figure 1. The percent of steps completed independently for discrete trial teaching of clap hands for Sabrina and the percent of independent responses for Hope.

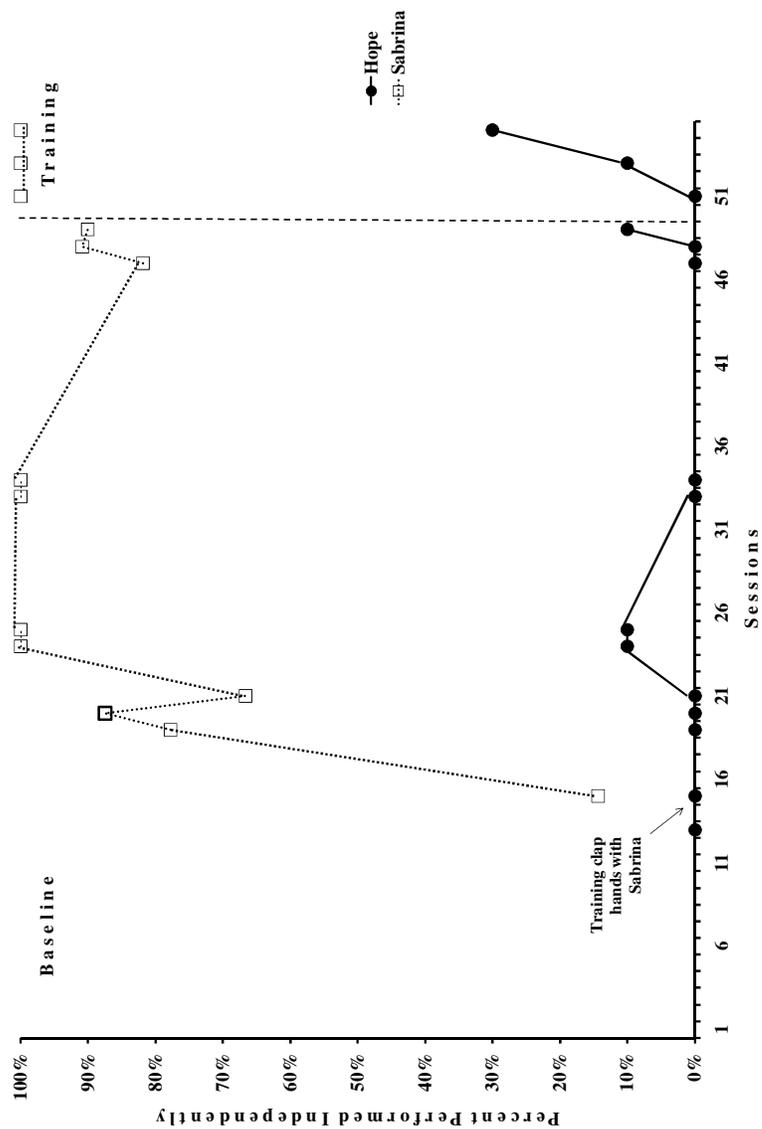


Figure 2. The percent of steps completed independently for discrete trial teaching of touch nose for Sabrina and the percent of independent responses for Hope.

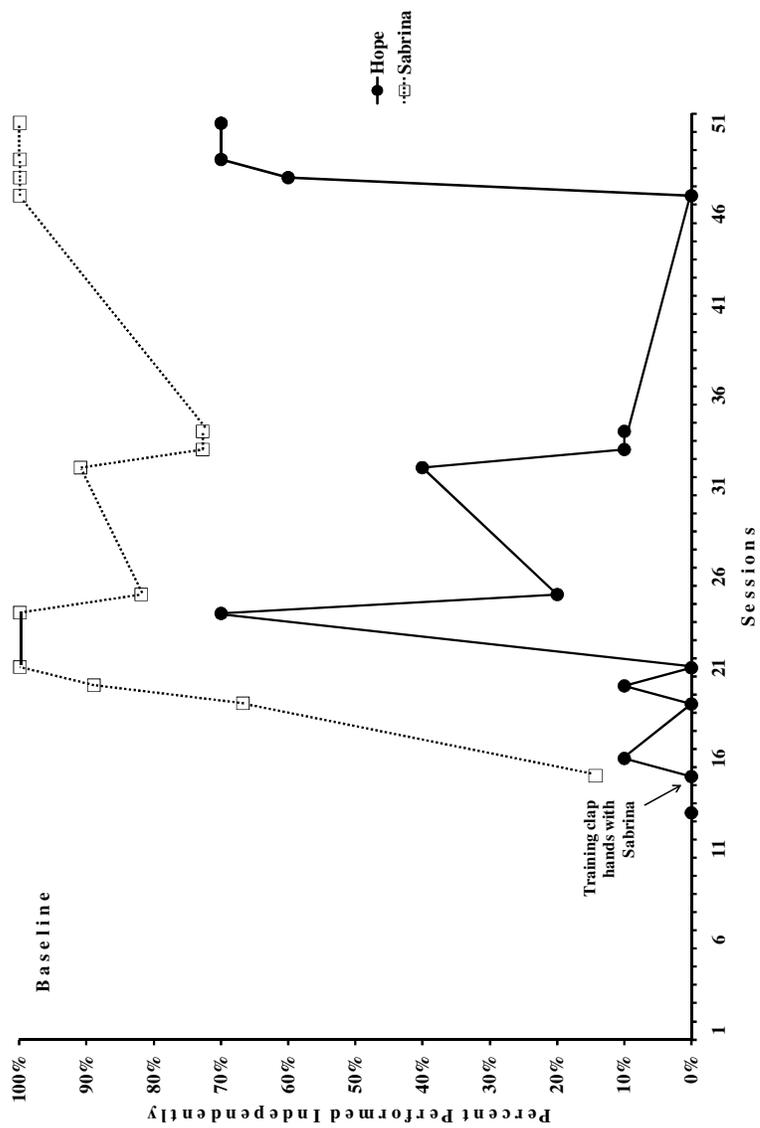


Figure 3. The percent of steps completed independently for discrete trial teaching of tap table for Sabrina and the percent of independent responses for Hope.

