

January 2013

An Evaluation of Self Management to Increase On Task Behavior with Individuals Diagnosed with Attention-Deficit/Hyperactive Disorder

Lindsey C. Slattery

University of South Florida, l6slattery@gmail.com

Follow this and additional works at: <http://scholarcommons.usf.edu/etd>

 Part of the [Behavioral Disciplines and Activities Commons](#)

Scholar Commons Citation

Slattery, Lindsey C., "An Evaluation of Self Management to Increase On Task Behavior with Individuals Diagnosed with Attention-Deficit/Hyperactive Disorder" (2013). *Graduate Theses and Dissertations*.
<http://scholarcommons.usf.edu/etd/4946>

This Thesis is brought to you for free and open access by the Graduate School at Scholar Commons. It has been accepted for inclusion in Graduate Theses and Dissertations by an authorized administrator of Scholar Commons. For more information, please contact scholarcommons@usf.edu.

An Evaluation of Self-Management to Increase On-Task Behavior with Individuals
Diagnosed with Attention-Deficit/ Hyperactive Disorder

by

Lindsey C. Slattery

A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Arts
Department of Child and Family Studies
College of Behavioral and Community Studies
University of South Florida

Co-Major Professor: Kimberly Crosland, Ph.D., BCBA
Raymond Miltenberger, Ph.D., BCBA
Rose Iovannone, Ph.D., BCBA

Date of Approval:
August 14, 2013

Keywords: ADHD, children, intervention, home setting

Copyright © 2013, Lindsey Slattery

Dedication

I dedicate this manuscript to my parents, Mike and Linda Slattery. Thanks to their love and unconditional support I was able pursue my dreams. They have helped shape my behavior over the years, behavior which has allowed me the opportunity to dream bigger than I could have imagined in the areas of education and research.

Acknowledgments

I would like to acknowledge my entire thesis committee, the professors who have helped shape my behavior and guided me to becoming the student and behavior analyst that I am today. Most importantly, I would like to thank my main advisor, Dr. Kim Crosland for her knowledge, support and patience.

Table of Contents

List of Figures.....	ii
Abstract.....	iii
Chapter One: Introduction.....	1
Chapter Two: Method.....	7
Participants and Setting.....	7
Target Behavior.....	8
Real-Time Recording Data Collection.....	10
Accuracy Data.....	11
Inter-observer Agreement.....	12
Treatment Fidelity.....	12
Social Validity.....	13
Experimental Design.....	13
Procedures.....	14
Baseline.....	14
Training of Participants.....	14
Training of Parents.....	15
Self-Management.....	16
Self-Management plus Reinforcement for On-Task Behavior.....	17
Chapter Three: Results.....	18
Chapter Four: Discussion.....	20
References.....	25
Appendices.....	29
Appendix A: Real Time Recording Data Sheet.....	30
Appendix B: Duration of Routine Data Sheet.....	31
Appendix C: Self-Management Form.....	32
Appendix D: Participant’s Social Validity Rating Scale.....	33
Appendix E: Parent’s Social Validity Rating Scale.....	34
Appendix F: Parent Interview Guide.....	35
Appendix G: Child Preference Assessment Interview.....	36
Appendix H: Task Analysis of Participant’s Training Components.....	38
Appendix I: Task Analysis of Parent’s Training Components.....	39

List of Figures

Figure 1: Percent of time spent on-task across all conditions is displayed above for all three Participants.....	28
---	----

Abstract

Attention-deficit/hyperactivity disorder (ADHD) is one of the leading diagnoses for children. Children diagnosed with ADHD often have difficulty in many settings including at school as well as in the home. Medication is often a common treatment for these children, however, it has been often shown ineffective when used alone. A review of behavioral interventions, including various self-regulation interventions has been studied. Self-regulation interventions have been shown to be effective for children diagnosed with ADHD primarily in school or academic settings. The purpose of this study was to evaluate the effects of a self-management intervention on the on-task behavior of children diagnosed with ADHD. Specifically, this study aimed to examine the impact a self-management intervention would have on the on-task behavior of children during various routines, both academic and non-academic, in the child's home setting. Participants were trained to use a self-management intervention. As a result of the accurate use of the self-management intervention all three participant's on-task behavior increased. For one participant, the duration of the targeted routine also substantially decreased.

Chapter One:

Introduction

Attention-deficit/ hyperactive disorder (ADHD) is one of the most prominent diagnoses given to children today in the United States (Root & Resnick, 2003). Between 2003 and 2007 the prevalence of parent reported ADHD increased 21.8%, representing 5.9 million children (Center for Disease Control and Prevention [CDC], 2010). Garfield et al. (2012) analyzed trends in both ADHD diagnosis and the medical treatment of ADHD in the United States and found that between 2000 to 2010 ADHD diagnoses in a doctor's office increased from 6.2 million to between 9.5 and 10.6 million. Also, it has been reported that 3 to 5% of elementary aged children are diagnosed with ADHD (Harris, Friedlander, Saddler, Frizzelle, & Graham, 2005).

Within the classroom setting, children with a diagnosis of ADHD complete their schoolwork at lower or poorer levels and suffer from far more off-task behavior than their typical peers (Barkley, 1990; Davies & Witte, 2000). Many children with a diagnosis of ADHD have extreme difficulties in school and other activities that require productivity and attentiveness. Children diagnosed with ADHD often suffer from problems relating to attention, effort, as well as organizing or completing tasks (American Psychiatric Association [APA], 1994). Youth with attention problems often struggle to maintain attention during activities, have control, and deal with a delay in reinforcement (Axelrod, Zhe, Haugen, & Klein, 2009). Because of this off-task behavior these children often suffer academically (Axelrod et al., 2009; Neef, Bicard, Endo, Coury, & Aman, 2005; Shapiro, DuPaul, & Bradley-Klug, 1998). Having a diagnosis of ADHD

can also place a large economic burden on children and families as a result of direct costs of a diagnosis and treatment and indirect costs including educational accomplishments, occupational instability and lost income (Barkley, 2002; Pelham, Foster, & Robb, 2007).

Many interventions have been developed and introduced for individuals with a diagnosis of ADHD. Stimulant medication is the most common treatment for ADHD (Barkley, 1998). Garfield et al. (2012) found that of those individuals receiving a diagnosis of ADHD in a doctor's office roughly 93 to 96% were prescribed medication for their diagnosis. However, over the last decade many safety concerns have been raised concerning the use of medical interventions for individuals with a diagnosis of ADHD (Garfield et al., 2012). The Food and Drug Administration (FDA) issued a series of reports regarding reported associations between potential cardiovascular events and adverse psychiatric symptoms with medications approved for the treatment of ADHD. Studies thus far conducted by the FDA researching this association have found no concrete data that demonstrates ADHD medication causes cardiovascular events in adolescents; however, the FDA continues to examine the potential link (The Food and Drug Administration [FDA], 2011).

