The Effectiveness of a Behavioral Treatment to Increase In-Home Compliance of an Adopted Adolescent Boy with Multiple Psychiatric Diagnoses

Shannon P. Moore and Jeannie A. Golden
East Carolina University

Abstract

This article describes a study in which a 13-year-old adopted adolescent boy who had been diagnosed with attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and borderline intellectual functioning was taught to take personal responsibility for completing tasks by doing them himself instead of waiting for someone else to do them. Using frequency data collection and a multiple baseline across tasks with changing criteria research design, it was demonstrated that a simple in-home intervention involving prompting, reviewing steps, sequencing, and monetary reinforcers was successful in teaching the young adolescent boy to make his own afternoon snack and complete daily chores, while maintaining this effect, with the continued use of monetary reinforcement.

Keywords

task analysis, sequencing, ADHD, ODD, prompting, monetary reinforcement, behavioral treatment

There exists a high occurrence of attention deficit hyperactivity disorder (ADHD) with disruptive behavior disorders in youth today (Children and Adults with Attention Deficit/Hyperactivity Disorder, 2005). In past studies, ADHD has been reported to frequently co-exist with other diagnoses of behavioral disruption (Pelham, Wheeler, & Chronis, 1998). Approximately one-third to one-half of children diagnosed with ADHD may also have co-occurring oppositional defiant disorder (ODD) (Children and Adults with Attention Deficit/Hyperactivity Disorder, 2005). Some of these children may eventually develop conduct disorder (CD), putting them at higher risk for contact with the police and court system (Children and Adults with Attention Deficit/Hyperactivity Disorder, 2005).

Due to the widespread prevalence of ADHD and the impairment, persistency, and poor prognosis associated with ADHD, effective treatment is a major public health issue (Pelham, Wheeler, & Chronis, 1998). Although behavioral interventions show promise of being effective treatments for these disorders, children with these diagnoses are typically not dealt with using behavioral methods. The purpose of this study was to increase desirable behaviors of a child diagnosed with ADHD, ODD and borderline intellectual functioning, specifically improving self-initiation and completion of snack-making and chores and to create an environment for the child to maintain his newly acquired skills.

ADHD consists of four major functional deficits: poor investment and maintenance of effort, deficient modulation of arousal to meet situational demands, a strong inclination to seek immediate reinforcement, and difficulties with impulse control, all of which arise from a central impairment in self-regulation (Barkley, 1997). These deficits can be manifested in a variety of behaviors interfering with normal day-to-day functioning and learning (Tynan, 2005).

Disruptive behavior disorders include ODD and CD. ODD is defined as "a recurrent pattern of negative, defiant, disobedient and hostile behavior toward authority figures lasting at least six months" (Children and Adults with Attention Deficit/Hyperactivity Disorder, p. 2, 2005). Children with ODD often lose their temper, argue with adults, actively defy or refuse to comply with adult requests/rules, deliberately annoy people, blame others for mistakes or misbehavior, are touchy or easily annoyed by others, are angry or resentful, and are spiteful or vindictive (Children and Adults with Attention Deficit/Hyperactivity Disorder, 2005). Children with ODD are more times than not disobedient and have outbursts of temper when challenged by adults. CD consists of behaviors of a more serious nature, involving aggression toward people or animals, destruction of property, lying, stealing and skipping school (Children and Adults with Attention Deficit/Hyperactivity Disorder, 2005). Often times, children with CD show a blatant disregard for the welfare of others.

Current studies describe activities which have previously been considered to be 'child-initiated' activities requiring more initial direct prompting from teachers, parents, or care-givers (Ndoro, Hanley, Tiger, & Heal, 2006). Consequently, for children to exhibit or complete expected behaviors or tasks, they may likewise require additional initial prompting. Research completed within the past few years supports the use of active prompting to increase compliance (Clayton, Helms, & Simpson, 2006) and that with specified training children are able to perform specified tasks (Himle, Miltonberger, Flessner, & Gatheridge, 2004).

The behaviors described above are difficult for parents to handle and living with children with the above disorders can create tension within families (Children and Adults with Attention Deficit/Hyperactivity Disorder, 2005). This tension may lead to disruptions in certain family management practices and parental monitoring (Patterson & Stouthamer-Loeber, 1984). This concept was further supported by a study in which results demonstrated that mothers were more likely to respond to their teen's irritable behavior with their own negativity or hostility (Fletcher, Fisher, Barkley, & Smallish, 1996). This becomes a vicious cycle when children exploit these disruptions in family management, angering parents and other family members, and creating a more intense tension within the home.

