Development and Validation of the Waiting Assessment Interview Tool (WAIT) and Evaluation of Individualized Waiting Durations in Signaled Reinforcement

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Development and Validation of the Waiting Assessment Interview Tool (WAIT) and Evaluation of Individualized Waiting Durations in Signaled Reinforcement

by

Claudia Campos Fleitas

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy Department of Child and Family Studies College of Behavioral and Community Sciences University of South Florida

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Date of Approval:
June 29, 2018

Keywords: functional communication training, indirect assessments, problem behavior, signaled reinforcement, waiting skills

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DEDICATION

This dissertation is dedicated to the strongest women in my life: Mom, Julie, and Sofie.
ACKNOWLEDGMENTS

This research would have not been possible without the mentorship of my advisor, Dr. Sarah E. Bloom. I am grateful for all your professional and personal support and guidance. Thank you for believing in me! In addition, I would like to thank Dr. Yanerys Leon and Dr. Catia Cividini-Motta for shaping my skills as a researcher, teacher, and practitioner.

To the rest of my committee members, Dr. Andrew L. Samaha, Dr. Eric A. Storch, and Dr. Nicole Hanney, I am thankful for the valuable feedback you have all provided me throughout this process. I would also like to acknowledge Jennifer R. Weyman, Dr. Anna R. Garcia, Marissa Lewis, Dr. Casey Clay, and Dr. Megan Boyle for their assistance with the completion of this study and Engage Behavioral Health for supporting and allowing me to recruit participants from their clinics. Furthermore, I am forever grateful to the McKnight Foundation for supporting my research and funding my doctoral studies.

Finally, I thank my entire family for their unconditional love and endless support. I am especially thankful to my mother, Ileana M. Fleitas, and my father, Enrique R. Campos, who taught me to love education, follow my dreams, and work very hard to accomplish my goals. To my sister, Julie, thank you for being my first mentor in life and my biggest cheerleader. To my brother, Shawn, thank you for making me laugh and for always finding the beautiful things in life. Lastly, to my husband, Greg, thank you for making my days a little brighter and easier, supporting all my goals and ideas, and experiencing the ups and downs of life with me.
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ABSTRACT

Indirect assessments are widely used to identify environmental factors that may be manipulated or integrated in the development of direct assessments and behavior interventions for individuals with developmental disabilities. To date, there are no indirect assessments that can be used to evaluate the extent to which children who engage in problem behavior wait to receive reinforcement. However, there are effective behavior interventions to increase waiting. A treatment package consisting of functional communication training (FCT) and schedule thinning (i.e., multiple schedules) has been identified as an effective intervention to increase waiting in children who engage in problem behavior maintained by social contingencies. Nonetheless, in studies in which a schedule thinning procedure has been used, the terminal waiting durations are typically selected arbitrarily. Therefore, we conducted three studies to evaluate the use of an indirect assessment to increase waiting within an FCT and schedule treatment package in children with developmental disabilities. The purpose of Study I was to develop the Waiting Assessment Interview Tool (WAIT) to obtain current waiting durations for subjects who engaged in problem behavior maintained by social contingencies. The purpose of Study II was to complete the WAIT with caregivers and behavior service providers and to compare their results to a latency functional analysis (FA) conducted with all children. Finally, the purpose of Study III was to use the WAIT completed by informants to systematically individualize the initial component durations used during the schedule thinning procedure. A second purpose was to use the informants’ preferred waiting times as final waiting targets for all subjects.
CHAPTER ONE

INTRODUCTION

Autism Spectrum Disorder and Problem Behavior

It has been estimated that 15% of children ages 3 to 17 years old have been diagnosed with at least one developmental disability in the United States (Centers for Disease Control and Prevention; CDC, 2016). According to the CDC, developmental disabilities consist of a group of disorders that impair physical and cognitive learning. These disorders or conditions are typically diagnosed during the early stages of life and may drastically impact the daily activities of individuals. One of the most prevalent developmental disabilities observed in children is autism spectrum disorder (ASD).

The prevalence of children with ASD has drastically increased in recent decades. Perez, Sawmiller, and Tan (2016) found that ASD is the second largest developmental disability in the United States with 1 in every 68 children (i.e., 1 in every 48 boys, 1 in every 189 girls) being diagnosed (Christensen et al., 2016). The Diagnostic and Statistical Manual of Mental Disorders (DSM-V-TR; American Psychiatric Association, 2013) defines ASD as a neurodevelopmental disorder that typically manifests during the early development of children. ASD significantly impairs social communication and interaction, acquisition of skills, social reciprocity, and non-verbal communication behavior. To be diagnosed with ASD, a social communication deficit and restricted or repetitive, or both, behavior must significantly impact the daily life of the individual. Moreover, there are several atypical behaviors that are frequently observed in
individuals with ASD (Dominick, Davis, Lainhart, Tager-Flusberg, & Folstein, 2007). Dominick et al. (2007) identified the following problem behaviors as the most common: a) feeding disorders (e.g., food selectivity), b) abnormal sleep patterns, c) self-injurious behavior, d) aggression, and f) tantrums.

Although there are no known cures for ASD, there are research-based interventions (e.g., early intensive behavioral intervention; Lovaas, 1993) that may help increase the quality of life and independent functioning of individuals with this disorder (Strain, Schwartz, & Barton, 2011). These interventions typically include increasing appropriate skills (e.g., daily living activities, verbal communication, social skills) and decreasing problem behavior. Functional analyses (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994) have been evaluated to assess problem behavior emitted by individuals with ASD. Also, some refinements have been made to the traditional functional analysis (FA) to increase the practicality of the assessment for different severities of responses, topography of the responses, and settings. These modified assessments continue to be evaluated and refined. Their results are used to identify function-based treatments for problem behavior.

**Functional Analysis**

The FA approach as conducted by Iwata et al. (1982/1994) is a direct assessment of problem behavior in which antecedents and consequences are manipulated to identify the environmental contingencies maintaining the problem behavior. Functional analyses are highly recommended for practitioners and researchers to conduct when working with individuals who engage in problem behavior (Carr & Fox, 2009). Functional analyses typically consist of several test conditions and a control condition. All test conditions are compared to the control condition and higher responses of problem behavior in one or more test conditions typically suggest that
problem behavior is maintained by the contingency in that condition. The typical conditions in a FA are a) alone or ignore, b) attention, c) play, and d) escape. Sometimes access to tangible items is evaluated as well.

As previously mentioned, researchers have continued to evaluate the FA to maximize its benefits while reducing some potential risks for subjects and implementers. Beavers, Iwata, and Lerman (2013) identified more than 2000 published studies and chapters have extended and replicated functional analyses. Replications have included different topographies of problem behavior, subjects, settings, and procedures. Several variations of functional analyses have also addressed some of its potential limitations. For example, the brief FA (Northup et al., 1991) was developed to address the total duration of the assessment. The precursor FA (Smith & Churchill, 2002) evaluated the use of precursor responses for severe problem behavior to decrease the risks associated with conducting a FA for severe topographies. The extended alone condition (Querium et al., 2013) assessed the use of alone conditions prior to all other conditions to identify potential automatically-maintained functions of problem behavior to increase the efficiency of the assessment by not having to conduct all conditions of the FA. Trial-based FA (Bloom, Iwata, Fritz, Roscoe, & Carreau, 2011) was developed to increase the practicality of the assessment by conducting it less controlled settings (e.g. educational settings). Finally, the latency FA (Thomason-Sassi, Iwata, Neidert, & Roscoe, 2011) evaluates the use of latency as a measure of behavior rather than the rate at which problem behavior occurs. Latency is the interval of time between the offset of a stimulus to the onset of a response (Skinner, 1938). In most traditional functional analyses and variations of it, the dependent variable is the repetition of behavior (Thomason-Sassi et al., 2011). However, when problem behavior is very severe it may not be appropriate to allow the individual to engage in multiple instances of the response.
Therefore, if latency data are collected, it is possible to evaluate the contingencies that maintain problem behavior by analyzing the latency of engaging in the problem behavior in each condition. Moreover, when the occurrences of a behavior terminate a session due to the topography of the response (e.g., elopement), a latency FA could be used as the method of assessment.

Latency functional analyses consist of the same conditions as the conventional FA. The dependent measure is the time from the onset of a stimulus to the first instance of the response (Thomason-Sassi et al., 2011). Sessions are conducted in a multielement design using the following sequence: a) alone, b) attention, c) play, and d) escape. Each session ends after a single instance of the problem behavior (and the immediately following delivery of the programmed consequence) or after five min have elapsed. If problem behavior occurs during the alone or play conditions, sessions are terminated after 1 min of the problem behavior to avoid advantageous reinforcement.

Based on the results of the functional analyses, several function-based treatments have been evaluated and found to be successful. Functional communication training (FCT; Carr & Durand, 1985) is one of the most commonly used treatments when results from a FA identify a social reinforcement contingency (e.g., positive reinforcement in the form of attention, negative reinforcement in the form of escape from demands; Hagopian, Boelter, & Jarmolowicz, 2011).
CHAPTER TWO
TREATMENTS FOR PROBLEM BEHAVIOR

Functional Communication Training

Functional communication training is a differential reinforcement procedure in which the individual who engages in problem behavior is taught a functional communication response (FCR) to request for the reinforcer (Carr & Durand, 1985). This response should be a functional mand that is under the control of the same establishing operation (EO; Laraway, Syncerski, Michael, & Poling, 2003) as the problem behavior. During FCT, the FCR is reinforced on a dense schedule whereas the problem behavior is placed on extinction. Using extinction while implementing FCT facilitates problem behavior reduction (Fisher, Thompson, Hagopian, Bowman, & Krug, 2000) and the acquisition of the new communication response. Functional communication training has been widely researched in the literature and has found to be a successful intervention for socially mediated problem behavior (Hagopian et al., 2011). Furthermore, Tiger, Hanley, and Bruzek (2008) identified FCT has the most published treatment for problem behavior maintained by social contingencies. However, a limitation of the intervention is the impracticality of reinforcing the communication response when it occurs at very high rates or during situations in which reinforcement is not available (Fisher et al., 2000). Generalization and maintenance of the FCR could be difficult to obtain if the reinforcement schedule is not thinned as part of the intervention. Furthermore, previously reinforced problem behavior could reemerge to baseline levels of responding if the FCR is not reinforced consistently across settings and caregivers (Tiger et al., 2008).
Tiger et al. (2008) suggested some practical guidelines to promote the generalization and maintenance of FCRs in natural environments. Some of these guidelines include the manipulation of response effort (Horner & Day, 1991), social recognition of the FCR, extinction of problem behavior, time delays between responses and delivery of reinforcers, reinforcement thinning, and the use of stimulus control procedures. To increase the likelihood of an appropriate communication response, the communication response’s effort should be equal to, or preferably less than, the response effort for the problem behavior. Meaning, engaging in the communication response should be easier for the individual than engaging in the problem behavior. If the communication response is more effortful (e.g., a vocal response for a non-vocal individual) than the problem behavior, the communication response is less likely to be emitted. Thus, the new contingency may be difficult to establish. Moreover, if the FCR is chosen arbitrarily (e.g., sign not recognized in sign language), the individual may be placed in settings in which others may not know how to reinforce the response, which may weaken the response-reinforcer contingency and may result in the reemergence of problem behavior. Another very important guideline when implementing FCT is the use of extinction, or a thinner schedule of reinforcement, for the problem behavior. If engaging in the problem behavior continues to be reinforced on the same schedule as the new FCR, the individual is more likely to engage in the problem behavior due to the previous history of reinforcement with this response versus the new one.