When preparing children for independent work expectations it may not be effective to simply wait for children to become engaged or emit on-task behaviors on their own (De Haas-Warner, 1992). Instead, to increase children's on-task behavior an intervention might be needed, especially for individuals diagnosed with ADHD. Multiple interventions aimed at individuals diagnosed with ADHD have been examined by researchers, either in addition to or in place of medication (Ayllon et al., 1975; Gureasko-Moore, DuPaul, & White, 2006). Behavioral interventions used with individuals diagnosed with ADHD, include token reinforcement, peer tutoring, peer mediated reinforcement, and school-home notes (Ayllon et al., 1975; DuPaul,

Ervin, Hook, & McGooney, 1998; Flood, Wilder, Flood, & Masuda, 2002; Jurbergs, Palcic, & Kelley, 2007).

Self-regulation has also been researched as an intervention for individuals diagnosed with ADHD (Shapiro et al., 1998). Self-regulation describes different strategies to manage, monitor, record, and assess an individual's own behavior (Reid, Schartz, & Trout, 2005). Self-regulation interventions can be classified as self-monitoring, self-reinforcement, and self-management. Self-monitoring includes observing and recording one's own behavior; this can include self-monitoring of attention or self-monitoring of performance. Self-monitoring may also include external reinforcement if needed, in which an external agent would award the individual's behavior for a change in the target behavior. Self-reinforcement is similar to self-monitoring plus reinforcement; however, in self-reinforcement the individuals provide the reinforcement themselves. Self-management requires individuals to observe and record their behaviors, however, it differs from self-monitoring as this strategy also requires individuals to evaluate the accuracy of their recordings. Individuals using a self-management intervention observe and record their behavior and then compare their self-evaluations to evaluations completed by someone else such as a teacher or parent. Reinforcement is subsequently contingent on accurate self-evaluations (Reid et al., 2005).

Self-regulation is an approach that is far less restrictive and more facilitative than other interventions that have been used to improve behavior (De Haas-Warner, 1992). As Barkley (1998) described in his theoretical model of ADHD, individuals diagnosed with ADHD have impaired executive functions that directly impact their ability to self-regulate their own behavior. Shapiro et al. (1998) argued that self-regulation skills could be identified as a core deficit for individuals diagnosed with ADHD. Other interventions while effective, do not directly address

the deficits in self-regulation skills common to individuals diagnosed with ADHD. Self-regulation interventions have not only been proven to be effective interventions with students with ADHD, they also teach individuals with ADHD skills that when learned allow for more independent living and that address specific skills believed to be core deficits in individuals with ADHD. Self-regulation should be an ultimate objective; teaching individuals to self-govern, to identify their own goals, to find ways to reach those goals, and to reinforce their own accomplishments (De-Haas-Warner, 1992). Another reason that self-regulation interventions appear to be a better option for children diagnosed with ADHD is that often the success of interventions relying on parental involvement correlates with the level of involvement of those parents. Difficult or time-consuming interventions may meet resistance from busy or disinterested parents (Axelrod et al., 2009). By removing the majority of responsibility from the parents and placing it on the child this problem is avoided. Teaching children how to self-regulate their own behavior teaches them a fundamental skill and also decreases the likelihood that the intervention will fail due to under involvement by parents.

Self-regulation interventions have been repeatedly shown to be effective interventions for students to address off-task behavior and academic performance. A substantial portion of the research conducted using self-regulation interventions, however, has been carried out in the school setting with a specific focus on academic routines (e.g., Amato-Zech & Doepke, 2006; Graham-Day, Gardner, & Hsin, 2010; Shapiro et al., 1998). Little research has been conducted examining the on-task or off-task behavior of children diagnosed with ADHD in the home setting (Toney, Kelley, & Lanclos, 2003). There are many ways in which ADHD can negatively impact the lives of children in their homes. Symptoms of ADHD begin in early in a child's life and

are commonly seen to persist across multiple settings, which can include the home, school, and community (American Psychiatric Association [APA], 1994). The APA also reported that ADHD could also lead to limitations in many domains including relationships with parents and siblings. Specifically, relationships between parents and children diagnosed with ADHD can become very strained and stressful (Barkley, 1998). Of the children diagnosed with ADHD it is estimated that 80% of those children will exhibit a number of behavioral problems (Cantwell & Baker, 1991). During childhood many difficulties at home begin to occur for children diagnosed with ADHD; these can include poor sleep patterns, strained family and marital relations, sad and depressive feelings, and oppositional and aggressive behaviors (Harpin, 2005; Johnston & Mash, 2001).

Parents of children with hyperactivity have reported high levels of stress as well as have made frequent statements regarding their child's inability to listen and the occurrences of hyperactive behaviors at home (Ayllon et al., 1976). Homework is also a problematic routine for some children with a diagnosis of ADHD or attention problems. Specifically these children often have difficulties staying on-task and frequently turn in incomplete assignments (Axelrod et al., 2009). Axelrod et al. (2009) examined the effects of self-monitoring on the on-task homework behaviors for children with attention and behavior problems in a residential setting. All of the participants in the study were living in a large-scale residential treatment facility, for children with behavior problems. Axelrod et al. implemented a self-monitoring intervention with both 3-min and 10-min intervals during the participants' homework routines. Some of the pre-existing interventions remained in effect during the study, which included a token economy and school-home notes. The results of the study showed that all of the participants' on-task behavior increased significantly as a result of the self-monitoring interventions. Furthermore, Axelrod et

al. demonstrated that there was no distinct difference in the participants' on-task behavior during the 3-min or 10-min intervals. Axelrod et al. reported that with respect to the realm of homework research two areas that have been relatively unexplored are interventions in the home and interventions to help individuals with attention problems. More research needs to be conducted with individuals diagnosed with ADHD in the home setting to address the problems that can occur there, as Axelrod et al. was the only study found that conducted this type of research. However, Axelrod et al. conducted their study in a residential facility, which may offer more structure than a typical home setting. Research should also be conducted to examine the effects of self-regulation interventions on other problematic routines in the home and not focus specifically on academic related routines such as homework.

The purpose of this study was to extend the research conducted using a self-management intervention with children diagnosed with ADHD in the home setting. This study examined the effects of a self-management intervention on children's on-task behavior. Considering the tendency to focus on academic routines in the literature the second purpose of this study was to extend the research to examine any identified problematic routine experienced by the participant's in their homes.