Research suggests that specialized behavioral strategies including positive attending, prompting, ignoring, effective use of rewards and punishments, token economics, and time outs have a positive effect on behavioral actions of children diagnosed with ADHD/ODD (Children and Adults with Attention Deficit/Hyperactivity Disorder, 2005). Behavioral parent training and other behavioral interventions have been recognized as well established treatments for ADHD/ODD (Pelham, Wheeler, & Chronis, 1998), and it is reported that such interventions teach children with ADHD/ODD more appropriate ways to handle their frustrations and how to be more flexible and adaptable to different situations (Children and Adults with Attention Deficit/Hyperactivity Disorder, p.4, 2005), providing pivotal skills that afford these children to focus on improvement in other skills and behaviors.

Findings of one specific study indicate that behavioral interventions that use antecedent-based intervention (prompting) and/or a consequence-based intervention (reinforcement) are effective treatments for children with ADHD/ODD (Wilder, Atwell, & Wine, 2006). More importantly, it is essential to combine reward and instructional variables (Daly et al., 2005), and when using contingent money as a reinforcer, it is important to pair it with feedback in order to provide the discriminative information participants need to improve or correct behaviors (Roscoe, Fisher, Glover, Volkert, & Mace, 2006). Research supports the reasoning that children with ADHD/ODD can learn skills and behaviors, and generalize these to other tasks and areas of life (Whaler, Vigilante, Strand, 2004).

Children with multiple diagnoses (ADHD, ODD, CD) often exhibit problems with initiating and following through with the steps involved in taking care of basic needs (Pelham, Wheeler, & Chronis, 1998). Such children will often whine and complain about what they want and about others failing to provide what they want. This often produces an interaction in which the adult provides for the child's needs while exhibiting apparent anger for the child's failure to act in his own behalf (Fletcher, Fisher, Barkley, & Smallish, 1996). Behavioral technology offers a positive alternative in which the adult could prompt and reinforce the child, thereby teaching new skills and avoiding angry interactions that inadvertently reinforce dependency (Children and Adults with Attention Deficit/Hyperactivity Disorder, 2005).

METHOD

PARTICIPANT AND SETTING

The family involved in this study is a middle-class family with three children, all boys. The two older children are adopted and the youngest is the parents' natural son. The family's residence is outside city limits in a county in eastern North Carolina where both older boys attend school. The researcher is employed as a community-based service provider for an agency that contracts work with families needing behavioral services . As such, the researcher spent the majority of her time working with both boys in the home after school. Their house is a one-story, three bedroom, and two bathroom house. Most interactions usually took place in the living room/dining room which is in the center of the home. Sometimes mom and baby brother were home in the afternoon, and sometimes they were not.

This study focuses on the oldest child, Marcus. He is 13 years old and has been diagnosed as having ADHD, ODD, and borderline intellectual functioning. He is currently in a classroom for children with behavioral and emotional disabilities at school for all of his core subjects, but is mainstreamed for his electives, art, music, and physical education. Marcus states that he loves music and he is often found singing aloud to himself. He is friendly and outgoing, as evidenced by his behavior of speaking to strangers and striking up random conversations. Marcus makes friends easily, but has trouble maintaining friendships. Marcus seems to have endless energy, very rarely complaining of being tired or sleepy. He enjoys being outside and being active, playing sports and riding his bike, although he prefers to do these things independently. Marcus states that he enjoys yard work, such as mowing the grass, watering plants, or digging holes. Marcus is easily frustrated with performing school tasks, such as reading and math. Marcus struggles to remember simple instructions when given more than one or two at a time. He also struggles to maintain self-control when conflicts arise involving his brother or mom. Often times in these situations, Marcus becomes angry, yelling, screaming, kicking, ignoring instructions, walking away, slamming doors, and/or throwing things. Due to the above-mentioned behaviors, Marcus is very reliant on others to provide for his basic needs.