The last three recommendations involve the implementation of delayed reinforcement, schedule thinning, and using stimulus control procedures to address the limitation of FCT. This limitation occurs when individuals engage in the communication response at rates that cannot be reinforced by the others in their environment (e.g., ask for attention every 5 s or for a break from academic work every 30 s) or when reinforcement cannot be provided (e.g., iPad® does not have
Delayed Reinforcement

Response chaining is one procedure used to address the limitation of FCT. Lalli, Casey, and Kates (1995) used response chaining with three individuals who engaged in problem behavior maintained by negative reinforcement. Lalli et al. taught the individuals communicative responses to decrease problem behavior and implemented a response chaining procedure to teach the individuals to tolerate delays to reinforcement. The response chaining procedure consisted of gradual increases in the response requirement before presenting the opportunity to request for a break from demands. The results from this study suggest that using response chaining was very effective in decreasing problem behavior and increasing the time between the FCR and the reinforcer (i.e., break). Similarly, Fisher et al. (1993) evaluated the use of this procedure for behavior maintained by positive reinforcement by increasing the waiting time between the response and the delivery of the reinforcer (e.g., attention, tangibles). Delayed reinforcement for behavior maintained by positive reinforcement was also effective in addressing the limitation of FCT. Reinforcer delay fading has also been used to teach children how to engage in “self-control”, by teaching them how to choose a larger later reward instead of an immediate smaller reward (Schweitzer & Sulzer-Azaroff, 1988).

An alternative procedure that has been evaluated in the literature to increase tolerance to delayed reinforcement is the use of another activity or reinforcers during the waiting period. Campos, Leon, Sleiman, and Urcuyo (2016) provided access to a positive reinforcer (i.e., toy, food) contingent on compliance to tasks during an extinction component of a multiple schedule to decrease FCRs for breaks when reinforcement was not available. This procedure was effective for one of the two subjects in the study. The results from this study suggest that when individuals...
engage in a FCR and the reinforcer is not available, it might be useful to present another activity for which another form of reinforcement can be provided. Having a competing activity may decrease the establishing operation to request for the reinforcer and engage in problem behavior while waiting.

Learning to wait is an important skill for all individuals, including children with developmental disabilities (Fisher et al., 2000). As previously mentioned, there are situations in which receiving the requested reinforcer might not be possible or practical. Therefore, teaching individuals to wait should be embedded in our clinical practice, especially when teaching a FCR to decrease problem behavior in individuals with developmental disabilities. Consequently, developing and evaluating procedures that could reduce the reemergence of problem behavior and the requests for functional reinforcers during periods of nonreinforcement continues to be an important topic of research.

**Schedule Thinning**

Hanley, Iwata, and Thompson (2001) evaluated the use of four reinforcement schedule thinning procedures after implementing FCT for individuals with developmental disabilities who engaged in problem behavior maintained by positive reinforcement. Three subjects learned how to request for the functional reinforcer using FCT. One of the subjects was then exposed to three reinforcement schedule-thinning procedures; increasing delays to reinforcement, graduated fixed interval (FI) schedule, and multiple schedule. The other two subjects were then exposed to mixed and multiple schedules of reinforcement.

In Hanley et al. (2001), the increasing delays to reinforcement schedule consisted of gradually increasing delays between the FCR and the reinforcer delivery. The maximum delay reached was 25 s. However, the FCR was extinguished during this schedule. In the graduated FI
schedule, the functional reinforcer was delivered after the first FCR was emitted after the current interval had elapsed. The final FI was 58 s. This schedule of reinforcement produced very high rates of the alternative response, which made it impractical for individuals in the natural environment to reinforce.

After evaluating the increasing delays and graduate FI schedules, a multiple schedule was implemented for the first subject. The multiple schedule consisted of two components that alternated. One component was reinforcement on a fixed ratio 1 (FR 1) and the other was extinction. Both components were signaled with corresponding stimuli (i.e., white and red cards). During the reinforcement component, all FCRs received reinforcement. During the extinction component, all FCRs were placed on extinction. Problem behavior was placed on extinction during both components. The component durations increased gradually after two consecutive sessions in which problem behavior was less than, or equal to, 85% reduction from baseline. The initial component durations were 45-s reinforcement / 15-s extinction and the final component durations were 60-s reinforcement / 240-s extinction. In a 10-min session, there were two 1-min reinforcement components and two 4-min extinction components. The multiple schedule evaluated produced stable rates of the communication response during the reinforcement component and almost zero rates during the extinction component. Furthermore, problem behavior remained near zero rates during both components.

Because of the successful results of the multiple schedule with the first subject, the authors decided to evaluate the same procedure with subjects two and three. Moreover, to assess the role of the schedule-correlated signals, they compared the multiple schedules to mixed schedules of reinforcement for the two subjects. The multiple schedules evaluated for these subjects were identical to the one used for subject one. Furthermore, the mixed schedule was the
same as the multiple schedule with one exception, no schedule-correlated signals were present. The results from these two subjects suggested that the use of schedule-correlated signals allowed for the discrimination of the components and facilitated discriminated manding. Meaning, using schedule-correlated signals facilitated schedule thinning.

**Stimulus Control**

Hanley et al. (2001) were successful in thinning the schedule of reinforcement for three individuals with developmental disabilities by using multiple schedules. Their results have been replicated and expanded in the literature. For example, Betz, Fisher, Roane, Mintz, and Owen (2013) used multiple schedules with four individuals with problem behavior maintained by positive reinforcement. Betz et al. taught the subjects FCRs before evaluating mixed and multiple schedules of reinforcement with rapid alternation of components. The rapid alternation consisted of changes between the reinforcement and extinction components. Both components were 60 s in duration and no gradual schedule thinning was evaluated. After establishing discriminated manding with the 60-s reinforcement / 60-s extinction, the authors increased the extinction component to 240 s. Similarly to Hanley et al. (2001), in a 10-min session, there were two 4-min extinction components and two 1-min reinforcement components. Furthermore, the authors provided specific rules during both, multiple and mixed schedules. The results from the study suggest that specific rules facilitated discriminated manding only when schedule-correlated stimuli were present. When the rules were provided during the mixed schedule, in which schedule-correlated stimuli were not present, the rules had little or no effect on responding. Therefore, discriminated manding was facilitated by the stimulus control in the multiple schedules. Moreover, all subjects showed rapid acquisition of discriminated manding while problem behavior remained low or near zero rates. Tiger and Hanley (2004) also assessed the use
of mixed and multiple schedules while providing rules in a classroom setting. In this study, three typically developing children learned how to request for attention from their teacher. Children were trained at the terminal schedule of reinforcement without the use of gradual fading.

In another evaluation of multiple schedules, Kuhn, Chirighin, and Zelenka (2010) taught two individuals who engaged in problem behavior to request for reinforcers using functional communication. Then, they used natural stimuli rather than arbitrary cards to signal the reinforcement and extinction components. The natural signals consisted of therapists engaging in busy (e.g., cooking) and non-busy (e.g., watching TV) activities that individuals would typically encounter in their natural environment. Both subjects in this study learned to engage in discriminated manding based on the overt behavior of the therapists engaging in the busy and non-busy activities. In an extension, Leon, Hausman, Kahng, and Becraft (2010) replicated Kuhn et al. (2010) across different settings, therapists, and novel sites, to increase the generality of treatment effects. Leon et al. (2010) taught a young boy with developmental disabilities to request for attention by saying “excuse me” during busy and non-busy times. Busy times represented the extinction component and non-busy times represented the reinforcement component.

Other studies have continued to evaluate the use of multiple schedules as a schedule thinning procedure after implementing FCT. However, no research to date has evaluated a systematic approach to identify appropriate individualized component durations during multiple schedules. Most studies using multiple schedules have increased the components to arbitrary durations such as 60-s reinforcement / 240-s extinction (e.g., Hanley et al., 2001; Betz et al., 2013), 60-s reinforcement / 300-s extinction (e.g., Fisher, Greer, Fuhrman, & Querim, 2015), 60-s reinforcement / 540-s extinction (e.g., Campos et al., 2016) and 300-s reinforcement / 900-s
extinction for one subject (Rooker, Jessel, Kurtz, & Hagopian, 2013). Therefore, it is unknown whether individuals’ waiting histories could be used as the initial extinction durations and terminal goals in the total duration of components in multiple schedules.
CHAPTER THREE

Waiting

Waiting, or tolerating delays, is defined as the latency between an opportunity to engage in a response and the individual engaging in that response. For example, if a child has the opportunity to ask for a cookie now, but asks for a cookie in 10 min, the child has waited for 10 min. Tolerating delays without engaging in problem behavior is considered a preschool life skill (Hanley, Heal, Tiger, & Ingvarsson, 2007).

Individuals who engage in impulsive behavior, those who respond for a sooner smaller reward instead of waiting for a larger later reward, are said to have less self-control (Vollmer et al., 1999). Individuals typically encounter concurrent schedules in which they have to make choices to respond on different schedules of reinforcement. Thus, individuals who successfully wait by consistently selecting the larger later reward relative to the sooner smaller reward are considered less impulsive. Individuals with developmental delays who have limited communication repertoires typically lack waiting skills and may engage in more impulsive behavior (Vollmer et al., 1999).

Previous research has used different procedures to teach individuals to make less impulsive behaviors (e.g., waiting for longer periods of time to receive larger reinforcers). Some of these procedures include delay fading (e.g., Vollmer et al., 1999), delay fading with alternative activities (e.g., Dixon & Cummings, 2001), teaching rules to be repeated while waiting (e.g., Hanley et al., 2007), using preferred toys (e.g., Newquist, Dozier, & Neidert, 2012), and providing qualitative different reinforcers (e.g., Passage, Tincani, & Hantula, 2012).
Vollmer et al. (1999) assessed self-control and impulsivity in two individuals with developmental disabilities who engaged in aggression maintained by access to food, TV, or both. The authors also evaluated the effects of signaled delays on impulsive aggression. Initially, the children were taught to request for the reinforcers using FCT with and without a delay. Then, the authors conducted reinforcer magnitude and impulsivity tests. The reinforcer magnitude tests consisted of providing a greater amount of the reinforcer for the alternative response and a smaller amount of the same reinforcer for aggression during a 0-s delay. The results from this test demonstrated that at a 0-s delay, rate of responding was higher for the greater amount of reinforcers than for the smaller amount of reinforcers. Hence, appropriate mands for reinforcers occurred more often than the problem behavior. Moreover, when delays to reinforcement were gradually increased in the impulsivity tests, children had to wait for the reinforcers for longer durations. Here, both subjects demonstrated self-control by engaging in the appropriate behavior only when signals for the delays were provided.