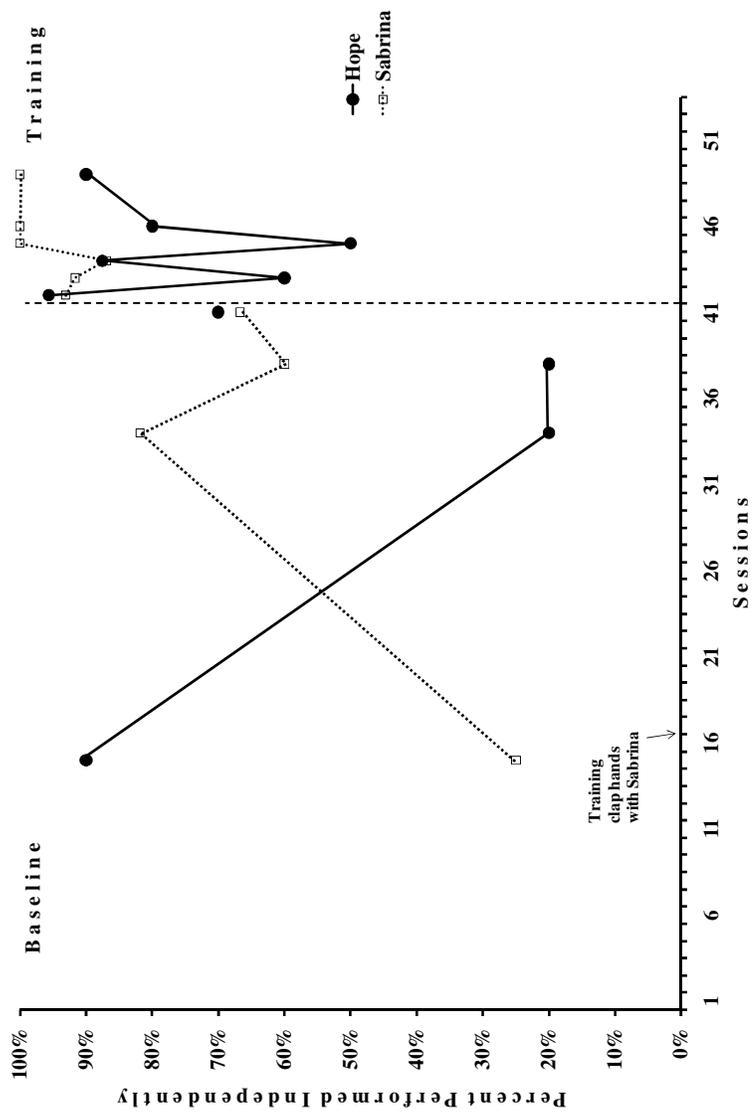


Figure 4. The percent of steps completed independently for discrete trial teaching of “give me” dog for Sabrina and the percent of independent responses for Hope.

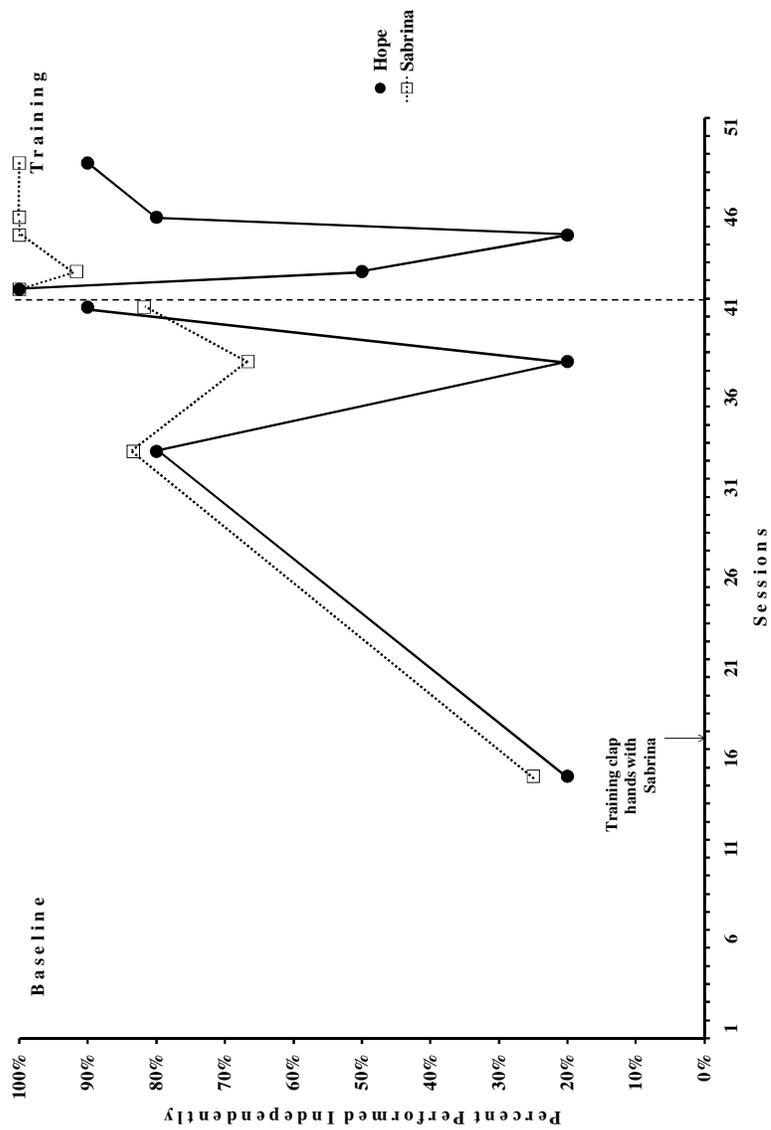


Figure 5. The percent of steps completed independently for discrete trial teaching of “give me” red for Sabrina and the percent of independent responses for Hope.