TARGET BEHAVIOR

Problems arose when Marcus assumed something was done, or would be done for him. The behavior to be changed was Marcus' responding in anger and/or frustration (arguing, kicking things, walking away, and pouting/ignoring adults) when he expected things to be done for him by others (per Marcus himself) and nothing had actually been done.

The skill deficits that appeared to be keeping him from exhibiting the desired behaviors were difficulty in breaking the task down into steps and initiating each step in the proper sequence. Instead of whining and complaining, and expecting snack to be prepared for him every afternoon or refusing to and/or having to be prompted continuously to complete chores, the child had to take more responsibility in making his own snacks and completing chores.

The appropriate placement behavior is Marcus taking personal responsibility for completing tasks by doing them himself

and not waiting for someone else to do them. Important components of learning this replacement behavior include:

1. Marcus verbally reviewing the correct steps and sequences with the researcher prior to the start of the task.
2. Marcus completing the task with verbal prompts from the researcher when needed regarding correct steps and sequences. (A verbal prompt was considered to be any verbal instruction given to Marcus prior to completing each step of the task.)

The required steps for each prompt are listed below:

Snack Task Steps

1. Decide what to eat for snack today.
2. Wash hands with soap and water.
3. Retrieve needed items for snack to countertop.
4. Read directions aloud if necessary. (Verbalize directions.)
5. Follow directions step by step if necessary.
6. Clean up kitchen and any trash/plates/cups/utensils from snack.

Chores Task Steps

1. Empty individual trashcans into kitchen trashcan.
2. Empty kitchen trashcan and put bag in outside trash can.
3. Re-line kitchen trashcan with new bag.
4. Pick-up toys, etc. from floor in hallway and living room.
5. Vacuum hallway and living room.
6. Pick-up clothes from bedroom floor and put in hamper.
7. Pick-up toys from bedroom floor.

DATA COLLECTION

The form of data collection used was frequency count, recording the number of prompts needed for completion of each step of each task.

Frequency data was also collected on the number of steps completed meeting or exceeding the criterion for each phase.

PROCEDURE

The research design used in this study was a multiple baseline across tasks with changing criteria.

Baseline was taken for 10 days during which time Marcus completed the tasks of making his afternoon snack and completing his daily chores while receiving many prompts from his mom, as he was currently accustomed to doing. During each task, the researcher recorded the number of prompts needed for correct task completion.

Following baseline, Marcus participated in a four-phase intervention as described later in the article. Marcus now had to complete each task within the allotted number of prompts for each step of each task to earn his monetary reinforcement. Again the researcher recorded the number of prompts given in order for Marcus to complete each task correctly, but this time the number of prompts given was recorded according to each task step. There were four intervention phases. As a positive reinforcer, Marcus received a set monetary amount for meeting predetermined criteria for each step of each task.

Intervention I: Marcus was informed that he was to complete the task with the predetermined number of prompts or less (12 for snack task and 14 for chores task). Marcus verbally reviewed all steps with the researcher prior to start of task. For each step he completed with 2 or less prompts, he received $0.25.

Intervention II: Marcus was informed that he was to complete the task with the predetermined number of prompts or less (6 for snack task and 7 for chores task). Marcus verbally reviewed all steps with the researcher prior to start of task. For each step he completed with 1 or less prompts, he received $0.25.

Intervention III: Marcus was informed that he was to complete the task with the predetermined number of prompts or less (0 for snack task and 0 for chores task). Marcus verbally reviewed all steps with the researcher prior to start of task. For each step he completed with 0 prompts, he received $0.25.

Intervention IV: Marcus was informed that he was to complete the task with the predetermined number of prompts or less (0 for snack task and 0 for chores task). Marcus no longer verbally reviewed all steps with the researcher prior to start of task. For each step he completed with 0 prompts, he received $0.25. The number of prompts provided was faded throughout the intervention phases until there were no prompts or sequenced step review provided during Intervention phase IV.

Intervention V: (A follow-up phase occurring over 3 weeks and begun approximately one month after the study was completed to assess maintenance of learned skills/behaviors. Since data was to be collected intermittently during this phase, predetermined days to collect data were set.) Marcus was informed that he was to complete the task with the predetermined number of prompts or less (0 for snack task and 0 for chores task). Marcus no longer verbally reviewed all steps with the researcher prior to start of task. For each step he completed with 0 prompts, he received $0.25.