In another study, Dixon and Cummings (2001) evaluated self-control in children with ASD by examining their response allocation. During baseline, the children were asked to wait for as long as they could before eating or playing with their preferred items. The items were provided when the children requested them or said that they could not wait any longer. The children were then exposed to two choice baselines. In the first one, they were asked to select between a small immediate reinforcer and a large delayed reinforcer. In the second one, they were asked to select between an immediate small reinforcer and an immediate large reinforcer. Finally, the children were exposed to a self-control procedure in which they had to choose among a small immediate reinforcer, a large delayed reinforcer without a response requirement, and a large delayed reinforcer with a response requirement. In this study, all children preferred
the small immediate reinforcer during the first baseline, the large immediate reinforcer during the second baseline, and the large reinforcer with an activity during the self-control phase. Problem behavior was near zero for all children during the self-control intervention that consisted of the large reinforcer with activity. These results suggest that self-control may be increased in individuals with disabilities by gradually exposing them to small increments in delays to receive access to larger reinforcers. Also, this study demonstrated that providing choices to complete activities during delays to reinforcement might minimize problem behavior and help increase waiting.

Hanley et al. (2007) taught a group of students ages 3 to 5 years old to engage in a mediating response that consisted of repeating rules (i.e., “When I wait quietly, I get what I want”) while they waited for their reinforcers in a classroom setting. This procedure was used to increase waiting in preschoolers. Some of the students had a developmental disability diagnosis and some of the students were typically developing. In this study, repeating rules increased waiting during delays and decreased problem behavior emitted by the children.

The combination of delay fading with different procedures (e.g., timers, rules, activities) has been found to increase waiting. However, the extent to which these different procedures are effective in the absence of delay fading has not received as much attention in the literature. A noteworthy exception is a study conducted by Newquist et al. (2012) that evaluated the effects of rules, timers, and the use of preferred toys without the use of delay fading with three typically developing preschool children. The results from this study were slightly inconsistent with prior research. In this study, providing rules and countdown timers during the delay was ineffective at teaching waiting, however, providing toys during the delay was effective at increasing waiting.

In summary, different procedures have been evaluated to teach children and individuals
with developmental disabilities to wait. This is because waiting is considered an important life skill. Waiting may result in increased access to preferred activities, items, and social interactions (Newquist et al., 2012). Typically, individuals encounter several situations in which they are required to wait since very early in life (e.g., waiting for parents to attend, waiting for their turn in school). These situations may evoke problem behavior when the delays to reinforcement are longer than they have previously encountered (e.g., history with delays to reinforcement) or when waiting skills are not in their repertoire. Moreover, teaching children and individuals with developmental disabilities to wait is important because this skill is a prerequisite for more difficult daily living and academic activities (Newquist et al., 2012). Therefore, developing procedures that increase the feasibility for practitioners to teach waiting skills in children with ASD is an important component of treatment interventions.
CHAPTER FOUR

Questionnaires and Caregiver Predictions

Questionnaires, interviews, checklists, and rating scales are typically completed when researchers and practitioners are interested in obtaining information about the variables that influence human behavior and selections. In the field of behavior analysis, when individuals engage in problem behavior that warrants assessment and treatment, questionnaires and interviews identify useful information that could be further analyzed through direct assessments (e.g., FA). Questionnaires could also be used when the interest is to identify potential sources of reinforcement (e.g., type of attention, variety of foods and toys). Typically, subjects, parents, caregivers, or teachers, or a combination of these, complete the questionnaires. This is because these individuals have a longer history with the subjects than the researchers and practitioners. In many cases, the information gathered from these indirect assessments is very valuable for the development of interventions.

The Motivation Assessment Scale (MAS; Durand & Crimmins, 1988) and the Questions about Behavior Function (QABF; Matson & Vollmer, 1995) were initially developed as tools to identify potential sources of reinforcement for problem behavior in individuals with disabilities. However, Zarcone, Rodgers, Iwata, Rourke, and Dorsey (1991) raised questions about the reliability of these indirect assessments and cautioned not to use them in isolation to determine the function of a behavior.

The Functional Analysis Screening Tool (FAST; Iwata, DeLeon, & Roscoe, 2013) was developed to have an organized interview as a preliminary step to completing an FA. The FAST
was structured for the informants (e.g., parents, staff, teachers) to answer questions related to the specific environmental contingencies under which problem behavior is most likely to occur. The questions are divided by the potential source of reinforcement that can be maintaining the problem behavior. After the development of the initial questions for the FAST, the questions were used for initial assessments of problem behavior of individuals with developmental disabilities at a residential facility. The individuals using these questions provided written feedback about content and format. The reliability of the revised FAST was then evaluated in three different facilities by administering the questions to pairs of direct-care staff who worked with the individuals who engaged in the problem behavior. Following this step, items with low scores were deleted or revised. A second revision of the FAST was then administered to a second group of pairs of informants who worked with the individuals who engaged in the problem behavior for an interrater reliability analysis. A validity analysis was completed after the reliability analysis. The validity analysis consisted of comparing the function identified on each pair of the FAST to the function identified by completing an FA. Iwata et al. (2013) used values of 0, .5, or 1 to identify if both informants’ results corresponded with the function identified by the FA (1), only one of the informants’ results corresponded with the function identified by the FA (.5), or neither of the informants’ results corresponded with the function identified by the FA (0).

The results from Iwata et al. (2013) identified what the authors had initially anticipated based on the data from previous studies (e.g., Zarcone et al., 1991), low reliability and low validity of the FAST. Due to the nature of the data collected by indirect assessments, it is very difficult to have reliable and valid results. Data have suggested that parents and caregivers are biased and make errors when answering these types of assessments (Iwata et al., 2013).
Moreover, Green, Reid, Canipe, and Gardner (1991) identified that parents and caregivers’ results have poor correspondence with direct assessments when it comes to subjects’ preferences and selections.

Green et al. (1991) extended previous research on reinforcement and preference assessments by completing stimulus preferences using behavioral assessments with individuals with developmental disabilities and comparing their results to the selections made by their caregivers. Their results suggested that the opinions of caregivers are not predictions of the stimulus preferences of individuals with developmental disabilities as identified by direct measurements.

Nevertheless, the use of these indirect assessments is still beneficial because they guide and facilitate further assessment and treatment. Thus, practitioners and researchers continue to use them. Moreover, indirect assessments have been expanded to other applications in ABA. Some other indirect assessments used in the field include the Reinforcer Assessment for Individuals with Severe Disabilities (RAISD; Fisher, Piazza, Bowman, & Amari, 1996) used to identify potential stimuli that may serve as reinforcers for skill acquisition programs, Sleep Assessment and Treatment Tool (Jin, Hanley, & Beaulieu, 2013) used to identify environmental factors that may influence sleep patterns, and Matson Evaluation of Social Skills with Youngsters (MESSY; Matson, Rotatori, & Helsel, 1983) and Social Skills Improvement System (SSIS; Gresham & Elliott, 2008) used to identify social skills in young children.

Overall, indirect assessments continue to be widely used in the field of behavior analysis possibly due to the fast acquisition of data that can be used for the development of direct behavior assessments and interventions. Therefore, the purpose of the current set of studies was to develop, implement, and validate a Waiting Assessment Interview Tool (WAIT) to obtain
current waiting durations for subjects who engage in problem behavior maintained by social contingencies. A second purpose was to systematically individualize the component durations used during multiple schedules and the final target durations for increasing waiting for each subject.
CHAPTER FIVE

STUDY I

Purpose

The purpose of Study I was to develop the Waiting Assessment Interview Tool (WAIT) to obtain current waiting durations for subjects who engaged in problem behavior maintained by social contingencies.

Method

Development of the Waiting Assessment Interview Tool. A Waiting Assessment Interview Tool (WAIT; see Appendix A for English version and Appendix B for Spanish version) was developed for this study to identify the typical contexts and ranges of durations that children are expected to wait to obtain access to preferred activities, attention, and to comply with non-preferred tasks. The purpose of the WAIT was to identify current waiting performances and potential individualized final target durations to be used to thin the schedule of reinforcement in a way that is feasible for parents. A second purpose of the WAIT was to determine gradual increments to thin the schedule of reinforcement during the extinction components of a multiple schedule used for the subjects in study III.

The WAIT consists of four parts. The first part focuses on the demographic information of the child and the caregiver completing the questionnaire. The target problem behavior is also identified and operationally defined in this section. In addition, specific instructions on how to fill out the questionnaire are provided.

The second part of the WAIT is divided into three subsections. These sections each
emphasize one of the three socially-maintained functions of problem behavior: 1) attention, 2) tangible, and 3) escape. In each of these sub-sections, there are two questions that address how long a child may wait to receive reinforcement before engaging in problem behavior and caregivers have the option to provide additional information regarding the contexts in which problem behavior happens. Caregivers also have the option to select non-applicable (N/A) if their children’s problem behavior does not occur in the context asked in the questions. For example, if the caregiver believes that problem behavior does not occur when the child is asked to complete an activity, the caregiver may select N/A in the questions in found under the escape section.

The third part of the WAIT is used to identify goals for appropriate individualized waiting times for each child based on the caregivers’ preferences. The caregivers are asked to select how long they would like their child to wait under different circumstances. The caregivers are given the option to select a number from 5 to 60 and a unit of time (i.e., seconds or minutes).

Finally, the fourth part of the WAIT is intended for behavior analysts to analyze the answers provided by the caregivers and identify the context (i.e., to get attention, access to tangibles, or a break from work) in which problem behavior has the shortest latency. Meaning, the child waits the shortest duration before engaging in problem behavior. Moreover, the behavior analysts may also select the average current waiting duration by using the answers provided by the caregivers, the initial treatment duration they would like to target, and the final treatment duration they would like for the child to achieve.

**Expert Review.** Prior to developing the final WAIT, a 15-question draft of the
questionnaire was submitted to an expert review panel. This draft was completed using behavior analytic literature on waiting and problem behavior. The questionnaire was provided through an email that allowed the experts to access a link to the questionnaire and rate each question anonymously using a 4-point rating scale as used by Dehdari, Rahimi, Aryaeian, Gohari, and Esfêh (2014). The scale consisted of: not relevant (N), slightly relevant (S), relevant (R), and very relevant (V). The experts also had the opportunity to provide comments for each question. In addition, the experts were asked to rate the overall clarity of instructions, order of questions, use of scale in every question, scoring summary, easy of completion, and overall format of the questionnaire using a scale from zero (do not like) to ten (like).