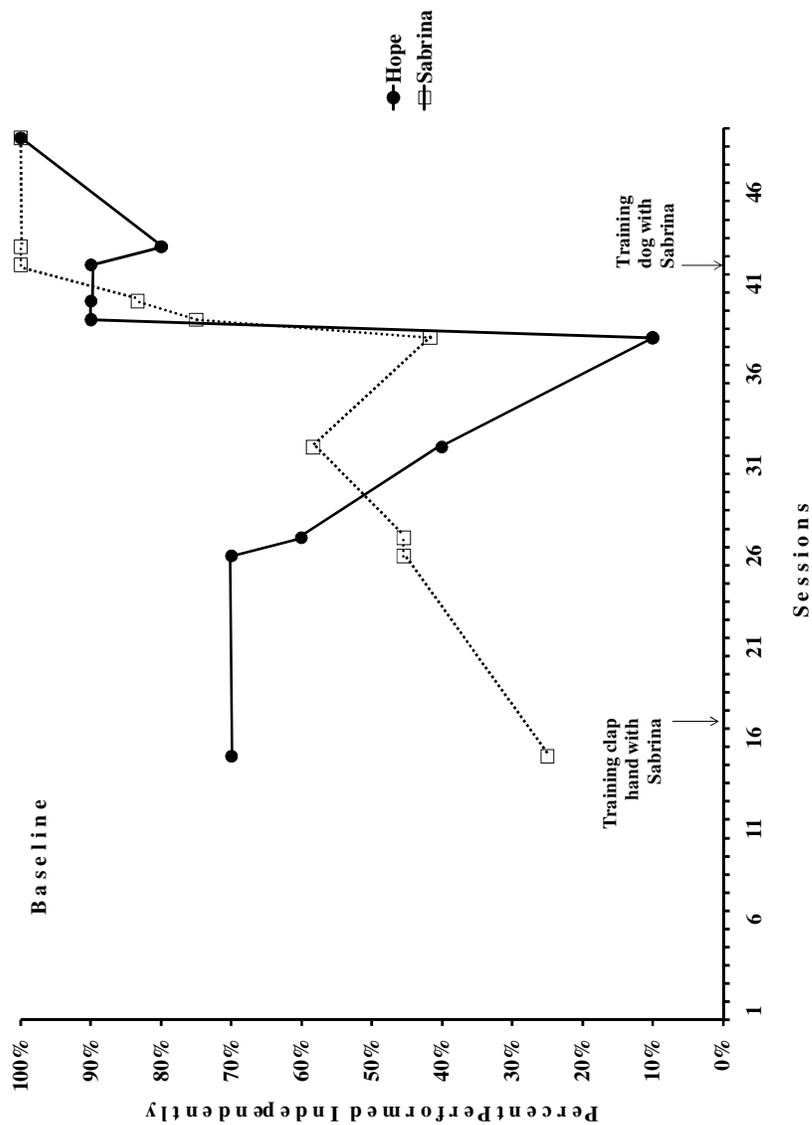


Figure 6. The percent of steps completed independently for discrete trial teaching of “give me” spoon for Sabrina and the percent of independent responses for Hope.