Chapter Two:

Method

Participants and Setting

Six participants (three parent-child dyads) were selected for the study. Child participants were selected for inclusion upon meeting the following criteria: (a) between the ages of 6 and 14-years-old; (b) a diagnosis of ADHD; (c) no comorbid diagnoses of autism or intellectual disability; (d) parent report of a currently existing or potentially problematic routine in the home including off-task behaviors; and (e) written parental consent and verbal or written assent from the child to participate. Three boys (Tommy, David, and Johnny) 10 and 12-years-old, participated in the study. Tommy was an 11-year-old boy who was diagnosed with ADHD at the age of 9 and had a history of engaging in off-task behavior both in the home setting and school setting. At the time of the study he was not taking any prescribed medications for his ADHD and had no history of receiving behavioral services. Tommy also did not have any other reported diagnoses. His parents reported that Tommy was dropped from the gifted program as a result of poor grades and off-task behaviors in the classroom and as a result had also been the victim of bullying from classmates. David was a 9-year-old boy with a diagnosis of ADHD with a long history of engaging in off-task behavior in both the home and school settings. David also engaged in tantrums, consisting of screaming, crying, dropping to the floor, elopement, physical aggression and property destruction when prompted to begin or continue engaging in a non-preferred task. David also reportedly had trouble sleeping. At the time of the study David was prescribed Focalin for his ADHD. He had no history of receiving behavioral services and did

not have any other reported diagnoses. Finally, Johnny was a 12-year-old boy with a diagnosis of ADHD. He also had a history of engaging in off-task behavior in both the home and school settings. At the age of 11 Johnny was removed from his public school as a result of poor grades and repeated reports of disruptive behavior and as a result began home schooling through an online program. At the time of the study Johnny was not taking any prescribed medications for his ADHD. Johnny was also diagnosed with diabetes at the age of 11 and took daily injections of Insulin. Johnny's parents reported that he often forgot to check his blood sugar and give himself his required injections. During the time of the study Johnny was also receiving evaluations through a University based Behavior Clinic, however, had no history of receiving behavioral services. All trainings and direct observations throughout the study took place in the participants' homes.

Target Behaviors

The target behavior selected for all three participants was on-task behavior during a routine in the home. Routines were defined on a case-by-case basis. Tommy's targeted routine was homework, which included getting his homework materials together, completing his homework and having his parents check his homework to make sure it was correct. David's targeted routine was nighttime shower, which included getting his shower materials (e.g., towel) and pajamas together, taking a shower, getting dressed and taking his dirty clothes and towel to the laundry room. Johnny's targeted routine was leisure reading, which included getting his book and writing materials (e.g., paper and pen) together, reading his book, and writing a summary of what he had read. All routines were videotaped when the researcher was present, with an exception of David's shower routine. David's parents reported a history of David coming out of the bathroom or running around the house naked when he did not want to shower, therefore to

minimize the potential possibility of capturing David naked on camera the researcher decided to hand collect data when present in the home and only video tape the routine when necessary for IOA purposes. Direct observation data were collected for on-task behavior as adopted from behavior categories listed in the *Behavioral Observation of Student in Schools (BOSS)* structured observation code (Shapiro, 2010).

On-task behavior was defined as any instance of passive engagement, active engagement and the absence of off-task behavior during the observed interval. Passive engaged time included those times when the participant was passively engaged in or attending to the targeted routine (e.g., silently reading or standing in the shower under the running water). Active engaged time included those times when the participant was actively attending to or engaged in the targeted routine (e.g., asking parent a question related to the assigned homework, flipping the pages of the book). Off-task behavior was broken down into three possible categories: off-task motor, off-task verbal, and off-task passive behaviors. Off-task motor behaviors were defined as any motor movement by the participant that was not associated with the targeted routine (e.g., out of seat during homework/reading routine or running away from the parents during the nighttime shower routine). Off-task verbal behavior was defined as any instance of verbalizations not related to the task at hand (e.g., talking to others about non-homework related topics or screaming/crying). Off-task passive behaviors were defined as any passive disengagement for a period of at least five consecutive seconds (e.g., looking away from the task at hand). All off-task motor, verbal or passive behaviors that were approved or allowed by the parent were identified on a case-by-case basis (e.g., talking to the parents during the shower).

Real-Time Recording Data Collection

Frequency of on-task behavior, duration of on-task behavior and the exact time of occurrence were all recorded by using real-time recording. The percentage of time the participant was engaged in on-task behavior was collected by utilizing a real-time recording method where data collectors viewed video recordings of the sessions and recorded the time indicated on the timer for the onset and offset for each occurrence of on-task behavior (see Appendix A for real-time recording data sheet). The percentage of time on-task was calculated by dividing the time spent on-task by the duration of the routine then multiplied by 100. Percentage of time on-task data was collected for the first 40 min of the routine. The duration of the targeted routine was also measured. The duration of the routine was calculated by viewing the timer from the video recordings to measure from the time the routine began to the time the routine ended (see Appendix B for the duration data sheet). Duration of the routine included the entire time it took the participant to complete the routine. For real-time recording data collection the researcher acted as the primary data collector and a research assistant acted as the secondary data collector. Research assistants were trained as data collectors by the researcher. Training included teaching on the operational definition of the target behaviors and viewing video recordings of routines from earlier baseline sessions to practice identifying the target behavior accurately. Training continued until the research assistant accurately identified and recorded the occurrence of the target behavior 100% of the time for two consecutive viewings of baseline sessions. Research assistants began collecting percentage of time on-task data and duration data during baseline and continued throughout all phases of the study.

Accuracy Data

Participants collected their own self-management data on a variable interval 3-min schedule, range = 1 to 5 min. Participants used a self-management form to record the data (see Appendix C for the self-management form). Participants utilized a momentary time sampling recording method. At the time of an auditory cue from a tape recorder participants were required to mark down whether they were on-task or off-task at the moment the auditory cue was delivered. Accuracy of the participant's self-management data was measured to assess whether the participant was correctly using the self-management intervention. Accuracy of self-management was determined by using the participant's parent as a secondary data collector, whose data was compared to that of the participant to determine an accuracy score. The parent was provided with the same self-management form as their child and a tape recorder that delivered an auditory cue 5 s ahead of that of their child's. The auditory cue was given 5 s before the end of the interval to prompt them to observe their child's behavior. At the time the second auditory cue (i.e, the auditory cue from the child's tape recorder) sounded, the parent was cued to mark down their child's on-task or off-task behavior at that exact moment. An agreement occurred when both the parent and child independently marked down the same response on the self-management form for each given interval. Accuracy was determined by dividing the number of agreements by the number of intervals then multiplied by 100. If the participants showed accuracy scores below 80% for two consecutive sessions they were re-trained on the operational definition and self-management intervention by the researcher until they could accurately identify and record their on-task and off-task behavior at least 90% of the time. Overall, the participants' accuracy of self-management was high with more variability for David. (Tommy, $M = 97.5\%$, range, 80% to 100%, David, $M = 83.3\%$, range, 0% to 100%, Johnny, $M =$

100%). David was retrained on the operational definition and self-management intervention on one occasion, following two consecutive 0% accuracy scores.