The questionnaire was submitted to 21 Board Certified Behavior Analysts-Doctoral level (BCBA-Ds) who had over five years of experience working with children with ASD who engage in problem behavior when waiting, have conducted research on waiting or delayed reinforcement, are authors of published questionnaires in the field of Applied Behavior Analysis (ABA), or some combination thereof. Of the 21 BCBA-Ds who received the questionnaire, 7 BCBA-Ds provided feedback to all the questions.

**Results**

Of the initial 15 questions, the experts rated 93% of the questions as either relevant or very relevant. All remaining questions were rated as slightly relevant and were removed from the questionnaire (See Figure 1). In addition, the experts provided some comments regarding the questions that were rated as relevant or very relevant. These comments suggested that some of the information overlapped across questions and some of the questions were incomplete. To address for overlap across questions, some questions were combined into one question. To address for the incomplete wording of the questions, some questions were rewritten to add the
suggested feedback. For example, if the question was originally “How long would you like the child to wait before you have to pay attention to him/her?” and the experts suggested to add “without engaging in problem behavior,” the question was rewritten to “If the child wants your attention and you are engaging in an activity (e.g., making dinner, driving, grading) and not paying attention to the child, after how many minutes will the child engage in problem behavior if you do not provide the attention requested?” Therefore, when questions rated slightly relevant were removed and all comments about all other questions were addressed, 60% or 9 out of the original 15 questions, became part of the final draft of the WAIT.

In addition, when asked about the overall questionnaire using a sliding scale from 0 to 10, the expert panel rated the following: instructions (M = 7.14), order of questions (M = 8.00), use of scale in every question (M = 8.29), scoring summary (M = 8.14), ease of questionnaire completion (M = 8.14), overall format of the questionnaire (M = 8.00). To address this feedback, the instructions were written more specifically (e.g., provided an example of how to answer the questions), and the scoring summary and format of the questionnaire were changed. For example, the final draft of the WAIT includes benchmarks for the parents to guide their answers when asked about waiting goals.

**Discussion**

Study I resulted in the development of a questionnaire that potentially identifies how long children wait before engaging in problem behavior under different circumstances. Furthermore, the questionnaire asks the caregivers for the durations they would want their children to wait before receiving reinforcement. This is important because including the caregivers’ preferences and opinions may increase their buy-in and the integrity in which they implement treatment procedures. Reimers, Wacker, and Koeppel (1987) suggested that the social acceptability of
treatments is necessary for generalization. Moreover, generalization is essential in the long-lasting effects of treatments (Stokes & Baer, 1977). In addition, the WAIT may also be used by behavior analysts to individualize waiting duration times in different settings as part of their treatment packages for problem behavior.
CHAPTER SIX

Study II

Purpose

The purpose of Study II was to complete the WAIT with caregivers and behavior service providers and to compare their results to a latency FA conducted with all children.

Phase I – Indirect Assessments

Method.

Subjects. The 33 subjects for Study II Phase I consisted of informants who completed the WAIT for every child who participated in the study (see children characteristics in Phase II method). Two caregivers (e.g., parents, siblings) and two behavior service providers (e.g., Board Certified Behavior Analysts [BCBAs], Board Certified Assistant Behavior Analysts [BCaBAs], Registered Behavior Technicians [RBTs], behavior therapists) were asked to serve as informants for all children. This sample was uncontrolled but is representative of the natural sample that would complete the WAIT if practitioners and researchers used this tool. Moreover, if children did not receive ABA services, no data were available for the two behavior service providers (David, Allen, Malik). In addition, if only one caregiver was available to complete the WAIT, no data were available for a second caregiver (Blake, Alex, Javier, Allen, Malik). Overall, the informants who completed the WAIT consisted of 11 mothers, 5 fathers, 1 male sibling, 16 female behavior service providers, and 1 male behavior service provider.
Demographic Questionnaire. The purpose of the demographic questionnaire (see Appendix C) was to identify the children’s gender, age, primary language, ethnicity, race, and diagnosis.

Functional Analysis Screening Tool (FAST). The FAST (see Appendix D) was completed prior to the WAIT for all children in Study II. The purpose of the FAST was to identify a problem behavior to be targeted during the completion of the WAIT and the latency FAs.

Waiting Assessment Interview Tool (WAIT). All informants were provided with an electronic or physical copy of the WAIT and were asked to complete the questionnaire independently. Moreover, the experimenters asked all informants if they had any questions before or during their completion of the WAIT. If the informants had questions, the experimenters answered all questions. In addition, all informants were asked to complete the WAIT for the same target problem behavior. The target problem behavior was selected based on the FAST. Questionnaires were provided in either English, Spanish, or in English with a computer-based program used to translate information (i.e., MARTII). This program was only used for Malik’s mom who spoke primarily Arabic.

Inter-Rater Reliability of the WAIT. To assess the inter-rater reliability of the WAIT, some of the procedures used in the evaluation of the FAST (Iwata et al., 2013) were modified and replicated. All informants who completed the WAIT were divided into pairs. Pairs consisted of two caregivers or two behavior service providers, or both. Inter-rater reliability was calculated by identifying the function selected to have the shortest latency of problem behavior by each informant.

Modifying the procedures used by Iwata et al. (2013), the inter-rater reliability was calculated by using the data gathered from both informants for each subject. The overall
reliability was assessed for each social function by identifying which function was selected as the maintaining consequence of problem behavior by each informant. To do this, we selected the shortest duration identified by the informants. If informants’ answers matched, suggesting that waiting in one context (e.g., social positive for tangibles/edible) served as an establishing operation to engage in problem behavior, agreement was scored. If informants’ answers did not match, meaning each informant selected a different function, disagreement was scored.

Results.

Inter-Rater Reliability of the WAIT.

Caregivers. A WAIT was completed by at least one caregiver for all children in the study. Overall, 6 pairs of caregivers completed the WAIT for the same child (see Table 1). From those pairs, 4 identified the same shortest latency of problem behavior. Meaning, agreement was found. For example, mom and dad identified that their child waited the shortest duration in the tangible condition. No agreement was found for the remaining 2 pairs. Thus, there was agreement for 67% of the caregivers.

Behavior Service Providers. A WAIT was only completed for children who received ABA services. Therefore, a total of 8 pairs of behavior service providers completed the WAIT (see Table 2). From those pairs, 4 pairs identified the same shortest latency of problem behavior. Meaning, agreement was found. The remaining 4 pairs identified the shortest latency of problem behavior for different functions. Meaning, no agreement was found. Thus, there was 50% agreement and 50% disagreement for behavior service providers.

Discussion. Overall, 67% of caregivers and 50% of behavior service providers identified a match for the function with the shortest latency. These results are preliminary but may suggest that the WAIT may be an effective initial indirect tool to guide behavior service providers to
identify how long some children may wait under different circumstances to receive reinforcement.

There are some limitations to these results. First, the number of informants who completed the WAIT was different for caregivers and behavior service providers. Even though 11 children participated in Phase II of Study II, there were only six pairs of caregivers and eight pairs of behavior service providers. It is possible that if we had used a controlled sample, more informants would have been available to participate. However, the sample used is representative of the individuals who may be available to complete questionnaires for children with developmental disabilities. Moreover, from the caregivers who completed the WAIT, 11 mothers participated. In contrast, only 5 fathers participated. It is possible that agreement would have been higher if a different ratio of mothers to fathers would have participated. However, some mothers who completed the WAIT reported to be single or divorced or reported that their significant other was not available to complete the questionnaire. Another possible explanation for the 33% of caregivers for which no agreement was scored could be the result of the caregivers’ individual interactions with the children. It is likely that parents interact with their children in different contexts and children may engage in discriminated responding when one parent is present versus the other. For example, if mom is typically the person doing homework with the child, the child may engage in problem behavior to escape from the tasks presented. Therefore, if mom is asked to select under which circumstances the child engages in problem behavior, mom is more likely to select an escape function. In contrast, dad is less likely to select an escape function if he does not interact with the child during homework time.

In addition, only 50% correspondence was observed for the behavior service providers. These results are more alarming because ideally behavior service providers work on the same
targets with the same child. However, there may be two explanations for this. First, the
difference in education and experience in behavior analysis may affect the results selected by the
providers. For example, a BCBA who completed the WAIT may have a better understanding of
functions of problem behavior than a newly certified RBT who may have only worked in the
field for several months. Second, the direct time working with a child may also affect these
results. For example, if two RBTs work with the same child but one of them has worked with the
child for a longer period of time or for more hours a week, their responses may vary as children
may behave differently with one RBT over another.

Overall, the inter-rater reliability data we obtained are not surprising with the number of
subjects who participated in the study. In general, these data are representative of previous
research using indirect assessments to identify circumstances under which problem behavior is
more likely to occur (e.g., Iwata et al., 2013). However, it is possible that if more informants are
selected per child and the study is conducted with more children, higher agreement percentages
may be identified, making the WAIT a more effective tool to be used to guide further assessment
and intervention of problem behavior.

Phase II – Direct Assessments

Method.

Subjects and Setting. The subjects for Study II Phase II consisted of 11 children who
engaged in problem behavior that warranted assessment. Informants in Study II Phase I
completed the questionnaires in relation to the children who participated in this phase.

David. 6-year-old Hispanic boy diagnosed with ASD. David engaged in tantrums which
was defined as vocalizations above conversation level that did not include requests for items or
people and crying with or without tears. His sessions were conducted at home in Florida.
**Jinger.** 10-year-old Caucasian girl diagnosed with ASD. Jinger engaged in aggression which was defined as attempts or successes at biting, scratching, hair pulling, pinching, kicking, or hitting others. Her sessions were conducted at home in Florida.

**Issac.** 9-year-old Hispanic boy who engaged in screaming which was defined as loud vocalizations that did not include words. His sessions were conducted at home in Florida.

**Blake.** 3-year-old Caucasian boy diagnosed with ASD. Blake engaged in head-banging which was defined as forceful contact of any part of his head with the floor, furniture, or another person. His sessions were conducted at his ABA clinic in Florida.

**Joaquin.** 6-year-old Hispanic boy diagnosed with ASD. Joaquin engaged in aggression which was defined as attempts or successes at kicking, hitting, hair pulling, throwing objects toward others, or biting other individuals. His sessions were conducted at home in Florida.

**Mahar.** 8-year-old Middle-Eastern boy diagnosed with ASD. Mahar engaged in screaming which was defined as loud vocalizations above conversational level that did not include words. His sessions were conducted at his ABA clinic in Florida.

**Sansa.** 5-year-old Indian girl diagnosed with ASD and attention deficit hyperactivity disorder. Sansa engaged in self-injury which was defined as pinching any part of her body. Her sessions were conducted at home in Florida.

**Alex.** 7-year-old Caucasian boy diagnosed with ASD. Alex engaged in aggression which was defined as attempts or successes at kicking, hitting, hair pulling, or biting others. His sessions were conducted at his ABA clinic in Florida.

**Javier.** 10-year-old Hispanic boy diagnosed with ASD. Javier engaged in property destruction which was defined as kicking or hitting the walls with opened hands or closed fists with force. His sessions were conducted at his ABA clinic in Florida.
Allen. 5-year-old Caucasian boy diagnosed with ASD. Allen engaged in aggression which was defined as hitting, kicking, or biting another person. His sessions were conducted at a university-based clinic in Missouri.