RELIABILITY

Reliability data was collected by having two observers simultaneously count the number of prompts given for each task during baseline and during each phase of the intervention. With the researcher being the first observer, the child's mom served as the second observer, counting the number of prompts that were given by the researcher for each step of each task. Percent of agreement between the two observers was calculated by dividing the smaller number of prompts by the larger number of prompts multiplied by 100.

Agreement between the two observers who recorded the number of verbal prompts given to the child during completion of each specific task during the 47 sessions was 94.3%.

Agreement between the two observers who recorded the number of verbal prompts given to the child during completion of each specific task for the duration of phase V follow-up was 99.2%.

RESULTS

The average number of prompts required for Marcus to correctly complete the snack task during baseline was 8.5. Throughout intervention, this number gradually decreased until the mean number of prompts nearly reached zero (see figure 1.) This effect was maintained as the average number of prompts needed was less than two during follow-up. The average number of prompts required for Marcus to correctly complete the chore task during baseline was 12.9. The average number of prompts required for Marcus to correctly complete the chore task gradually decreased to near-zero as well. For the chore task, the average number of

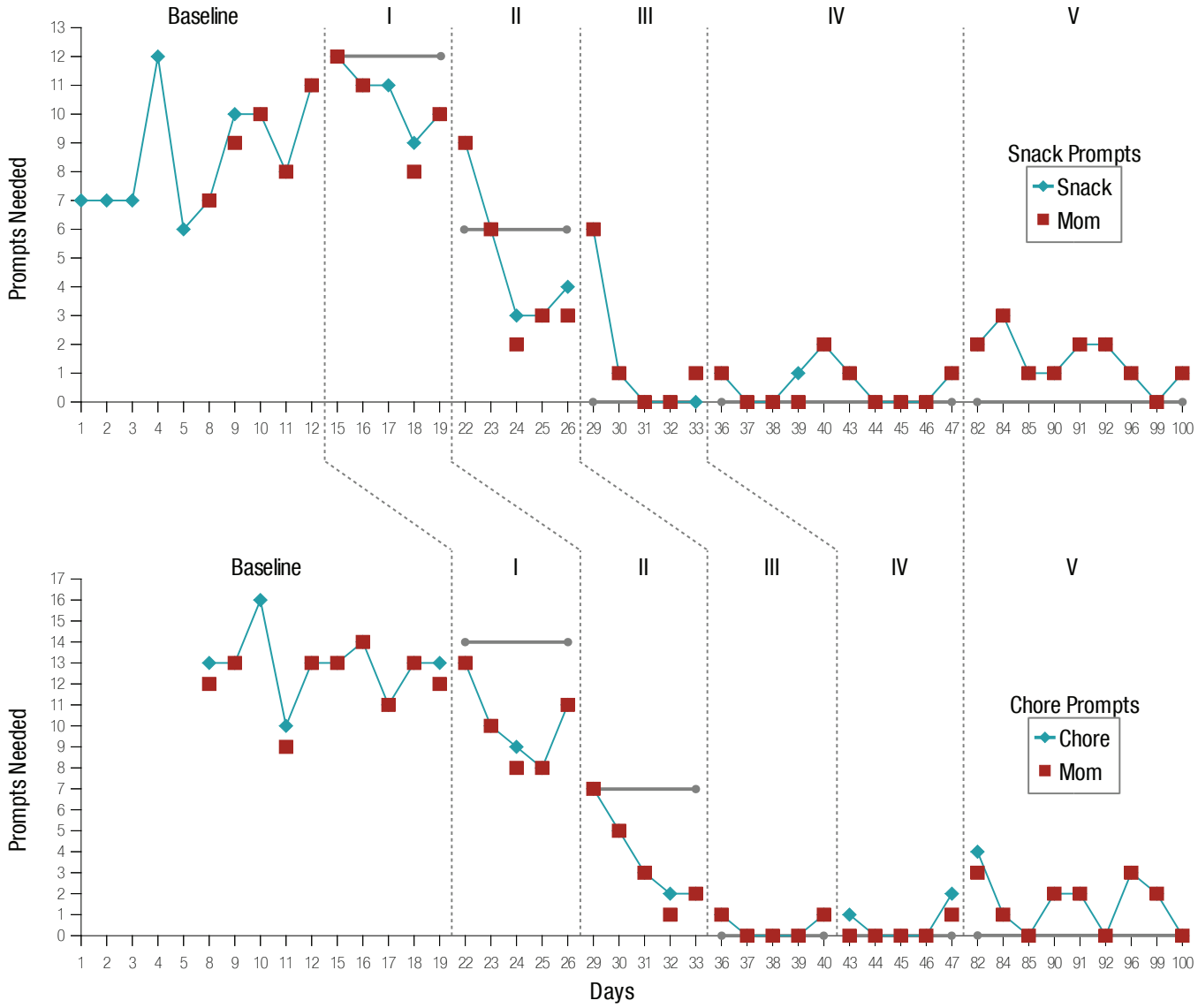

Figure 1. Prompts needed for task completion.

prompts needed was also less than two during follow-up. Again, the effect of intervention seems to have been maintained.