Inter-Observer Agreement

Inter-observer agreement (IOA) data were collected for percentage of time on-task data and duration data. IOA data were collected by having both the researcher and a research assistant view video recordings of the sessions for 33% of baseline and 33% of intervention sessions. For percentage of time on-task data an agreement occurred when both the researcher and a research assistant recorded the same onset and offset of on-task behavior with a 5 s variation (window of error). IOA for percentage of time on-task data was calculated by dividing the number of agreements by the number of agreements plus the number of disagreements then multiplied by 100. For duration data an agreement occurred when both the researcher and a research assistant independently recorded the same duration with a 10 s variation (window of error). IOA for duration data was calculated by dividing agreements by agreements plus disagreements then multiplied by 100. IOA scores for percentage of time on-task for Tommy, David and Johnny were $M = 95.8\%$, range 83% to 100%, $M = 80.5\%$, range 50% to 92% and $M = 100\%$ respectively. IOA scores for duration data were 100% for all three participants during all phases of the study.

Treatment Fidelity

Treatment fidelity was measured to ensure the parents were accurately identifying and recording their child's on-task or off-task behavior. The researcher completed the self-management form to compare to the forms completed by the participants' parents during 50% of sessions (four sessions for Tommy, nine sessions for David and three sessions for Johnny). Treatment fidelity checks ensured that the parents were correctly conducting accuracy checks on

their child's self-management. An agreement occurred when both observers independently marked the participant's behavior as on-task or off-task during the same interval. Treatment fidelity was calculated by dividing the number of agreements by the number of agreements plus disagreements then multiplied by 100 to determine an overall percent of agreement. During treatment fidelity checks the researcher also observed the parents to ensure they were delivering the appropriate consequences contingent on the accuracy score achieved for that session. Treatment fidelity scores were high and stable for all of the participants' parents throughout the entire study (Tommy's parents $M = 96.9\%$, range 75% to 100%, David's parents $M = 100\%$, Johnny's parents $M = 100\%$).

Social Validity

Following the completion of the study, parents and participants were asked to complete a social validity questionnaire assessing their thoughts on the intervention's effectiveness as well as their overall satisfaction with the intervention. The questionnaire administered to the parents consisted of five questions in which their responses were measured on a 5-point Likert scale. Participants were provided with a similar questionnaire, which consisted of five questions assessing the participant's satisfaction and thoughts on the intervention's effectiveness. The participant's responses were also measured on a 5-point Likert scale. Please see Appendices D and E for the social validity questionnaires.

Experimental Design

A non-concurrent multiple baseline across participants design was used to evaluate the effects of a self-management intervention on the participants' on-task behavior during a problematic routine in the home setting.

Procedures

Baseline. The researcher conducted a brief interview with the parent to determine a target routine (see Appendix F). The data/information from the parent interview was collected via handwritten notes. After the target routine was identified, direct observations were conducted in the home during the identified routine. Parents and participants were advised to behave as they normally would. Baseline data collection continued until stable rates of behavior were observed. Following the completion of baseline data collection the researcher conducted a preference assessment in the form of an interview with the child to determine a list of preferred items and activities. The participant and the parent assisted in identifying acceptable and feasible items and activities from the list and this data/information was collected via handwritten notes by the researcher. See Appendix G for the preference assessment interview.

Training of participants. Participants met individually with the researcher in their respective home settings on two occasions for training on the self-management intervention. The training consisted of a series of seven steps: (a) introducing a rationale for the use of a self-management intervention, (b) describing the operational definition of on-task behavior as it related to the study, (c) describing the self-management procedure, (d) having the participant describe the procedure to the researcher, (e) modeling the procedure for the participant, (f) allowing the participant time to rehearse the procedure, (g) and providing feedback accordingly. Rehearsing the procedure involved viewing video recordings of earlier baseline sessions and recording on-task or off-task behavior from the video on a self-management form utilizing a variable interval 3-min schedule with a momentary time sampling recording system until they could accurately recognize and record the occurrence of their on-task or off-task behavior at least 90% of the time during two consecutive viewings of baseline sessions. The initial training

session lasted approximately 1 hr. The second session included a review of the procedure and time to practice rehearsing the procedure as done on the first day of training until the participant demonstrated mastery of the self-management techniques. Mastery of the techniques was defined as accurately recording their own behavior at least 90% of the time during two consecutive viewings of earlier baseline sessions. Once mastery of the self-management intervention was observed training was completed and the participant began the self-management intervention. See Appendix H for a task analysis of participant training components.

Training of parents. The participants' parents were trained to collect data on the accuracy of their child's self-management. The training included seven steps: (a) teaching on the operational definition of the target behavior, (b) providing instruction on the use of the self-management form, (c) allowing the parent time to practice using the self-management form, (d) providing instructions on calculating accuracy scores, (e) providing instructions on delivering the appropriate form of feedback and preferred items, and (f) allowing the parent time to practice comparing two self-management forms to calculate accuracy scores and providing the appropriate form of feedback, and preferred items if earned. Parents practiced identifying the target behavior and using the self-management form by viewing video recordings of the targeted routine from baseline sessions of their child. The parents rehearsed observing the target behavior, assessing whether the target behavior occurred or not, and recording the occurrence of the behavior. During training a variable interval 3-min schedule with a momentary time sampling recording system was used. Parents practiced comparing two self-management forms to determine accuracy scores by comparing their forms from training to forms completed by the researcher from the same baseline sessions. Based on the accuracy score determined during practice the parent also practiced delivering the appropriate form of feedback, and preferred

items if earned. Parents were trained until they could accurately recognize and record the occurrence of the target behavior 100% of the time during two consecutive viewings of baseline sessions. See Appendix I for a task analysis of parent training components.