Malik. 5-year-old Arabic boy diagnosed with ASD. Malik engaged in elopement which was defined as attempting to or successfully leaving a designated area by pulling up or down on a door handle. His sessions were conducted at a university-based clinic in Missouri.

Preference Assessment. A multiple stimulus without replacement (DeLeon & Iwata, 1996) preference assessment was conducted with all subjects to identify preferred items to be used during the different conditions of the latency FAs. Low-preferred items were used during the attention and play sessions and high-preferred items were used during the tangible and play sessions.

Response Measurement, Reliability, and Treatment Integrity. Researchers collected data on the latency of problem behavior for all children during the latency FAs. Reliability of the observation system was assessed by having a second researcher collect data on the latency of problem behavior for at least 20% of all FA sessions for all subjects. To calculate interobserver agreement (IOA) the shortest latency in seconds was divided over the longest latency in seconds and multiplied by 100%. Treatment integrity (TI) data were collected to assess the researchers’ implementation of all the procedures during the FAs. Treatment integrity was collected for at least 20% of all FA sessions for all subjects. To calculate treatment integrity, all correct steps were divided over all steps in each condition of the latency FA. All results for IOA and TI may be found in Table 3.
**Latency Functional Analysis.** The purpose of the latency FA was to identify the function of the problem behavior and the average latency to engage in the problem behavior following the procedures by Thomason-Sassi et al. (2011). For the purpose of this analysis, the lower the number of min, the shorter the latency to problem behavior. Meaning, the problem behavior is maintained by the function that sets the establishing operation for the individual to emit the response in the shortest amount of time. The following conditions in the latency FA were conducted using a multielement design: ignore (some subjects), attention, play, tangible, and escape. The latency FA consisted of 5-min sessions with a 5-min inter-session interval. Sessions were terminated after the first instance of problem behavior or after the five min elapsed. Discriminative stimuli (S^D_s; Skinner, 1938) were used to enhance discrimination across conditions (e.g., colored shirts; Conners et al., 2000).

*Ignore.* The ignore condition is a test condition used to identify if problem behavior is maintained by automatic reinforcement. In this condition, the researcher and the subject were in the same room and the researcher ignored all subject’s behavior. If the target problem behavior happened during this condition, sessions were terminated after 1 min of the first instance of the target problem behavior to avoid adventitious reinforcement. This condition was not conducted with individuals who engaged in problem behavior that required the presence of another person (e.g., aggression), as the problem behavior was unlikely maintained by automatic reinforcement.

*Attention.* The attention condition tests for problem behavior maintained by social positive reinforcement in the form of attention. During this condition, the subject and the researcher were in the session room together. At the beginning of the session, the researcher told the subjects that he or she was going to be busy and gave the subject the opportunity to play with a moderately preferred toy (e.g., “I’ll be working over here, you can play with your toy if you
want to”). Contingent on the first instance of the target problem behavior, the researcher provided verbal attention (e.g., “No, do not hit yourself”), physical attention (e.g., hug), or both types of attention, depending on what the informants reported, to the subjects and the session was terminated. There were no programmed consequences for non-targeted behavior.

*Play.* The play condition was the control condition. All conditions were compared to the control condition. In the play condition, the establishing operations to engage in behavior maintained by social consequences were removed or reduced by providing non-contingent attention, access to preferred items, and placing no demands on the subjects. In this condition, the subject was provided with attention approximately every 30 s, free access to highly preferred toys, and no demands. If the subjects emitted the target problem behavior, sessions were terminated after 1 min of the response to avoid adventitious reinforcement. If no target behavior occurred, sessions were terminated after 5 min. All non-targeted problem behavior was placed on extinction.

*Tangible.* Rooker, Iwata, Harper, Fahmie, and Camp (2011) suggested that the use of tangible conditions should be limited in FAs because of the possibility of producing a function where there is not one (i.e., false positive result), especially for food items. Thus, the tangible condition was only conducted with children whose informants reported that obtaining access to items, or the removal of them, resulted in problem behavior. This condition tests for behavior maintained by positive reinforcement in the form of access to preferred items (e.g., toys, food). In this condition, the researcher and the subject were in the same room and the subject started the session with access to highly preferred items. At the beginning of the session, the items were removed by the researcher (e.g., “no more toys”). Contingent on the first instance of the target
problem behavior, the items were returned to the subject and the session was terminated. No programmed consequences were provided for non-targeted problem behavior.

_Escape._ The escape condition tests for problem behavior maintained by negative reinforcement in the form of task removal. In this condition, the researcher and subject were in the same room. The session started when the researcher presented demands to the subject. Demands were typically presented every 30 s using a three-step prompting procedure (Horner & Keilitz, 1975). This procedure included verbal, model, and physical prompts. The demands, or tasks, presented to each subject were based on the information provided by the informants. The tasks that the informants identified as problematic (e.g., academic assignments, motor imitation, daily-living activities) were used in this condition. Contingent on the target problem behavior, tasks were discontinued, and work material was removed. Non-targeted problem behavior and correct completion of the tasks were placed on extinction.

**Results.** Visual inspection was used to analyze the data from all latency FAs (see Figures 2 and 3). Researchers compared the latencies to respond in each test condition to the latency to respond in the control condition. Shorter latencies in one or more test conditions suggest that problem behavior is maintained by the function(s) tested in that condition.

*David.* Shorter latencies of tantrums were observed during the tangible (M = 56.60 s) and escape (M = 175 s) conditions when compared to the play condition of the latency FA. These results suggest that David’s tantrums were maintained by access to preferred items and escape from demands.

*Jinger.* Shorter latencies of aggression were observed during the tangible (M = 4.60 s) and escape (M = 162.60 s) conditions when compared to the play condition of the latency FA. These results suggest that Jinger’s aggression was maintained by access to preferred items and
Issac. Shorter latencies of screaming were observed during the tangible (M = 24.40 s) and escape (M = 92.80) conditions when compared to the play condition of the latency FA. These results suggest that Issac’s screaming was maintained by access to preferred items and escape from demands.

Blake. Shorter latencies of head-banging were observed during the escape (M = 73.33 s) condition when compared to the play condition of the latency FA. These results suggest that Blake’s head-banging was maintained by escape from demands.

Joaquin. Shorter latencies of aggression were observed during the tangible (M = 147.75 s) condition when compared to the play condition of the latency FA. These results suggest that Joaquin’s aggression was maintained by access to preferred items.

Mahar. Shorter latencies of screaming were observed during the tangible (M = 16.25 s) and escape (M = 195.50 s) conditions when compared to the play condition of the latency FA. These results suggest that Mahar’s screaming was maintained by access to preferred items and escape from demands.

Sansa. Shorter latencies of self-injury were observed during the tangible (M = 117.17 s) condition when compared to the play condition of the latency FA. These results suggest that Sansa’s self-injury was maintained by access to preferred items.

Alex. Shorter latencies of aggression were observed during the tangible (M = 5.67 s) and escape (M = 36.33 s) conditions when compared to the play condition of the latency FA. These results suggest that Alex’s aggression was maintained by access to preferred items and escape from demands.

Javier. Shorter latencies of property destruction were observed during the escape (M =
149 s) condition when compared to the play condition of the latency FA. These results suggest that Javier’s property destruction was maintained by escape from demands.

*Allen.* Shorter latencies of aggression were observed during the tangible (M=141.43 s) and escape (M=137.00 s) conditions when compared to the play condition of the latency FA. These results suggest that Allen’s aggression was maintained by access to preferred items and escape from demands.

*Malik.* Shorter latencies of elopement were observed during the tangible (M=103.40 s) and attention (M=134.50 s) conditions when compared to the play condition of the latency FA. These results suggest that Malik’s elopement was maintained by access to preferred items and attention from others.

**General Method**

**Validity Assessments.** To assess the validity of the WAIT two analyses were completed. First, we evaluated correspondence between the functions identified by all informants to the functions identified by the latency FA. To do this, we compared the average latencies of problem behavior identified by all informants and the average latency for each contingency (i.e., social positive for attention, social positive for access to tangibles, social negative for escape from demands) identified as a function of problem behavior. Second, a simple linear regression was completed to evaluate the extent to which the average latency identified by all informants for each social function predicted the latency for problem behavior obtained in the last data point for each social function identified in the latency FA.

**Comparison of Functions.** To compare the results from the WAITs completed by informants to the latency FAs completed in controlled settings, two categories were used to indicate a complete match: 1) the FA identified one function, the average of all WAITs identified
this function as having the shortest latency of problem behavior, 2) the FA identified two functions, the average of all WAITs identified these functions as having the shortest latencies of problem behavior. Moreover, one category was used to indicate a partial match 1) the FA identified two functions, the average of all WAITs identified one of these functions as having the shortest latency of problem behavior. If the FA identified a function and the average of all WAITs did not identify this function as the function in which problem behavior had the shortest latency, no match was identified.

**Linear Regression.** The purpose of the linear regression was to assess the extent to which the results from the WAIT predict the results from the latency FA. Meaning, can the WAIT identify the latency of problem behavior for the functions identified in the latency FA? The research question for the linear regression was: Does the average score from the WAITs completed by all informants predict the waiting duration of children with an ASD who engage in problem behavior? The hypothesis for this analysis was that the average scores from the WAIT predicted the current waiting duration of children with ASD who engage in problem behavior. The null hypothesis for this analysis was that the average scores from the WAIT did not predict the current waiting duration of children with ASD who engage in problem behavior. For the purpose of this regression, the independent variable was the average number of seconds from the WAIT identified by all informants for each social function. The dependent variable was the last data point obtained from the latency FA for each social function. The number of seconds for both, WAITs and latency FAs, were converted to numbers 1 thru 5. To do this, the session duration (e.g., 300 s) was divided into 5 intervals of 60 s and all durations were rounded to the nearest whole number. If the latency to engage in problem behavior was from 1 s to 60 s, the number 1 was assigned. If the latency to engage in problem behavior was from 61 s to 120 s, the
number 2 was assigned. If the latency to engage in problem behavior was from 121 s to 180 s, the number 3 was assigned. If the latency to engage in problem behavior was from 181 s to 240 s, the number 4 was assigned. Finally, if the latency to engage in problem behavior was from 241 s to 300 s, the number 5 was assigned. This was done to reduce the minimal differences in seconds that may mask the results. For example, the difference between 25 s and 46 s may suggest that the measures used cannot identify current waiting durations. However, the actual difference between 25 s and 46 s is only 21 s which may be considered a negligible difference in practical use. Moreover, because the latency FA is an assessment of problem behavior in which contingencies are manipulated to obtain efficient results, the waiting durations of children may decrease as the subjects contact those contingencies for several sessions. Thus, we may obtain shorter latencies during the last sessions in which problem behavior occurs.