The average number of steps which Marcus completed meeting or exceeding the phase requirements for snack task phases ranged from 4.6 to 5.6 with a mean of 5.5 out of 6 (see figure 2). The corresponding average amount of money Marcus received for meeting or exceeding the phase requirements of snack task ranged from $1.15 to $1.40 out of a possible $1.50. During follow-up, the average number of steps which Marcus completed meeting or exceeding the phase requirements for the snack task was 4.56, out of the 6 snack steps. The corresponding average amount of money Marcus received for meeting or exceeding the phase requirement for the snack task follow-up was $1.14, out of a possible $1.50.

The average number of steps which Marcus completed meeting or exceeding the phase requirements for chore task ranged from 6.4 and 6.8 with a mean of 6.7 out of the 7 snack steps. The corresponding average amount of money Marcus received for meeting or exceeding the phase requirements of chore task ranged from $1.60 to $1.70 with a mean of $1.68 out of a possible $1.75. The average number of steps which Marcus completed meeting or exceeding the phase requirements for the chore task during follow-up was 5.67, out of the 7 snack steps. The corresponding average amount of money Marcus received for meeting or exceeding the phase requirement for the chore task during follow-up was $1.39, out of a possible $1.75.

Thus, the effect of intervention on independent completion of task steps of snack making and chore completion was also maintained.

DISCUSSION

Using task analysis, sequencing, adult prompting, and reinforcement, Marcus was taught the skills of snack making and completing chores. In this way, Marcus exhibited less dependency and minimized the possibility of making adults angry. He gained the skills to initiate and complete these tasks without requiring prompting each step of the way. This study lends support to the assertion that behavioral interventions are effective treatments in teaching children with ADHD and ODD to im-