Self-management. Prior to the beginning of the targeted routine the parents informed the participants that they would be allowed to choose a preferred item or activity if their recordings on the self-management form accurately matched their parents 100% of the time. Following the end of the routine the parent collected the tape recorder and self-management form from the participant and reviewed the form with the participant for accuracy. If the participant's self-management form accurately matched that of the parent 100% of the observed intervals, the parent delivered appropriate feedback and provided the child with his choice of a preferred item or activity. Feedback for achieving an accuracy score of 100% consisted of providing the child with praise, which included statements such as "Great job today! You can choose an item or activity" or "You did really well marking down when you were on-task! Pick an item or activity for doing a great job today". The parent then provided the child with an array of 1-3 of his top preferred items or activities identified during the preference assessment and allowed the child to choose one item or activity. If the participant's self-management form did not accurately match the form of the parent for 100% of the observed intervals the parent only delivered feedback. Feedback for not meeting the criteria included statements such as "Your sheet does not match mine today, but you will have a chance to try again tomorrow" or "Sorry you did not meet the goal today, but tomorrow you can try again and if you meet the goal you can choose an item or activity".

Once the participant showed a stable level of on-task behavior, during at least 80% of the total routine, for three consecutive sessions the variable interval duration was faded to an 8-min

variable interval schedule, range = 6 to 10 min. Fading of the self-management interval was done to see if similarly high levels of on-task behavior could be achieved or maintained with longer durations of time in between self-management checks. Accuracy checks, feedback and access to preferred items or activities remained the same in this condition.

Self-management plus reinforcement for on-task behavior. If an increase in the participants' on-task behavior was not observed during the self-management condition, participants moved to a self-management plus reinforcement for on-task behavior condition. During the self-management plus reinforcement for on-task behavior condition participants continued to utilize the self-management intervention, however, in addition to receiving feedback and access to preferred items or activities for accurately recording their behavior during this phase the participants access to preferred items or activities was also contingent on a change in the target behavior. The self-management plus reinforcement for on-task behavior was implemented to ensure that the participants were not only accurately recording their behavior, but were also engaging in high amounts of on-task behavior. Following the completion of the targeted routine the parent collected and reviewed the self-management forms to determine an accuracy score for the participant's recordings, and determine the percentage of intervals the participant was engaged in on-task behavior. If the participant was engaged in on-task behavior for at least 80% of the intervals he received praise and access to a preferred item or activity.

Chapter Three:

Results

Percentage of time spent on-task data is displayed in Figure 1. During Baseline all three participants engaged in low levels of on-task behavior. The self-management 3-min variable interval condition resulted in an immediate increase to higher levels of time spent on-task for all three participants (Tommy, $M = 93.8\%$, range, 83% to 100%; David, $M = 86.3\%$, range, 60% to 98%, Johnny, $M = 99.7\%$, range, 99.4% to 100%). The self-management 8-min variable interval condition resulted in similarly high levels of time spent on-task for two of the three participants (Tommy, $M = 97.5\%$, range, 93% to 100%; Johnny, $M = 99.9\%$, range, 99.7% to 100%) and resulted in variable levels of time on-task for one participant (David, $M = 65.3\%$, range, 27.8% to 91%). David showed high variability during the self-management 8-min variable interval condition, therefore was faded back to the 3-min variable interval condition. Once David was faded back to the 3-min variable interval schedule he showed low levels of on-task behavior (David, $M = 23.5\%$, range, 10.5% to 43%). As a result of the low levels of on-task behavior the self-management plus reinforcement for on-task behavior condition was implemented. During this condition David showed an increasing trend and ended the phase with very high and stable levels of on-task behavior (David, $M = 78.1\%$, range, 27.8% to 96.4%).

Duration of the targeted routine is displayed in Figure 2. The self-management 3-min variable interval condition resulted in substantially lower and more stable levels of duration for David ($M = 10.6$ min), a slight decrease in duration for Tommy ($M = 33.8$ min) and a slight increase in duration for Johnny ($M = 51.3$ min). The self-management 8-min variable interval

condition maintained a low but slightly more variable level of duration for David ($M = 15.8$ min) while both Tommy ($M = 31.6$ min) and Johnny ($M = 48.1$ min) maintained similar levels of duration. Duration of the target routine data increased for David when he was faded back to the self-management 3-min variable interval condition ($M = 37.3$ min). After implementation of the self-management plus reinforcement for on-task behavior condition David's duration of routine data decreased back to similar levels as seen in prior conditions ($M = 18.3$ min).

Self-management appeared to be a socially acceptable intervention for both the participants and their parents. Two of the three participants, Tommy and Johnny, rated all five questions on the social validity rating scale as a 5 (i.e., strongly agree), including that they believed the intervention was beneficial, easy to learn, easy to use, that they would be willing to use the intervention in other settings and that they would recommend the intervention to other kids. One of the three participants, David, gave a 4 (i.e., agree) to the question asking if the intervention was easy to learn. However, he chose 3 (i.e., undecided) for how beneficial the intervention was, if the intervention was easy to use as well as if he would be willing to use the intervention in other settings. Finally, he chose 1 (i.e., strongly disagree) for if he would recommend the intervention to other kids. Overall the ratings received by the participants' parents were high for the social validity questions including if the intervention was beneficial to their child, easy to learn, easy to use, if they would be willing to continue using the intervention in their home and if they would recommend the intervention to other parents (Tommy's parents $M = 5$, David's parents $M = 4.6$, Johnny's parents $M = 5$). David's parents, chose 4 (i.e., agree) for if the intervention was beneficial to their child and if they would recommend the intervention to other parents.