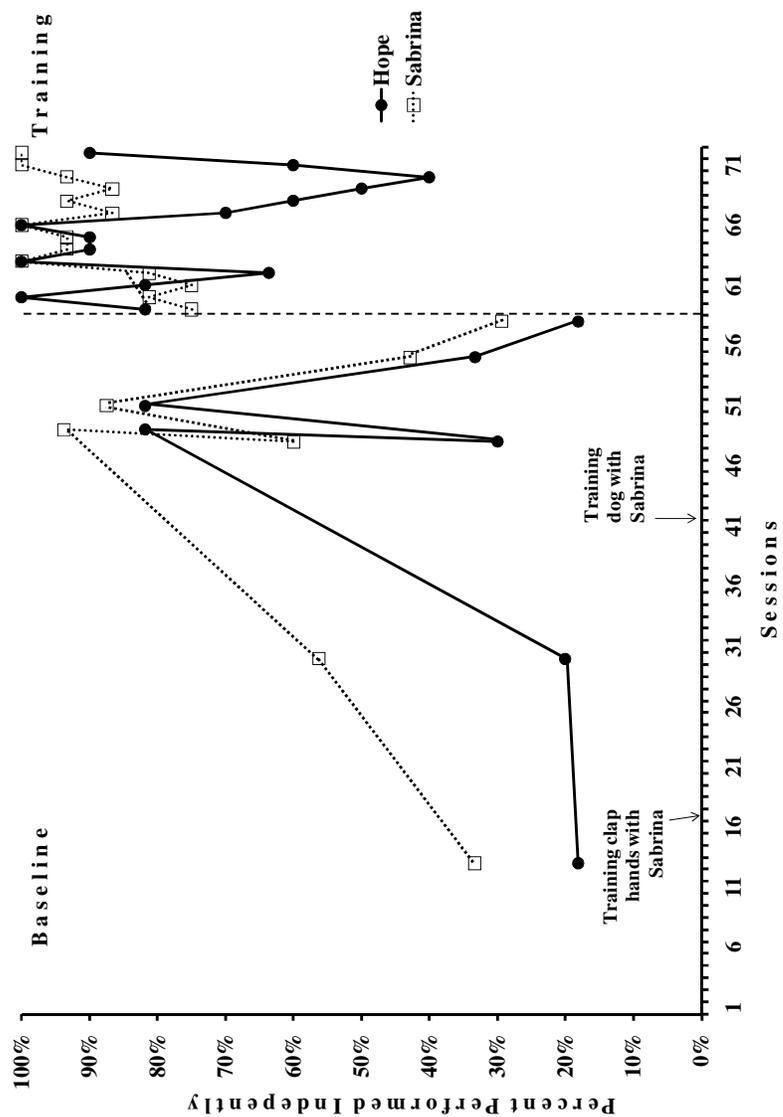


Figure 7. The percent of steps completed independently for self-help teaching of putting on pants for Sabrina and the percent of independent responses for Hope.

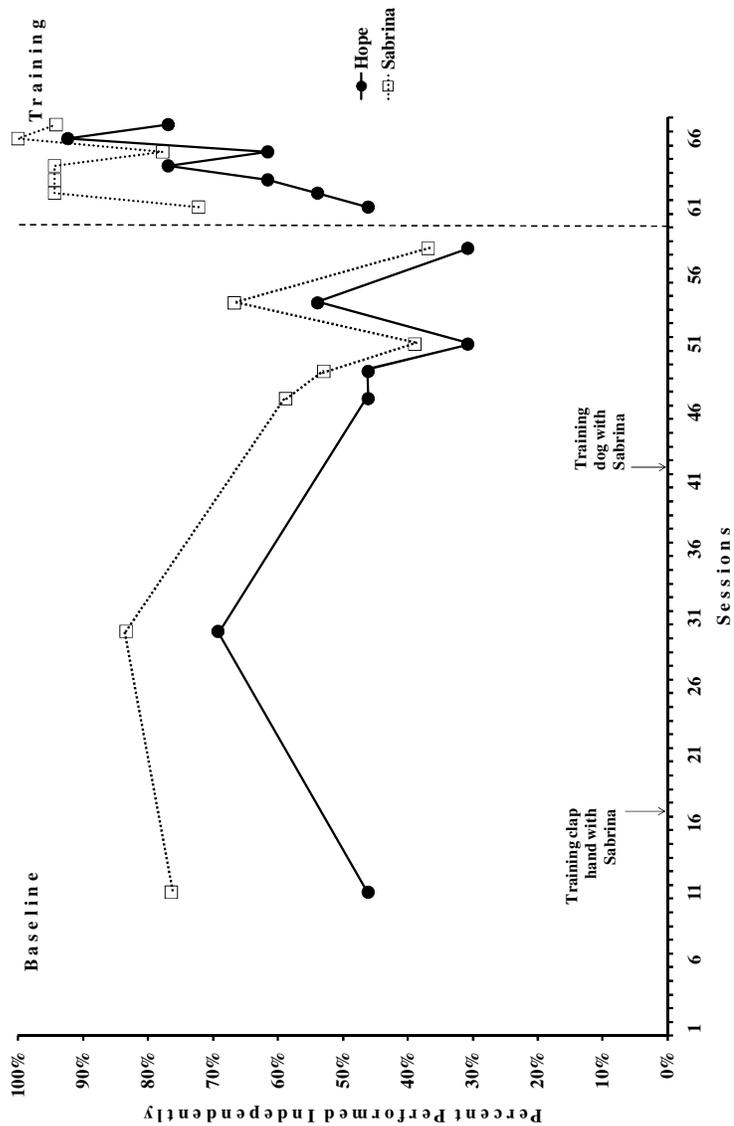


Figure 8. The percent of steps completed independently for self-help teaching of putting on coat for Sabrina and the percent of independent responses for Hope.