Results

Comparison of Functions. The results from the comparison of functions may be found on Table 4. For 8 out of 11 children a match was identified. In addition, a partial match was identified for 1 out of 11 children and no match was identified for 2 out of 11 children. These results show that the WAIT identified the correct function or functions of problem behavior in 73% of the cases, a partial match is 9% of cases, and no match in 18% of cases.

Linear Regression. A linear bivariate regression was completed to determine if the relationship between the average number of seconds from the WAIT identified by all informants and the last data point obtained from the latency FA for each social function was statistically significant. To do this, we used the last data point for the function(s) identified by the latency FAs and the average latencies identified by all informants for the same function(s) identified by the latency FAs. A total of 17 functions were used for this linear regression. A one-tailed t-test
resulted in a $p$-value of 0.0348 (alpha < 0.05) and an $R^2$ of 0.2641 (see Figure 4).

**General Discussion**

Latency FAs for all 11 children identified social functions. WAITs completed by all informants also identified that the behavior problems were maintained by social contingencies. After comparing the functions identified by both, the WAITs and Latency FAs, the results showed that the WAITs identified the correct functions for 73% of the children. In addition, in the two cases in which there was no match identified (Sansa and Javier), the WAITs identified the correct function as the function with the second shortest latency. Although the purpose of the WAIT is not to determine the function of problem behavior, it is interesting that the informants’ perceptions of latency to problem behavior in the presence of various EOs corresponded to the identified functions of problem behavior in the latency FAs.

Furthermore, in the linear regression, the average of all WAITs predicted the duration children waited before engaging in problem behavior to receive reinforcement. Overall, these results suggest that the WAIT when completed by one or multiple informants (e.g., 1 to 4) may identify under which circumstances children with developmental and intellectual disabilities engage in problem behavior.
CHAPTER SEVEN

Study III

Purpose

The purpose of Study III was to use the WAIT completed by informants to systematically individualize the initial component durations used during the schedule thinning procedure. A secondary purpose was to use the informants’ preferred waiting times as final waiting targets for all subjects.

Method

Subjects and Setting. Four children (Joaquin, Javier, Mahar, and Alex) who participated in Study II Phase II also participated in Study III. Recall that all subjects had an ASD diagnosis and engaged in socially-mediated problem behavior when waiting to receive reinforcement. Sessions for Joaquin were conducted at home. Sessions for Javier, Mahar, and Alex were conducted at their ABA clinics.

Response Measurement, Reliability, and Treatment Integrity. Data were collected using a real-time behavioral data application on electronic devices (Countee™). Data were collected on the rate of problem behavior and functional communication responses (FCRs), prompts and compliance (Javier only), and duration of components during the multiple schedules. A second observer collected data for at least 27% of all sessions for all subjects to assess the reliability of the observation system. Sessions were divided into 10-s intervals and partial-interval agreement was used to compare data collected by both observers. Partial-interval agreement consisted of dividing the smaller frequency of behavior over the larger frequency of
behavior and multiplying the result by 100%. Zero instances of problem behavior by both observers were scored as 100% IOA. The percentages for all intervals were averaged to calculate IOA for the sessions (see Table 5 for results). Moreover, data on therapists’ behavior were collected on at least 25% of sessions for all subjects to assess treatment integrity (e.g., researcher reinforced all FCRs on a fixed ratio [FR] 1 schedule during FCT and the reinforcement component of the multiple schedule, researcher placed all FCRs during the extinction component of the multiple schedule on extinction, researcher ignored all problem behavior). See Table 6 for results.

**Design.** A multiple baseline across subjects design was used during Study III.

**Baseline.** Noncontingent reinforcement (NCR)/ contingent reinforcement (CR) baselines were completed following the latency FAs for all subjects. Sessions were 5 min and alternated using a 1:2 ratio (1 NCR session to 2 CR sessions). Data were collected on rate of problem behavior and functional communication responses (FCRs) for all subjects. During the NCR sessions, subjects had free access to reinforcement (i.e., access to preferred items or breaks from work) and problem behavior was ignored. During the CR sessions, subjects had access to reinforcement contingent on the target problem behavior.

**Functional Communication Training.** Following NCR/CR baseline, an FCR was taught to each subject to appropriately request for their social reinforcer as identified by the latency FA. All FCRs were taught using FCT and were based on the behavioral repertoire of the subjects. For all subjects, FCRs consisted of vocal responses. Functional communication training consisted of 5-min sessions in which a most-to-least prompting procedure was used. Furthermore, increased prompt delays across sessions provided opportunities for independent responding (Touchette & Howard, 1984). The initial session of the FCT for all subjects was implemented using a 0-s
prompt delay. The second session included a 1-s delay. Moreover, time delays increased across sessions by 50% and were rounded to the nearest whole number.

All FCT sessions depended on the function of problem behavior identified by the latency FA. For example, if problem behavior was maintained by access to toys, the beginning of the sessions resembled the tangible condition in the FA with the addition of a rule provided by the experimenter (e.g., “if you want to play with your toys, you can say ‘may I have my toys, please’). After the rule was provided, the session began, and a researcher removed the toys and provided an instruction (e.g., “no more toys”). Then, a second researcher implemented the prompting procedure (e.g., a vocal prompt “may I have my toys, please”). Contingent on the subject engaging in the FCR, with or without prompts, the toys were provided to the subjects for 30 s. Similarly, if problem behavior identified by the latency FA was maintained by escape from demands, the sessions resembled the escape condition in the latency FA. During all FCT sessions, all problem behavior, including the target problem behavior, was placed on extinction and FCRs were reinforced on a fixed ratio (FR 1) schedule. Mastery criteria consisted of three consecutive sessions with 100% independent responding and problem behavior below 80% reduction from the last three baseline sessions.

**Schedule Thinning.** A multiple schedule procedure was conducted as the schedule thinning method used to increase the time in which subjects had to wait to receive reinforcement. The multiple schedule consisted of two components, reinforcement and extinction. During the reinforcement component all FCRs were reinforced on a FR 1 schedule. During the extinction component all FCRs were placed on extinction. Problem behavior was placed on extinction during both components. In addition, the multiple schedules had schedule-correlated stimuli (e.g., green laminated card during reinforcement, red laminated card during extinction) and the
addition of a rule stated by the experimenter at the beginning of each session (e.g., “when the card is green, you may ask for a break by saying ‘break,’ when the card is red, you cannot ask for a break, you have to work”; “when the card is green, you may ask for your toys by saying ‘may I have my toys please’, when the card is red, you have to wait”).

The initial waiting durations (i.e., extinction component) for the multiple schedules depended on the information provided by the informants who completed the WAIT. To identify an initial waiting target, we used the shortest latency provided by one of the informants who completed the WAIT in the setting in which we ran sessions. Meaning, if we completed sessions at home, we compared the latencies from the caregivers who completed the WAIT and selected the shortest latency as the initial waiting duration. For example, if a mother reported that her child waited 5 s before engaging in problem behavior to receive reinforcement and a father reported that the same child waited 20 s before engaging in problem behavior to receive reinforcement, we used the mother’s reported duration. Therefore, we started the waiting duration at 5 s. In addition, if an informant selected 0-s waiting time, we started the waiting duration at 1 s.

All reinforcement components for all subjects started and remained at 60 s. During reinforcement, contingent on FCRs, subjects had access to reinforcers for 30 s. In contrast, the waiting durations for all subjects increased across sessions based on problem behavior. For waiting durations to increase, problem behavior had to remain below the 80% reduction from the last three sessions of baseline. We increased the waiting durations adapting the prompt delay procedure implemented by Touchette and Howard (1984) for FCT. Thus, time delays increased across sessions by 50% and were rounded to the nearest whole number until the final target.
waiting duration was met. This procedure allowed for all subjects’ waiting durations to be increased in an individualized but systematic format.

In addition, final target waiting durations were also individualized. We selected the final waiting durations based on the goals identified on the WAIT by the informants. Similarly to the selection of the initial waiting durations, we used the WAITs completed by the informants in the setting in which we ran sessions. In this case, we selected the longest waiting time identified by the informants. For example, if sessions were conducted at the clinic and WAITs were completed by the BCBA and RBT who worked with the child, we selected our final goal to be the longest waiting time selected by either the BCBA or RBT.

During the multiple schedules, all sessions were initially 5 min for all subjects. However, sessions durations were increased to either 10 min, 11 min, 16 min, or a combination of any of these to allow for individualized final waiting times. For example, if the final target duration for a subject was 15 min, we ran sessions at 5 min until the addition of the extinction and reinforcement components exceeded 5 min. At this time, we extended session durations to 10 and then 16 min. The final session durations were always 1 more min than the final waiting goals to allow for the 60-s reinforcement component at the beginning of each session. Mastery criteria for this phase consisted of three consecutive sessions with discriminated manding and problem behavior below 80% reduction from the last three baseline sessions.

In order to calculate the response rate in each component to account for the differences in duration of components and reinforcement time in the reinforcement component, two equations were completed for each multiple schedule session. First, we divided the number of FCRs emitted in the reinforcement component by the total duration of time in the reinforcement component minus the reinforcement time divided by 60. Second, we divided the number of FCRs
emitted in the extinction component by the total duration of time in the extinction component divided by 60.

**Results**

Figure 5 depicts the rate of problem behavior during NCR/CR baseline, FCT, and multiple schedule phases for all subjects. Figure 6 depicts the rate of FCRs also emitted during NCR/CR baseline, FCT, and multiple schedule phases for all subjects.

**Baseline.** During the NCR/CR baseline, all subjects engaged in higher rates of problem behavior during the CR condition compared to the NCR condition. This suggests that problem behavior was maintained by the social reinforcers identified in the latency FA. Moreover, zero rates of FCRs were observed for all subjects.

**Functional Communication Training.** Following baseline, all subjects were trained to request for their reinforcers using a vocal response. The vocal responses were “I want toys, please” for Mahar, “break” for Javier, “I want toys” for Joaquin, and “May I have my toys, please” for Alex. For Mahar and Joaquin, rates of FCRs increased immediately or after the first session while rates of problem behavior decreased to zero or near zero levels. For Javier, rates of FCRs remained at zero levels during the first three sessions but increased and remained at high levels after the fourth session. Moreover, Javier’s rates of property destruction decreased immediately when compared to baseline, however, we did not observe an 80% reduction from the last three sessions of baseline until the last three sessions of the FCT. For Alex, rates of FCRs remained at zero or near zero levels while rates of aggression increased when FCT was initially implemented. This pattern of behavior remained for the first ten sessions of FCT. However, during these sessions, Alex expressed that he did not want to engage in the response and he did not want to play with the toys. Therefore, new stimuli, similar to the items that he had previously
engaged in problem behavior to access, were introduced and then included during all subsequent sessions. This change resulted in an increase of FCRs and a reduction of problem behavior to zero levels.

**Schedule Thinning.** When the multiple schedule procedure was implemented, problem behavior remained at zero or near zero levels for three (Mahar, Joaquin, and Alex) of four subjects. Moreover, FCRs remained at high levels during the reinforcement component and decreased for all subjects during the extinction components as the sessions advanced.