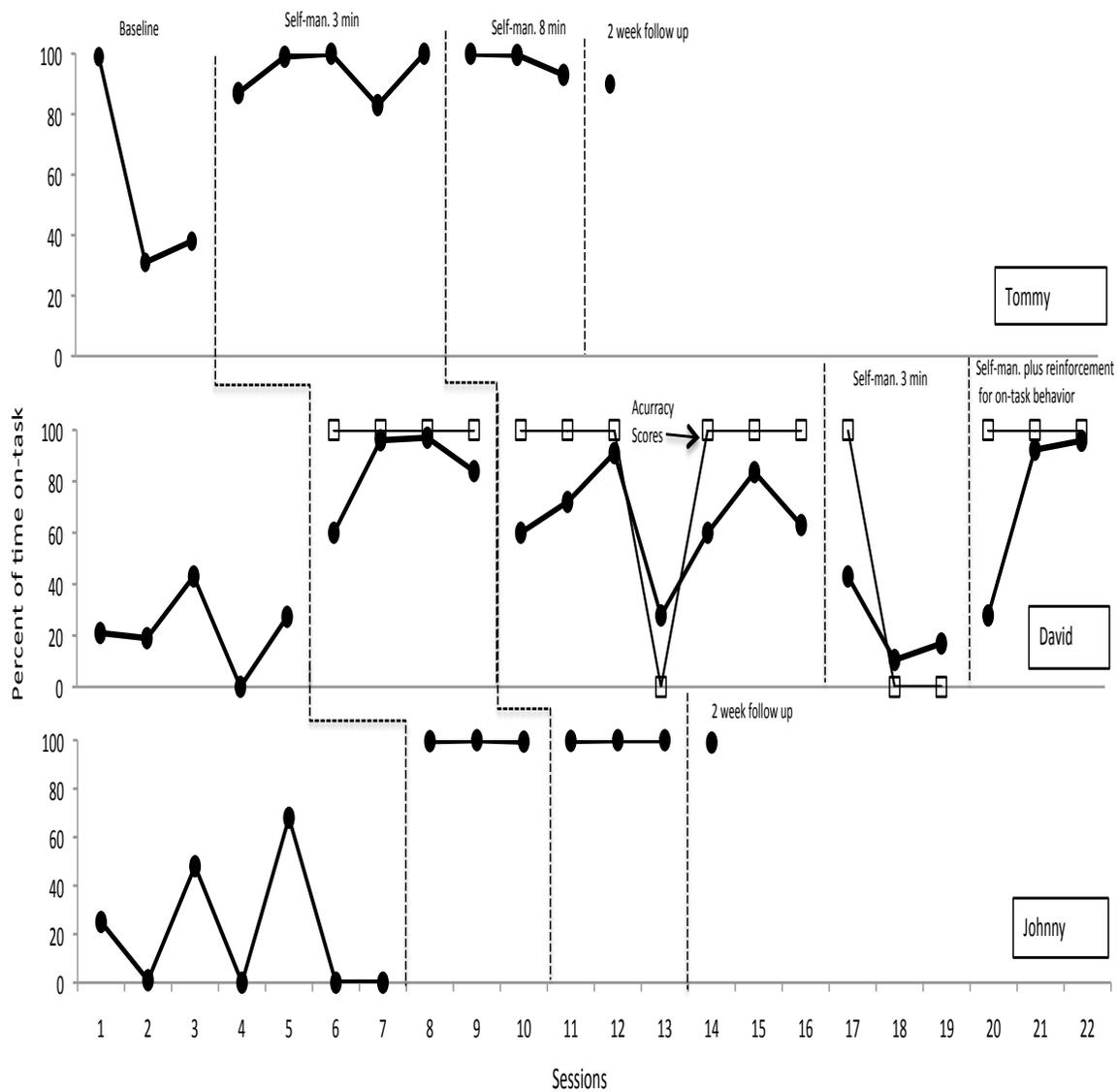


Figure 1. Percent of time on-task. Percent of time spent on-task across all conditions is displayed above for all three participants. Accuracy scores are also displayed for David.

Chapter Four:

Discussion

The current study evaluated the effects of a self-management intervention on the on-task behavior of children with ADHD. The results of this study suggest that self-management was an effective intervention for increasing the on-task behavior of these three children with ADHD. The results also suggest that self-management can be effective in the natural home setting with parent implementation of the intervention during a variety of problematic routines. During baseline all three participants showed low levels of on-task behavior, with the exception of Tommy's first data point in baseline. Tommy's first session of baseline showed an unusually high percentage of time spent on-task. It is hypothesized that this occurred as a result of reactivity to both the researcher and the video camera being present for the first time during the routine. It was hypothesized that this high data point resulted from reactivity due to parental report that this behavior was extremely unusual as well as observing a decrease in on-task behavior, which remained low and stable for the final two sessions of baseline. All three participants showed a substantial increase in their on-task behavior during the self-management 3-min variable interval condition. When the self-management intervention was faded to an 8-min variable interval Tommy and Johnny's on-task behavior remained at high and stable levels, suggesting that the self-management interval can be faded to less restrictive and more natural rates of occurrence while still resulting in high levels of on-task behavior. The results displayed for Tommy and Johnny are similar to the results in Axelrod et al. (2009), which showed that both 3-min and 8-min self-management intervals were equally effective for increasing and

maintaining the on-task behavior of children diagnosed with ADHD. For David, on-task behavior showed a slight decrease in level and became more variable as a result of being faded to the 8-min variable interval condition. David was faded back to the 3-min variable interval condition, however, the participant's on-task behavior continued to decrease and remain at low levels, therefore the self-management plus reinforcement for on-task behavior condition was implemented. During the self-management plus reinforcement for on-task behavior condition David's on-task behavior increased and remained at very high levels.

Johnny showed an increase in the duration of the routine. Johnny engaged in a leisure reading routine, therefore it was hypothesized that as he spent more time on-task made more contact with the reading material and likewise potentially received more reinforcement from reading, which may have resulted in an increase in the time he spent reading.

Accuracy scores as well as treatment fidelity scores were extremely high for all three participants and participants' parents, which suggests self-management was an easy intervention for both the participants and parents to learn and use within the home. In addition to the high Likert scale ratings on the social validity measure Tommy and Johnny's parents reported that they noticed positive changes with their child outside of the targeted routine, including an increase in positive interactions between the participants and their family as well as showing more independence in daily routines (e.g., Johnny began independently keeping track of his blood sugar levels and giving himself Insulin injections when needed). Tommy's mother reported he used the self-management intervention during chores, which was another problematic routine that often resulted in a low amount of on-task behavior. She stated that Tommy engaged in very high amounts of on-task behavior when using the self-management intervention during chores. She also reported that her other children had noticed a change in

Tommy's behavior in general; that he appeared happier and more engaged in community activities during the course of the study. David's parents reported that he used the self-management intervention to clean his room while home with his sister, and that he reportedly engaged in high amounts of on-task behavior during that time. David's parents also reported that he used the self-management intervention during nighttime shower on a day when he had not received his ADHD medication (Focalin), and that he engaged in high amounts of on-task behavior during that routine.

Results of this study are similar to those found in Axelrod et al. (2009), in which researchers showed that self-management was effective at increasing the on-task behavior of children with ADHD in a residential setting. However, the current study adds to the literature by evaluating the effects of self-management on the on-task behavior of children with ADHD in their natural home settings as opposed to a structured residential facility. This study also extends the literature by including different types of routines that can be problematic (e.g., homework, nighttime shower and leisure reading).