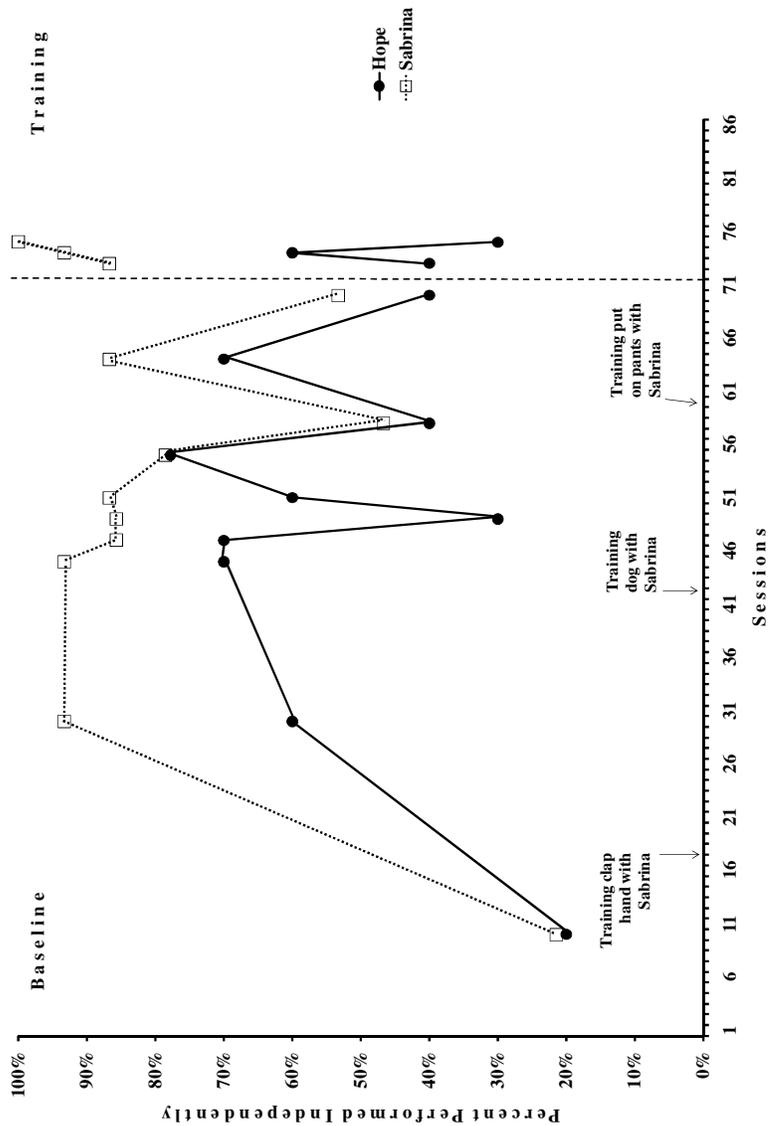


Figure 9. The percent of steps completed independently for self-help teaching of brushing hair for Sabrina and the percent of independent responses for Hope.

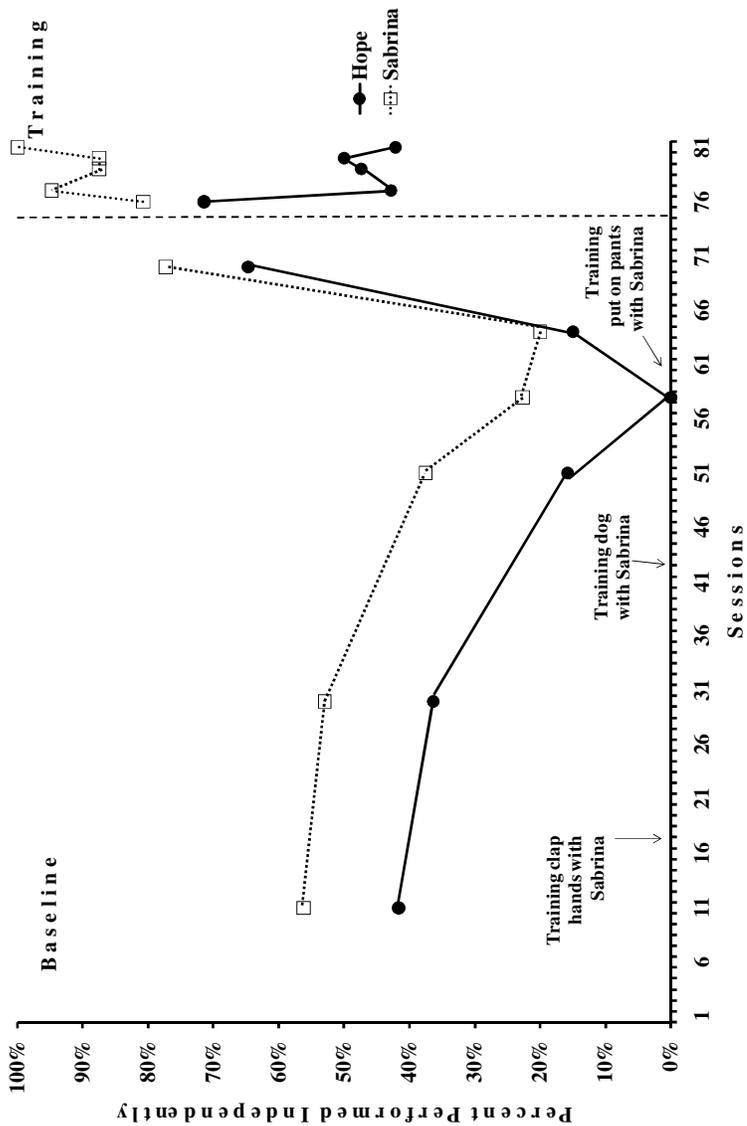


Figure 10. The percent of steps completed independently for self-help teaching of pouring a drink for Sabrina and the percent of independent responses for Hope.