*Mahar.* Sessions for Mahar were conducted at his ABA clinic. We used the results from the WAITs completed by his behavior service providers. The shortest latency identified for Mahar to wait for preferred items was 20 s. We started the multiple schedule using a 20-s waiting period in extinction and 60 s in reinforcement. The longest waiting duration identified as a goal in the WAIT was 15 min. Therefore, we used this as our final goal. Sessions started at 5 min. During the 5-min multiple schedule, problem behavior remained at zero levels with the exemption of two sessions. Discriminated responding was observed from the first sessions. Functional communication responses remained at high levels during the reinforcement component and near zero levels during the extinction component. After his extinction and reinforcement durations exceed the 5-min session, we moved into 10-min session. Here, two sessions were completed were problem behavior remained below the 80% reduction from the last three sessions of baseline and FCRs were stable in the reinforcement component and near zero levels in the extinction component. The final session duration was 16 min. This was done to allow for the 15-min final waiting time and the 1-min reinforcement component. During the 16-min sessions, problem behavior and FCRs in the extinction component remained near zero levels while FCRs in the reinforcement component remained at high levels.
Javier. Sessions for Javier were conducted at his ABA clinic. We used the results from the WAITs completed by his behavior service providers. The shortest latency identified for Javier to wait was 20 s. We started the multiple schedule using a 20-s waiting period in extinction and 60 s in reinforcement. The longest waiting duration identified as a goal in the WAIT was 10 min. Therefore, we used this as our final goal. Sessions started at 5 min. During the 5-min multiple schedule, problem behavior initially increased to baseline levels and FCRs in both components did not occur during the first session. However, after the second session, we observed high rates of FCRs during the reinforcement component and lower rates of FCRs in the extinction component. Some variability in FCRs was observed until the last five sessions during the 5-min sessions in which we observed consistent discrimination. Meaning, higher levels of FCRs in reinforcement and lower levels of FCRs in extinction. As previously stated, we only increased the extinction component by 50% when problem behavior was below the 80% reduction from the last three sessions of baseline. Thus, we remained with the same component durations across multiple sessions. For example, Javier experienced three sessions of 60-s reinforcement and 20-s extinction, four sessions of 60-s reinforcement and 68-s extinction, and five sessions of 60-s reinforcement and 102-s extinction. When the extinction component reached 153 s, problem behavior decreased to near zero levels and extinction component durations increased across sessions. Therefore, we increased the sessions to 10 min and then to 11 min to meet the final goal of 1-min reinforcement and 10-min extinction. During the 10-min and 11-min sessions, discriminated responding was observed in all sessions. Higher levels of FCRs occurred in the reinforcement component while lower levels of FCRs occurred in the extinction component. Moreover, problem behavior remained near zero levels.
Joaquin. Sessions for Joaquin were conducted at home. We used the results from the WAITs completed by his caregivers. The shortest latency identified for Joaquin was 0 s. Therefore, we started the multiple schedule using a 1-s waiting period in extinction and 60 s in reinforcement. The longest waiting duration identified as a goal in the WAIT by the caregivers was 3 min. However, after talking to the caregivers and reviewing the WAITs completed by the behavior service providers we decided to increase our final goal to what both behavior service providers selected, 10 min. During the implementation of the multiple schedule using 5-min sessions, problem behavior remained at zero or near zero rates. However, FCRs occurred at high rates during both components of the multiple schedule with slightly higher levels of responding during the reinforcement component. As sessions progressed, we continued to observe high rates of FCRs during the reinforcement component and zero to near zero levels of FCR during the extinction component. Therefore, we moved to 11-min sessions to account for the final goal of 1-min reinforcement, 10-min extinction. Here, problem behavior remained at zero rates with the exception of one session. In addition, FCRs remained at zero or near zero levels during the extinction component and high levels during the reinforcement component.

Alex. Sessions for Alex were conducted at his ABA clinic. We used the results from the WAITs completed by his behavior service providers. The shortest latency identified for Alex was 0 s. We started the multiple schedule using a 1-s waiting period in extinction and 60 s in reinforcement. The longest waiting duration identified as a goal in the WAIT by the behavior service providers was 15 min. Therefore, we used this as our final goal. During the implementation of the multiple schedule using 5-min sessions, problem behavior was at zero or near zero rates and discriminated responding was immediately observed during the sessions. Thus, we moved to 10-min sessions. Here, we continued to observe zero levels of problem
behavior, high rates of FCRs during the reinforcement component, and zero to near zero levels of FCRs during the reinforcement component. Finally, during the 16-min sessions, we continued to observe low levels of problem behavior and high levels of FCRs in the reinforcement component while FCRs in the extinction component remained at zero or near zero levels.

**Discussion**

Study III extends the current research on multiple schedules as a schedule thinning method within the context of FCT for problem behavior maintained by social contingencies. In addition, in this study, we evaluated a different procedure for selecting and increasing component durations in the multiple schedules. To do this, we used the durations that the caregivers or behavior service providers identified in the WAIT as the latency to problem behavior as the initial waiting target for each subject. This method allowed for very short initial extinction component duration targets (e.g., 1 s) while the reinforcement component duration stayed consistent throughout all sessions (i.e., 60 s). Results suggest that acquisition of the discriminated response for all subjects was obtained faster and for longer durations (e.g., 15 min) from what has been previously reported in the research literature (e.g., Fisher et al., 2015). There are two potential reasons for these results. First, it is possible that starting the extinction components using individualized durations may have reduced potential extinction bursts sometimes observed during the initial extinction components. Previous research has typically selected arbitrary initial duration components during the multiple schedules (e.g., Betz et al., 2013). Second, we used a different procedure from what has been used in previous literature to increase the multiple schedule components. Rather than increasing the extinction components arbitrarily, we adapted the prompt delay procedure evaluated by Touchette and Howard (1984) within the context of the multiple schedule. We increased extinction component durations across
sessions by 50% and we rounded to the nearest whole number. In addition, we only used one session with problem behavior below the 80% reduction from the last three sessions of baseline as the criteria to increase the duration of extinction components. Previous research has typically increased components using both, problem behavior and discriminated responding to determine component increments (e.g., Campos et al., 2016) or have used at least two sessions with problem behavior below a certain percentage reduction from baseline (e.g., 85%; Hanley et al., 2001). These results may suggest that perhaps using both discriminated responding and problem behavior to increase component durations may decrease the efficiency of the procedure as it may take longer durations for discriminated responding to occur. It is possible that higher rates of responding in the extinction component relative to the reinforcement component may occur because, from the subject’s perspective, the FCR may be on a variable schedule of reinforcement (e.g., variable interval [VI] or variable ratio [VR]). This may be especially true for individuals whose problem behavior is maintained by negative reinforcement.

To date, the research that has evaluated the use of multiple schedules within the context of FCT has not been effective at establishing discriminated responding without the use of other treatment components in children who have problem behavior maintained by negative reinforcement (e.g., response restriction; Fisher, Greer, Querim, & DeRosa, 2014; positive reinforcement; Campos et al., 2017). However, in this study, we observed discriminated responding without other treatment components for one subject who engaged in problem behavior maintained by negative reinforcement, Javier. For Javier, high rates of problem behavior were observed during FCT and the initial durations of the multiple schedule. Variable rates of FCRs were observed in both components until the extinction components were substantially longer than the reinforcement component. These results, although only available for
one subject, may suggest that extinction may take longer to be effective at reducing both problem behavior and FCRs in the extinction component when behavior is maintained by negative reinforcement. Future research should replicate these results with more individuals who engage in problem behavior maintained by negative reinforcement.

Furthermore, there are some limitations that should be noted in this study. First, all four subjects engaged in a vocal response to engage in the FCR. It is possible that we may have obtained different results if we had used the procedures with individuals who communicated using a different verbal response. However, the children who participated in the study, did not have an age appropriate verbal repertoire even though they engaged in some vocal behavior. For example, Javier only engaged in one-to-two-word sentences that were not always understandable. His vocal repertoire consisted mostly of echoing other individuals in his environment.

Second, for three of four subjects, sessions were conducted at their ABA clinics. It is possible that the clinic itself, or some of the therapists present during some sessions, may have had some stimulus control over the subjects’ learning behavior. This, could have increased the likelihood of establishing discriminated responding more efficiently in all subjects. However, similar results were observed for Joaquin for which we conducted sessions at home. In addition, all subjects in this study were recommended to participate due to their severe problem behavior in the clinic and at home.

Another limitation of this study was the different final goals selected by the informants who completed the WAIT. In general, caregivers selected very short waiting durations (e.g., 3 min for Joaquin) while behavior service providers selected longer waiting durations (e.g., 15 min for Mahar). To account for this, we chose the longest waiting duration identified by the
informant who completed the WAIT in the setting in which we ran sessions. However, for Joaquin, sessions were conducted at home and caregivers selected three min of waiting. Rather than following this goal, we chose the goal selected by the behavior service providers because waiting three min did not seem to be age appropriate for Joaquin. In addition, in other settings (e.g., school, ABA clinic) in which more children may need assistance from teachers or therapists, waiting three min may not be sufficient for another individual to attend to Joaquin’s request to receive access to a preferred item. Future research could evaluate waiting different durations in different settings as identified by each informant or using an average waiting duration based on all goals identified by all informants.

Finally, we did not evaluate the transfer of treatment effects with caregivers or behavior service providers for the subjects in different settings. However, most therapists that worked with Mahar, Javier, and Alex were present during most sessions of the study and at least one caregiver was present in some sessions for Joaquin. Caregivers and therapists were not formally trained on following all the procedures of the study. Rather, informal training was conducted when therapists and caregivers asked questions about the procedures and after the study was concluded. No data are available for this. Therefore, future research should evaluate the transfer of treatment effects in different settings and with different caregivers.
CHAPTER EIGHT

CONCLUSION

Three studies were completed to create and evaluate a questionnaire to identify waiting durations for subjects who engage in problem behavior to receive social positive or social negative reinforcement. The first study consisted of the development of a questionnaire (i.e., WAIT). To complete this first step, 15 questions were submitted to an expert review of BCBA-Ds who rated 93% of the questions as either relevant or very relevant. In addition, the experts provided feedback about the overall questionnaire. All feedback was addressed by changing the wording of questions, layout of the questionnaire, instructions, and removing all questions that were rated below relevant or very relevant.

After developing the final version of the questionnaire, the WAIT was provided to informants of children with an ASD who engage in problem behavior maintained by social contingencies. The purpose of Study II Phase I was to assess the inter-rater reliability of the questionnaire. To do this, the informants were divided into two categories: 1) caregivers and 2) behavior service providers and the results provided by each set of informants were compared. Here, we compared the results based on contexts in which problem behavior happens rather than just latencies to problem behavior. This was done to account for potential similarities in latencies but differences in contexts. For example, both caregivers may report that a child waits 20 s to receive reinforcement. However, if these reports are for different contexts (e.g., engage in problem behavior to receive attention vs. engage in problem behavior to escape task demands)
the results may not be as useful for treatment purposes. Overall, the results from the inter-rater reliability showed that caregivers’ answers matched in 67% of the cases and behavior service providers’ answers matched in 50% of cases.