There are some limitations in the current study that warrant discussion. One limitation is the variability of data in the self-management 8-min variable schedule for David. David's data ranged from 27.8% to 91% within the self-management 8-min variable interval condition of the study and did not show any consistency similar to his data in the prior phase. The fourth data point in the 8-min variable interval condition was also much lower than the rest of the data points. During this session David's father was observed to have changed his approach to the routine for the first time during the study, which resulted in approximately a 15-min extinction burst, including screaming, crying, dropping, physical aggression and property destruction by the participant. During this session David's father refused to enter the bathroom until David was in

the shower and had his hair wet, which was not an expectation during prior sessions with the father. The father stated that David complied with this request during sessions with the mother; therefore, he was expected to comply with the same request with him. The change in the father's expectations of David was hypothesized to have resulted in the low percent of time spent on-task. David's data in the 8-min variable interval condition reached the above 80% criteria twice, however, most of his sessions fell below 80%. David was observed to make comments in reference to the fact that he did not have to be on-task in order to earn a reward but that as long as he was honest on his self-management form he would earn the reward. He also was observed to make comments that suggested he only needed to be on-task at the time of the auditory cue, therefore, the rest of the time he was free to be off-task and that would not be reflected on his self-management form. Finally, as a result of the high percent of time spent on-task during the 3-min variable interval condition, the duration of David's nighttime shower routine dropped to a mean of 10.6 min. Therefore, during the 8-min variable interval condition of the study David was only receiving an auditory cue approximately one to two times throughout the routine, with several minutes in between each auditory cue. It is possible that this self-management interval was too long for David, as a result of the short duration of his targeted routine.

Another limitation of the current study was the lack of long-term maintenance data for all three participants. It would have been beneficial to collect data following an extended duration of time from the end data collection in the final phase. Tommy's parents reported that one month following the end of data collection the participant no longer needed to use the tape recorder or self-management form while maintaining high levels of on-task behavior during the routine. The current study suggests that self-management can be effective at increasing the on-task behavior of children ages 9-12 who have a diagnosis of ADHD. The current study also suggests that self-

management intervals can be faded to less restrictive and more natural rates of occurrence while maintaining high and stable levels of on-task behavior. Self-management plus reinforcement may be necessary for some children in order to achieve high and stable levels of on-task behavior, as observed with David in the current study. This study adds to the literature in several ways, including examining the effectiveness of self-management in the home setting as well as extending the routines that are targeted. Future research may want to examine the effectiveness of self-management with a wider range of participants, including younger or older children. Also, future research may add to the literature by examining different methods of fading self-management intervals as well as different methods of fading the use of tangible rewards.

References

- Amato-Zech, N., Hoff, K., & Doepke, K. (2006). Increasing on-task behavior in the classroom: Extension of self-monitoring strategies. *Psychology in the Schools, 43*, 211-221.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th edition). Washington, DC: Author.
- Axelrod, M., Zhe, E., Haugen, K., & Klein, J. (2009). Self-management of on task homework behavior: A promising strategy for adolescents with attention and behavior problems. *School Psychology Review, 38*, 325-333.
- Ayllon, T., Layman, D., & Kandel, H. J. (1975). A behavioral-educational alternative to drug control of hyperactive children. *Journal of Applied Behavior Analysis, 8*, 137-146.
- Barkley, R. A. (1990). *Attention-deficit hyperactivity disorder*. (1 ed.). New York: Guilford Publications.
- Barkley, R. A. (1998). *Attention-deficit hyperactivity disorder: A handbook for diagnosis and treatment* (2nd ed.). New York: Guilford.
- Barkley, R. A. (2002). Major life activity and health outcomes associated with \ attention-deficit/hyperactivity disorder. *Journal of Clinical Psychiatry, 63*, 10-15.
- Cantwell, D. P., & Baker, L. (1991). Association between attention deficit-hyperactivity disorder and learning disorders. *Journal of Learning Disabilities, 24*, 88-95.
- Centers for Disease Control and Prevention. (2010). Increasing prevalence of parent-reported attention deficit/hyperactivity disorder among children: United states, 2003 and 2007. *Morbidity and Mortality Weekly Report (MMWR), 59*, 1439-1443.
- Davies, S., & Witte, R. (2000). Self-management and peer-monitoring within a group contingency to decrease uncontrolled verbalizations of children with attention-deficit/hyperactivity disorder. *Psychology in the Schools, 37*, 135-147.
- De Haas-Warner, S. (1992). The utility of self-monitoring for preschool on-task behavior. *Topics in Early Childhood Special Education, 12*, 478-495.

- DuPaul, G. J., Ervin, R. A., Hook, C. L., & McGooney, K. E. (1998). Peer tutoring for children with attention deficit hyperactivity disorder: Effects on classroom behavior and academic performance. *Journal of Applied Behavior Analysis, 31*, 579-592.
- Flood, W. A., Wilder, D. A., Flood, A. L., & Masuda, A. (2002). Peer-mediated reinforcement plus prompting as treatment for off-task behavior in children with attention-deficit hyperactivity disorder. *Journal of Applied Behavior Analysis, 35*, 199-204.
- Garfield, C., Dorsey, R., Zhu, S., Huskamp, H., Conti, R., Dusetzina, S., ... Alexander, C. (2012). Trends in attention deficit hyperactivity disorder ambulatory diagnosis and medical treatment in the united states, 2000–2010. *Academic Pediatrics, 12*, 110-116.
- Graham-Day, K., Gardner, R., & Hsin, Y. (2010). Increasing on-task behaviors of high school students with attention deficit hyperactive disorder: Is it enough? *Education and Treatment of Children, 33*, 205-221.
- Gureasko-Moore, S., DuPaul, G. J., & White, G. P. (2006). The effects of self-management in general education classrooms on the organizational skills of adolescents with adhd. *Behavior Modification, 3*, 159-183.
- Harpin, V. A. (2005). The effect of adhd on the life of an individual, their family, and community from preschool to adult life. *Archives of Disease in Childhood, 90*, 2-7.
- Harris, K. R., Friedlander, B. D., Saddler, B., Frizzelle, R., & Graham, S. (2005). Self-monitoring of attention versus self-monitoring of academic performance: Effects among students with adhd in the general education classroom. *The Journal of Special Education, 39*, 145-156.
- Johnston, C., & Mash, E. J. (2001). Families of children with attention-deficit/hyperactivity disorder: Review and recommendations for future research. *Clinical Child and Family Psychology Review, 4*, 183–207.
- Jurbergs, N., Palcic, J., & Kelley, M. (2007). School-home notes with and without response cost: Increasing attention and academic performance in low-income children with attention-deficit/hyperactivity disorder. *School Psychology Quarterly, 22*, 358-379.
- Neef, N., Bicard, D., Endo, S., Coury, D., & Aman, M. (2005). Evaluation of pharmacological treatment of impulsivity in children with attention deficit hyperactivity disorder. *Journal of Applied Behavior Analysis, 38*, 135-146.