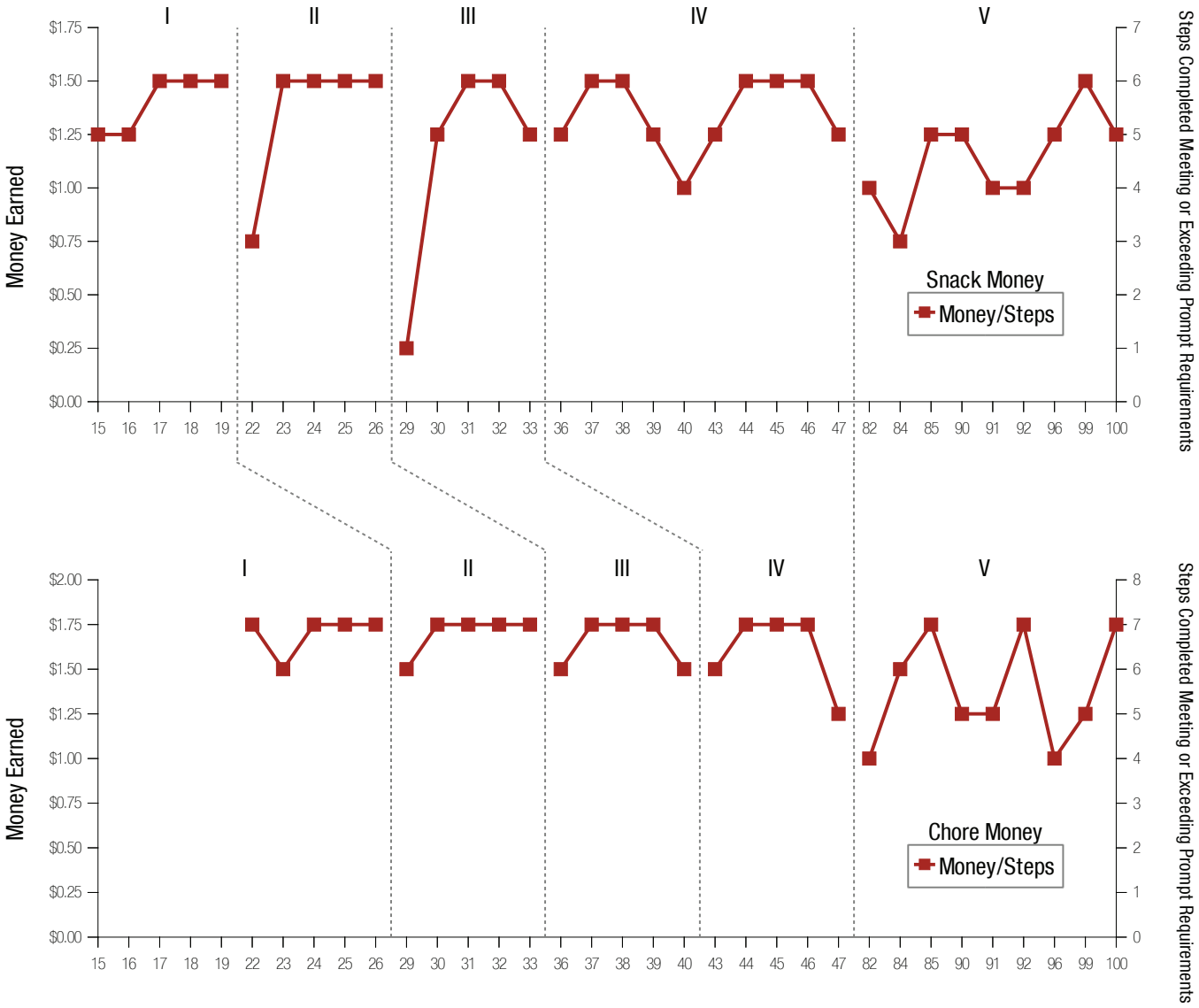

Figure 2. Number of steps completed meeting or exceeding the phase requirements and corresponding amount of money received.

prove their behavior and skill level. Through a behavioral intervention, the researcher was able to train a child with co-occurring ADHD and ODD to correctly complete multi-step tasks meeting or exceeding an expected standard. Systematically, as the behavioral intervention was applied, Marcus' behavior and skill level improved to meet the set criterion. Marcus learned to complete snack and chore tasks with no prompts needed.

During phase I of the snack task, the average number of prompts required for Marcus to correctly complete the task increased slightly from baseline. It is likely that this is because the criterion set for Marcus to meet was too easy for him, and since he had the extra prompts available to him while still meeting the criterion, he used them. Notice though, that with each time the prompt criterion was changed according to the corresponding phase of the intervention for both tasks, Marcus was able to adjust his behavior and skill level to meet the new requirement and the average number of prompts needed to correctly complete each task decreased to meet or fall below the set criterion. Marcus maintained the new snack and chore behaviors during phase V (follow-up).

During follow-up, one month after the behavioral intervention was discontinued, Marcus still retained some of the snack and chore behavior/skill level taught to him during the intervention, although it was not as strong as during the intervention. Some days of follow-up Marcus complied with snack and chore tasks perfectly. Other days were just bad days for Marcus all around (at school, on the bus, at home with brother), and Marcus performed less consistently with snack and chore tasks than he had previously done. Mom had intermittently been reinforcing Marcus with money for completing tasks correctly with no prompts needed, during the intervention hiatus. This created an issue of Marcus demanding money when he knew he had completed his tasks correctly with no prompts needed.

Dealing with issues like this are often times the case when interacting with children with ADHD, ODD, and/or CD. But even on "bad days", snack and chore time behavior and skills were still better than not having the intervention at all. Use of behavioral interventions is similar to exercising in that it is a lifestyle change. One cannot exercise for one month and then expect to reap the benefits of exercise for the rest of one's life; one has

to continually exercise to maintain the health benefits. The same is true with behavioral interventions. One cannot expect a behavior to maintain without continued prompting and reinforcement, perhaps though, more intermittently, less intense, and with different reinforcers. This is definitely the case with Marcus regarding reinforcers. It would have been more beneficial had the researcher worked more social reinforcers into the behavioral intervention study, thus Marcus may not have been so likely to demand money when he completed his tasks correctly without prompting. None-the-less, his mom reported to the researcher during follow-up how much better snack and chore time were when she didn't have to constantly argue and fight with Marcus.