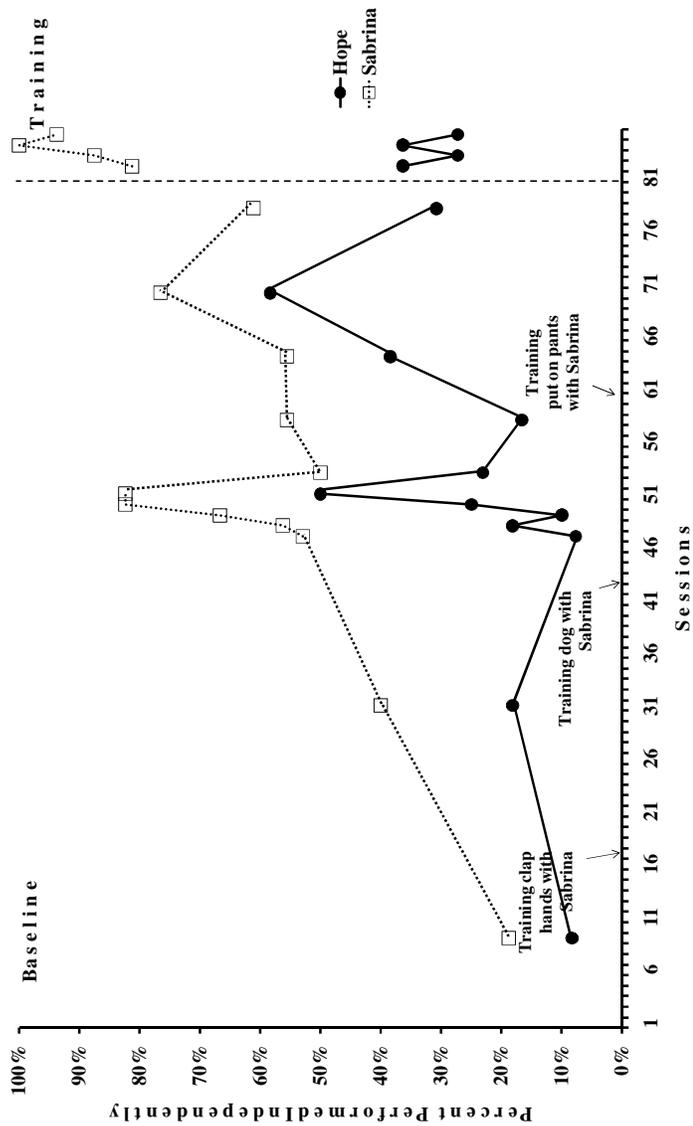


Figure 11. The percent of steps completed independently for self-help teaching of washing hands for Sabrina and the percent of independent responses for Hope.

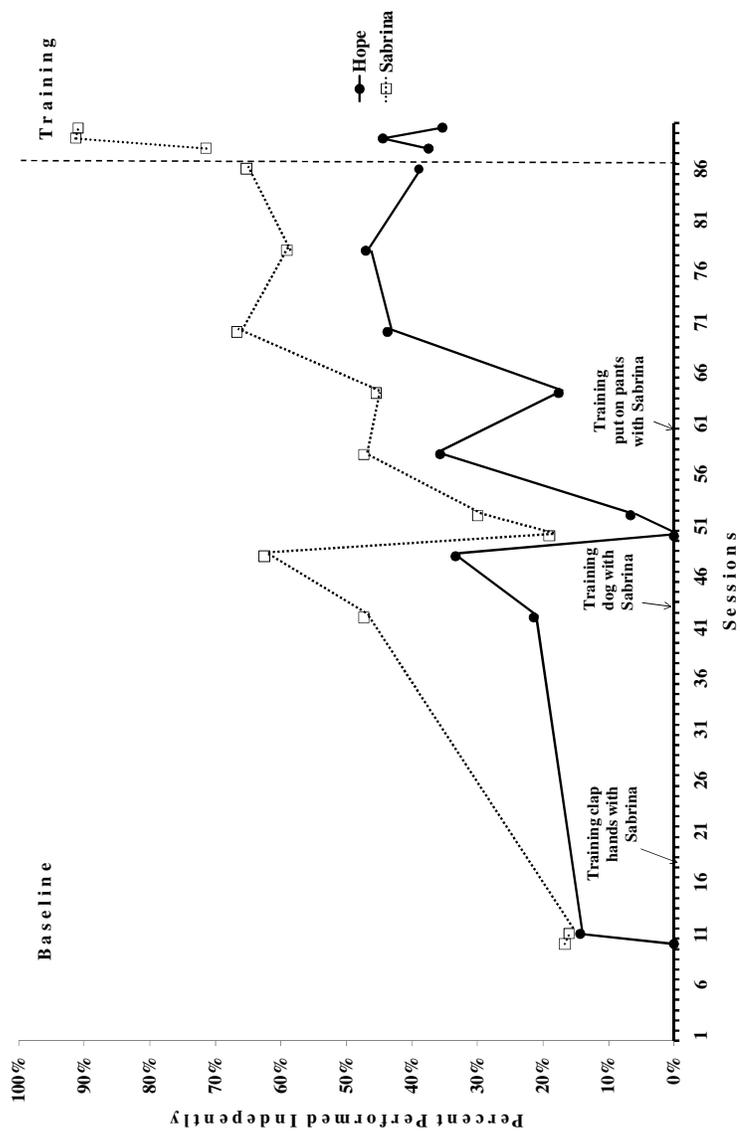


Figure 12. The percent of steps completed independently for self-help teaching of setting a table for Sabrina and the percent of independent responses for Hope.