- Pelham, W. E., Foster, M. E., & Robb, J. A. (2007). The economic impact of attention-deficit/hyperactivity disorder in children and adolescents. *Ambulatory Pediatrics*, 7, 121-131.
- Reid, R., Schartz, M., & Trout, A. (2005). Self-regulation interventions for children with attention deficit/hyperactivity disorder. *Exceptional Children*, 71, 361-377.
- Root, R. W., & Resnick, R. J. (2003). An update on the diagnosis and treatment of attention deficit/hyperactivity disorder in children. *Professional Psychology: Research and Practice*, 34, 34-41.
- Shapiro, E. S. (2010). Direct observation: Manual for the behavioral observation of students in school (boss). *Academic Problems Skills Fourth Edition Workbook* (pp. 42-45). New York, NY: Guilford Press.
- Shapiro, E. S., DuPaul, G. J., & Bradley-Klug, K. L. (1998). Self-management as a strategy to improve the classroom behavior of adolescents with adhd. *Journal of Learning Disabilities*, 31, 545-555.
- The Food and Drug Administration. (2011). *FDA drug safety communication: Safety review update of medications used to treat attention-deficit/hyperactivity disorder (adhd) in children and young adults*. Retrieved from http://www.fda.gov/Drugs/DrugSafety/ucm277770.htm?utm_campaign=Google2&utm_source=fdaSearch&utm_medium=website&utm_term=adhd&utm_content=4.
- Toney, L. P., Kelly, M. L., & Lanclos, N. F. (2003). Self- and parental monitoring of homework in adolescents: Comparative effects of parents' perceptions of homework behavior problems. *Child and Family Behavior Therapy*, 25, 35-51.

Appendices

Appendix A: Real Time Recording Data Sheet

Participant: _____

Date: _____

Observer: _____

Phase: _____

Start Time: _____

End Time: _____

Occurrence of On-task Behavior	On-set of BX (real time)	Off-set of BX (real time)	Total Time On-Task
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Appendix C: My Self-Management Form



At the exact second the bell rings, was I on-task or off-task?

Intervals (bell rings)	On-Task	Off-Task
Start Of Routine		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
End Of Routine		

Appendix D: Participant’s Social Validity Rating Scale

Directions: Please read each statement and circle one of the five choices that best describe the extent to which you agree with each statement.

1. I think the self-management intervention was beneficial and helped me stay on-task.				
1- Strongly disagree	2- Disagree	3- Undecided	4- Agree	5- Strongly agree
2. The self-management intervention was easy to learn.				
1- Strongly disagree	2- Disagree	3- Undecided	4- Agree	5- Strongly agree
3. The self-management intervention was easy to use.				
1- Strongly disagree	2- Disagree	3- Undecided	4- Agree	5- Strongly agree
4. I would be willing to use the self-management intervention in other settings such as school.				
1- Strongly disagree	2- Disagree	3- Undecided	4- Agree	5- Strongly agree
5. I would recommend the self-management intervention to other kids.				
1- Strongly disagree	2- Disagree	3- Undecided	4- Agree	5- Strongly agree

Appendix E: Parent's Social Validity Rating Scale

Directions: Please read each statement and circle one of the five choices that best describe the extent to which you agree with each statement.

1. I think the self-management intervention was beneficial to my child.				
1- Strongly disagree	2- Disagree	3- Undecided	4- Agree	5- Strongly agree
2. The self-management intervention was easy to learn.				
1- Strongly disagree	2- Disagree	3- Undecided	4- Agree	5- Strongly agree
3. The self-management intervention was easy to use in the home.				
1- Strongly disagree	2- Disagree	3- Undecided	4- Agree	5- Strongly agree
4. I would be willing to continue use the self-management intervention in my home.				
1- Strongly disagree	2- Disagree	3- Undecided	4- Agree	5- Strongly agree
5. I would recommend the self-management intervention to other parents.				
1- Strongly disagree	2- Disagree	3- Undecided	4- Agree	5- Strongly agree

Appendix F: Parent Interview Guide

1. Does your child engage in off-task behaviors in the home? IF so, can you describe what those off-task behaviors look like?
2. When does your child engage in these off-task behaviors? Is there a specific routine(s) (e.g., homework, chores) that your child often engages in off-task behaviors?
3. Does your child's off-task behavior significantly prevent him/her from completing the routine? Does your child's off-task behavior significantly increase the time it takes to complete the routine?
4. How often does the routine(s) occur? How many times a week does your child engage in the routine(s)?

Appendix G: Child Preference Assessment Interview

Child's Name: _____

Date Completed: _____

Favorite Edibles

Please list 10 preferred edibles from your favorite (1) to your least favorite (10).

- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

Favorite Tangible Items

Please check all that apply.

- Books
- Puzzles
- Video Games
- Stickers
- Toys specify: _____
- Pencils, markers, crayons
- Other: _____

Favorite Activities

Please check all that apply

- Arts and Crafts
- Going somewhere specify: _____
- Eating out specify: _____
- Listening to music
- Watching movies
- Playing video games
- Playing on the computer
- Spending time with friends
- Other: _____

Appendix G Continued

Preferred Items/Activities

Parents please circle all feasible and acceptable items/activities for your child

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
- 14.
- 15.
- 16.
- 17.
- 18.
- 19.
- 20.
- 21.
- 22.
- 23.
- 24.
- 25.

Top 5 Preferred Items/Activities (child's choice from items circles above)

- 1.
- 2.
- 3.
- 4.
- 5.

Appendix H: Task Analysis of Participant Training Components

Participant Training

1. Provide participant with a rationale for the use of a self-management intervention.
 2. Provide an operational definition of the target behavior (on-task behavior) and provide examples.
 3. Describe the self-management procedure and introduce the self-management form.
 4. Have the participant describe the self-management procedure to the researcher to ensure understanding.
 5. Model the procedure for the participant.
 6. Allow time for the participant to rehearse using the procedure.
 - Participant will view videos from earlier baseline sessions to practice identifying the target behavior.
 - Participant will practice using the self-management form to record occurrences of on-task or off-task behavior.
 7. Provide feedback accordingly.
-

Appendix I: Task Analysis of Parent Training Components

Participant Training

1. Provide an operational definition of the target behavior (on-task behavior) and provide examples.
 2. Introduce and provide instructions on the use of the self-management form.
 3. Allow the parent time to practice using the self-management form.
 - Parents will view videos from earlier baseline sessions to practice identifying the target behavior.
 - Parents will practice using the self-management form to record occurrences of their child's on-task or off-task behavior.
 4. Provide instructions on determining accuracy scores.
 5. Provide instructions on delivering the appropriate form of feedback and preferred items depending on the accuracy score achieved.
 6. Allow the parent time to practice comparing two self-management forms to determine an accuracy score and allow time to practice providing feedback and preferred items if earned.
 7. Provide the parent with feedback accordingly.
-