One of the unique features of this study is that it was conducted in the home by a community-based service provider and enlisted the assistance of the parent as a data collector for reliability purposes. This is a different expectation from what is typically asked of the parent. Usually, the parent is trained in behavior management techniques as a means of improving parenting skills through didactic instruction, modeling, role-play, and feedback. In this case, the child's mom became an observer of the community worker who implemented the intervention and thus his mom inadvertently learned to implement the techniques through modeling. This indirect and non-confrontational way of getting parents to attend to a model and imitate the use of a procedure appears to warrant further investigation.

REFERENCES

Barkley, R. A. (1997). Behavioral inhibition, sustained attention, and executive functions: Constructing a unifying theory of ADHD. *Psychological Bulletin, 121*(1), 65-94.

Children and Adults with Attention-Deficit/Hyperactivity Disorder (CHADD) (2005). AD/HD and coexisting conditions: disruptive behavior disorders. *What We Know*, 1-7.

Clayton, M., Helms, B., & Simpson, C. (2006) Active prompting to decrease cell phone use and increase seat belt use while driving. *Journal of Applied Behavior Analysis, 39*(3), 341-349.

Daly, E.J., Bonfiglio, C.M., Mattson, T., Persampieri, M., Foreman-Yates, K., & McComas, J. (2005). Refining the experimental analysis of academic skills deficits: Part I. An investigation of variables that affect generalized oral reading performance. *Journal of Applied Behavior Analysis, 38*(4), 485-497.

Fletcher, K. E., Fischer, M., Barkley, R. A., & Smallish, L. (1996). A sequential analysis of the mother-adolescent interactions of ADHD, ADHD/ODD, and normal teenagers during neutral and conflict discussions. *Journal of Abnormal Child Psychology, 24*(3), 271-297.

Himle, M.B., Miltenberger, R.G., Flessner, C., & Gatheridge, B. (2004). Teaching safety skills to children to prevent gun play. *Journal of Applied Behavior Analysis, 37*(1), 1-9.

Ndoro, V.W., Hanley, G.P., Tiger, J.H., & Heal, N. A. (2006). A descriptive assessment of instruction-based interactions in the preschool classroom. *Journal of Applied Behavior Analysis, 39*(1), 79-90.

Patterson, G. R., & Stouthamer-Loeber, (1984). The correlation of family management practices and delinquency. *Child Development, 55*(4), 1299-1307.

Pelham, W.E., Wheeler, T., & Chronis, A. (1998). Empirically supported psychosocial treatments for attention deficit hyperactivity disorder. *Journal of Clinical Child Psychology, 27*(2), 190-205.

Roscoe, E.M., Fisher, W.W., Glover, A.C., Volkert, V.M., & Mace, F.C. (2006). Evaluating the relative effects of feedback and contingent money for staff training of stimulus preference assessments. *Journal of Applied Behavior Analysis, 39*(1), 36-77.

Tynan, W. D. (2005). What is ADHD? Retrieved January 26th, 2007 from http://www.kidahealth.org/parent/Medical/learning/adhd.htMl

Wahler, R.G., Vigilante, V.A., & Strand, P.S. (2004). Generalization in a child's oppositional behavior across home and school settings. *Journal of Applied Behavior Analysis, 37*(1), 43-51.

Wilder, D. A., Atwell, J., & Wine, B. (2006). The effects of varying levels of treatment integrity on child compliance during treatment with a three-step prompting procedure. *Journal of Applied Behavior Analysis, 39*(3), 369-373.

AUTHORS' CONTACT INFORMATION

SHANNON PATON, M.S.

Licensed Recreational Therapist
Certified Therapeutic Recreation Specialist
3111 East Firetower Rd.
Greenville, NC 27858
slp0127@yahoo.com

[1]JEANNIE A. GOLDEN, PHD

Psychology Department
East Carolina University
Greenville, NC 27858
252-328-6206
goldenj@ecu.edu

1 Please address correspondence to Jeannie A. Golden.