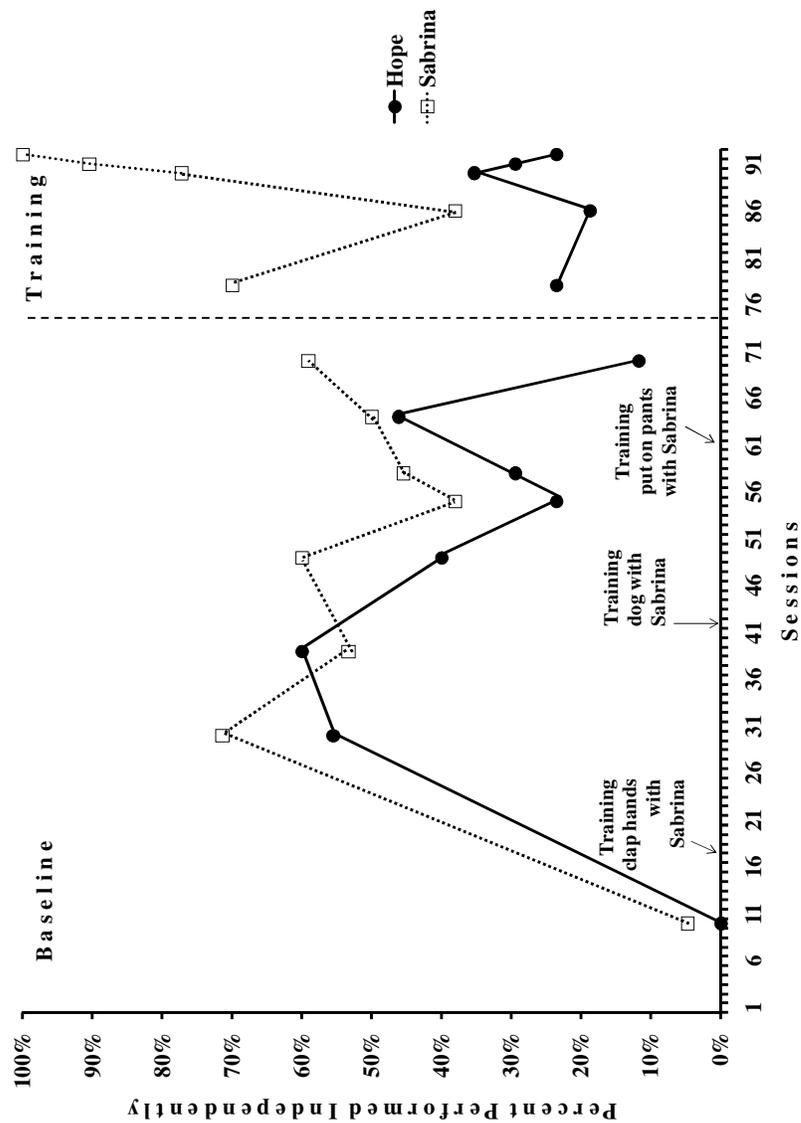


Figure 13. The percent of steps completed independently for self-help teaching of putting on shoes for Sabrina and the percent of independent responses for Hope.

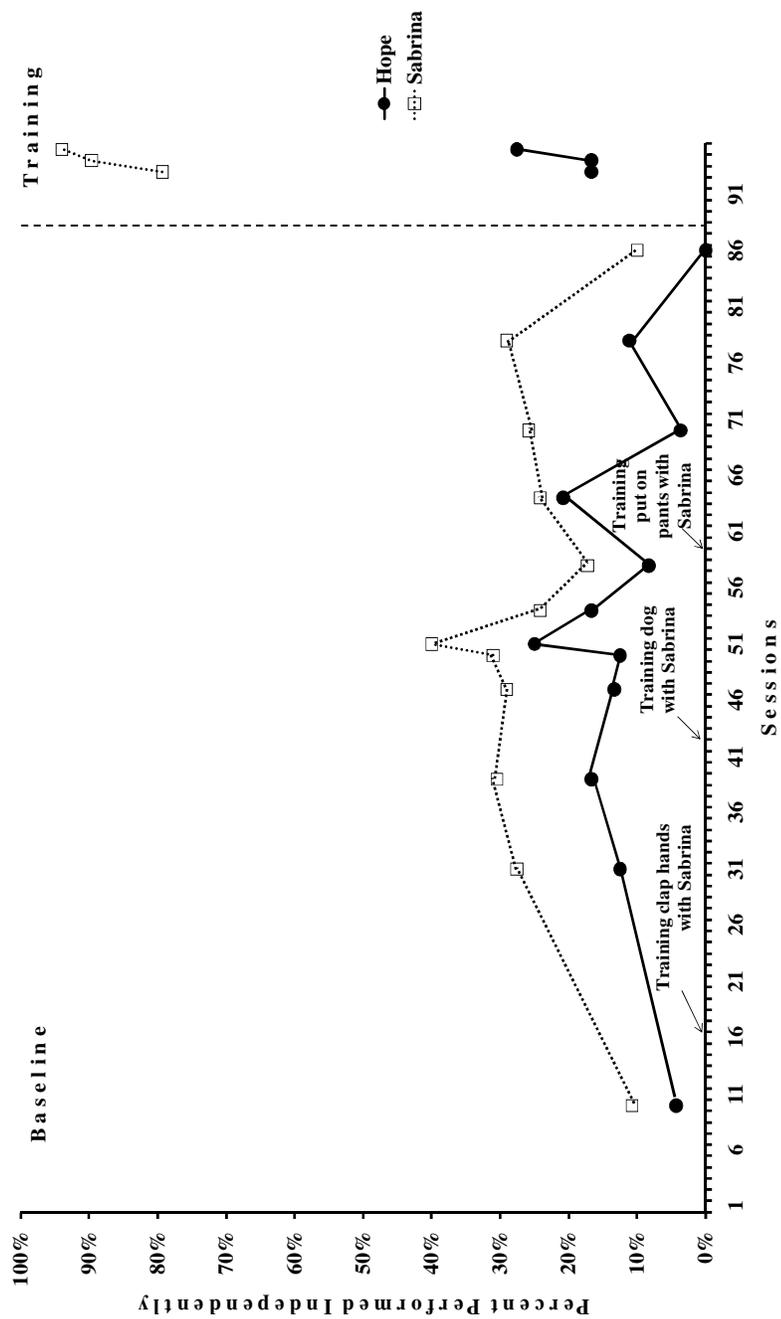


Figure 14. The percent of steps completed independently for self-help teaching of brushing teeth for Sabrina and the percent of independent responses for Hope.

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APPENDICES

Appendix A

Trial Data Sheet

Client: _____ DCFS ID #: _____ Observer: _____
 Date: _____

Task: _____ **Task:** _____ **Task:** _____
Teacher: _____ **Teacher:** _____ **Teacher:** _____

Trial Outcome		Trial Outcome		Trial Outcome	
1	C I P	1	C I P	1	C I P
2	C I P	2	C I P	2	C I P
3	C I P	3	C I P	3	C I P
4	C I P	4	C I P	4	C I P
5	C I P	5	C I P	5	C I P
6	C I P	6	C I P	6	C I P
7	C I P	7	C I P	7	C I P
8	C I P	8	C I P	8	C I P
9	C I P	9	C I P	9	C I P
10	C I P	10	C I P	10	C I P

Task: _____ **Task:** _____ **Task:** _____
Teacher: _____ **Teacher:** _____ **Teacher:** _____

Trial Outcome		Trial Outcome		Trial Outcome	
1	C I P	1	C I P	1	C I P
2	C I P	2	C I P	2	C I P
3	C I P	3	C I P	3	C I P
4	C I P	4	C I P	4	C I P
5	C I P	5	C I P	5	C I P
6	C I P	6	C I P	6	C I P
7	C I P	7	C I P	7	C I P
8	C I P	8	C I P	8	C I P
9	C I P	9	C I P	9	C I P
10	C I P	10	C I P	10	C I P

Appendix B
Brushing Hair

Family: _____ DCFS ID# _____
 Phase: _____
 Date: _____
 Trainer: _____
 Child: _____
 Observer: _____

All necessary materials within view and reach of child		
Deliver instructions when child is attending (eye contact, no distractions, close)		
Delivers clear, concise instructions once		
Has currently effective reinforcers ready		
	Child	Trainer (+= waits & uses least-most)
Pick up hair brush/comb	I V G M P	
Place brush on front of head	I V G M P	
Brush front of hair (front to back)	I V G M P	
Place brush on side	I V G M P	
Brush front to back	I V G M P	
Place brush on other side	I V G M P	
Brush front to back	I V G M P	
Place brush on back of head	I V G M P	
Brush front to back	I V G M P	
Put brush away	I V G M P	
Deliver reinforcement at end		

Appendix C
Brushing Teeth

Family: _____ DCFS ID# _____

Phase: _____

Date: _____

Trainer: _____

Child: _____

Observer: _____

All necessary materials within view and reach of child

Deliver instructions when child is attending (eye contact, no distractions, close)

Delivers clear, concise instructions once

Has currently effective reinforcers ready

Child	Trainer (+= waits & uses least- most)
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	

Turn on light

Pick up toothbrush

Get toothpaste

Open toothpaste

Position opening over brush

Squeeze a small amount onto brush

Close/replace cap on toothpaste

Put toothpaste down/away

Turn on water

Pick up toothbrush

Put toothbrush under water

Appendix E
Putting on Coat

Family: _____ DCFS ID# _____

Phase: _____

Date: _____

Trainer: _____

Child: _____

Observer: _____

All necessary materials within view and reach of child

Deliver instructions when child is attending (eye contact, no distractions, close)

Delivers clear, concise instructions once

Has currently effective reinforcers ready

Child	Trainer (+= waits & uses least-most)
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	
I V G M P	

Pick up sleeve

Put first arm in sleeve

Push arm through sleeve

Grab other sleeve

Put second arm in sleeve

Push arm through sleeve

Pull up coat to be over shoulders

Grab bottom of coat with hand

Grab zipper with hand

Slide zipper into place

Hold zipper with hand

Slide zipper up with hand
Zip coat up to reaches neck
Deliver reinforcement at end

I V G M P	
I V G M P	

Zip pants (if applicable)

Deliver reinforcement at end

I V G M P	

Appendix H
Setting a Table

Family: _____ DCFS ID# _____

Phase: _____

Date: _____

Trainer: _____

Child: _____

Observer: _____

All necessary materials within view and reach of child		
Deliver instructions when child is attending (eye contact, no distractions, close)		
Delivers clear, concise instructions once		
Has currently effective reinforcers ready		
	Child	Trainer (+= waits & uses least-most)
Walk in kitchen	I V G M P	
Go cabinet door	I V G M P	
Open cabinet door	I V G M P	
Get plates/bowls	I V G M P	
Take plates/bowls to table	I V G M P	
Put 1 plate in front of 1 chair	I V G M P	
Put 2 plate in front of 2 chair	I V G M P	
Go back into kitchen	I V G M P	
Go to cabinet	I V G M P	
Get 2 cups	I V G M P	
Close cabinet	I V G M P	

Appendix I
Washing Hands

Family: _____ DCFS ID# _____
 Phase: _____
 Date: _____
 Trainer: _____
 Child: _____
 Observer: _____

All necessary materials within view and reach of child		
Deliver instructions when child is attending (eye contact, no distractions, close)		
Delivers clear, concise instructions once		
Has currently effective reinforcers ready		
	Child	Trainer (+= waits & uses least- most)
Turn on light	I V G M P	
Turn on water	I V G M P	
Put 1 hand on soap dispenser/ grab soap	I V G M P	
Put 2 hand below dispenser/ put soap on hands	I V G M P	
Pump soap once (NA if bar of soap)	I V G M P	
Put hands under water	I V G M P	
Rub hands together for 10 seconds	I V G M P	
Rub back of left hand	I V G M P	
Rub back of right hand	I V G M P	
Rinse hands	I V G M P	
Turn off water	I V G M P	

Get towel

Dry hands with towel

Put down towel

Turn off light

Delivers reinforcement at end

I V G M P	
I V G M P	
I V G M P	
I V G M P	

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Major Professor: Brandon F. Greene