To assess the validity of the questionnaire, Study II Phase II was completed. Here, the average results provided by all informants were compared to the last data point in the latency FAs for each social function identified by the latency FAs completed in controlled settings. In addition, a linear regression was completed to identify if the WAIT predicted the duration children waited to receive reinforcement before engaging in problem behavior. The results from the first analysis showed that in 73% of the cases, the WAIT identified the correct function or functions that the latency FA identified. Moreover, the linear regression identified that the WAIT predicted the duration children wait before engaging in problem behavior to receive reinforcement.

Finally, Study III was used to further validate the use of the WAIT by systematically individualizing the component durations used during a schedule thinning procedure. To do this, we used the current waiting durations and the final waiting target durations identified by the informants. Results showed that using individualized beginning and ending targets was successful in obtaining discriminated responding while problem behavior remained at zero or near zero levels for all subjects.

In general, the current set of studies extend the existing research on indirect assessments and provide an interview tool that may be used by researchers and practitioners. This tool may be useful when working with individuals with an ASD who engage in problem behavior when waiting to receive reinforcement. Overall, we do not expect the WAIT to be the only assessment completed when working with children with problem behavior. Instead, we expect the WAIT to
be used as an initial evaluation that could help develop further direct assessments and treatments. In addition, these studies expand the current research on schedule thinning by evaluating individualized initial and final duration components during multiple schedules which may increase the durability of treatment effects and decrease the recurrence of problem behavior.
Table 1. Inter-rater Reliability of WAIT (caregivers).

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Caregiver 1</th>
<th>Caregiver 2</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>David</td>
<td>Tangible</td>
<td>Tangible</td>
<td>Agreement</td>
</tr>
<tr>
<td>Joaquin</td>
<td>Tangible</td>
<td>Tangible</td>
<td>Agreement</td>
</tr>
<tr>
<td>Mahar</td>
<td>Escape</td>
<td>Escape</td>
<td>Agreement</td>
</tr>
<tr>
<td>Sansa</td>
<td>Escape</td>
<td>Escape</td>
<td>Agreement</td>
</tr>
<tr>
<td>Jinger</td>
<td>Escape</td>
<td>Tangible</td>
<td>Disagreement</td>
</tr>
<tr>
<td>Issac</td>
<td>Escape</td>
<td>Tangible</td>
<td>Disagreement</td>
</tr>
<tr>
<td>Blake</td>
<td>Tangible</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Alex</td>
<td>Tangible</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Javier</td>
<td>Escape</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Malik</td>
<td>Tangible</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Allen</td>
<td>Tangible</td>
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Table 2. Inter-Rater Reliability of WAIT (behavior service providers).

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<thead>
<tr>
<th>Subjects</th>
<th>Behavior Service Provider 1</th>
<th>Behavior Service Provider 2</th>
<th>Results</th>
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<td>Tangible and Escape</td>
<td>Agreement</td>
</tr>
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<td>Escape</td>
<td>Escape</td>
<td>Agreement</td>
</tr>
<tr>
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<td>Tangible</td>
<td>Agreement</td>
</tr>
<tr>
<td>Alex</td>
<td>Tangible</td>
<td>Tangible</td>
<td>Agreement</td>
</tr>
<tr>
<td>Jinger</td>
<td>Escape</td>
<td>Tangible and Attention</td>
<td>Disagreement</td>
</tr>
<tr>
<td>Joaquin</td>
<td>Escape</td>
<td>Tangible</td>
<td>Disagreement</td>
</tr>
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<tr>
<td>Javier</td>
<td>Attention</td>
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<tr>
<td>David</td>
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<td>-</td>
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</tr>
<tr>
<td>Allen</td>
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Table 3. Interobserver Agreement (IOA) and Treatment Integrity (TI) for Latency Functional Analyses.

<table>
<thead>
<tr>
<th></th>
<th>IOA % Sessions</th>
<th>IOA % Mean</th>
<th>IOA % Range</th>
<th>TI % Sessions</th>
<th>TI % Mean</th>
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<td>99.60 - 100</td>
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<td>-</td>
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<tr>
<td>Blake</td>
<td>20</td>
<td>100</td>
<td>-</td>
<td>33</td>
<td>96.00</td>
<td>80.00 - 100</td>
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<td>Joaquin</td>
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<td>99.20 - 100</td>
<td>35</td>
<td>100</td>
<td>-</td>
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<td>83.87 - 100</td>
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<td>Alex</td>
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Table 4. Comparison of Functions for WAITs and Latency Functional Analyses.

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<tr>
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<th>Latency FAs</th>
<th>All WAITs</th>
<th>Results</th>
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<td>1. Tangible</td>
<td>Match</td>
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<tr>
<td></td>
<td>2. Escape</td>
<td>2. Escape</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Attention</td>
<td></td>
</tr>
<tr>
<td>Jinger</td>
<td>1. Tangible</td>
<td>1. Tangible</td>
<td>Match</td>
</tr>
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<td>1. Escape</td>
<td>Match</td>
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<td>Joaquin</td>
<td>1. Tangible</td>
<td>1. Tangible</td>
<td>Match</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Escape</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Attention</td>
<td></td>
</tr>
<tr>
<td>Mahar</td>
<td>1. Tangible</td>
<td>1. Tangible</td>
<td>Match</td>
</tr>
<tr>
<td></td>
<td>2. Escape</td>
<td>2. Escape</td>
<td></td>
</tr>
<tr>
<td>Alex</td>
<td>1. Tangible</td>
<td>1. Tangible</td>
<td>Match</td>
</tr>
<tr>
<td></td>
<td>2. Escape</td>
<td>2. Escape</td>
<td></td>
</tr>
<tr>
<td>Malik</td>
<td>1. Tangible</td>
<td>1. Attention</td>
<td>Match</td>
</tr>
<tr>
<td></td>
<td>2. Tangible</td>
<td>2. Tangible</td>
<td></td>
</tr>
<tr>
<td>Allen</td>
<td>1. Tangible</td>
<td>1. Tangible</td>
<td>Partial Match</td>
</tr>
<tr>
<td></td>
<td>2. Escape</td>
<td>2. Attention</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Escape</td>
<td></td>
</tr>
<tr>
<td>Sansa</td>
<td>1. Tangible</td>
<td>1. Escape</td>
<td>No Match</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Tangible</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Attention</td>
<td></td>
</tr>
<tr>
<td>Javier</td>
<td>1. Escape</td>
<td>1. Tangible</td>
<td>No Match</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Escape</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Attention</td>
<td></td>
</tr>
</tbody>
</table>
Table 5. Interobserver Agreement (IOA) for Study III.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>% Sessions</th>
<th>Mean and Range % Problem Behavior</th>
<th>Mean and Range % FCRs S&lt;sup&gt;D&lt;/sup&gt;</th>
<th>Mean and Range % FCRs S&lt;sup&gt;A&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahar</td>
<td>33</td>
<td>99.16 (96.66, 100)</td>
<td>99.05 (96.66, 100)</td>
<td>99.67 (98.33, 100)</td>
</tr>
<tr>
<td>Javier</td>
<td>27</td>
<td>95.53 (89.30, 100)</td>
<td>99.17 (97.50, 100)</td>
<td>92.30 (84.16, 95.83)</td>
</tr>
<tr>
<td>Joaquin</td>
<td>33</td>
<td>99.58 (98.33, 100)</td>
<td>99.58 (96.66, 100)</td>
<td>98.53 (96.21, 100)</td>
</tr>
<tr>
<td>Alex</td>
<td>32</td>
<td>97.91 (88.33, 100)</td>
<td>99.25 (96.66, 100)</td>
<td>97.78 (93.33, 100)</td>
</tr>
</tbody>
</table>
Table 6. Treatment Integrity (TI) for Study III.

<table>
<thead>
<tr>
<th>Subjects</th>
<th>% Sessions</th>
<th>TI % Mean</th>
<th>TI % Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahar</td>
<td>25</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Javier</td>
<td>30</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Joaquin</td>
<td>33</td>
<td>99.50</td>
<td>98.36 - 100</td>
</tr>
<tr>
<td>Alex</td>
<td>33</td>
<td>100</td>
<td>-</td>
</tr>
</tbody>
</table>
Figure 1. Expert review responses to initial WAIT questions. The rating scale is shown on the x-axis and consisted of Very Relevant, Relevant, Slightly Relevant, or Not Relevant. The percentage of expert review responses to all questions is shown on the y-axis.
Figure 2. Latency functional analyses for six subjects. On the top panel David and Jinger, on the middle panel Issac and Blake, and on the bottom panel Joaquin and Mahar. Sessions are on the x-axis and latency of problem behavior on the y-axis. Closed symbols represent the ignore condition, open circles represent the play condition, open squares represent the attention condition, closed squares represent the tangible condition, and closed triangles represent the escape condition.
Figure 3. Latency functional analyses for five subjects. On the top panel Sansa and Alex, on the middle panel Javier and Allen, and on the bottom panel Malik. Sessions are on the x-axis and latency of problem behavior on the y-axis. Closed symbols represent the ignore condition, open circles represent the play condition, open squares represent the attention condition, closed squares represent the tangible condition, and closed triangles represent the escape condition.
Figure 4. Linear regression for function(s) of problem behavior. Informants endorsed latencies (min) on the x-axis and last data point in latency FAs (min) on the y-axis.
Figure 5. Rate of problem behavior for four subjects during baseline, functional communication training, and multiple schedules. Open circles represent rate of problem behavior in the NCR condition. Closed circles represent rate of problem behavior in the CR condition, FCT, and all phases of the multiple schedules. Mahar’s data are shown on the first panel, Javier’s data are shown on the second panel, Joaquin’s data are shown on the third panel, and Alex’s data are shown on the fourth panel.
Figure 6. Rate of functional communication responses for all four subjects during baseline, functional communication training, and multiple schedules. Open circles represent rate of FCRs in the NCR condition in BL and in the reinforcement (S^D) component during the multiple schedules. Closed circles represent rates of FCRs in the CR condition in BL, FCT, and in the extinction (S^A) component during the multiple schedules. Mahar’s data are shown on the first panel, Javier’s data are shown on the second panel, Joaquin’s data are shown on the third panel, and Alex’s data are shown on the fourth panel.
REFERENCES


**APPENDIX A:**

**WAITING ASSESSMENT INTERVIEW TOOL (ENGLISH)**

*WAITING ASSESSMENT INTERVIEW TOOL (WAIT)*

Claudia Campos & Sarah E. Bloom

<table>
<thead>
<tr>
<th>Caregiver’s name:</th>
<th>Relationship:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Child’s name:</th>
<th>Age:</th>
<th>Ethnicity/Race:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Target problem behavior:**

**Instructions:** The purpose of this questionnaire is to identify how long the child waits during different situations. To answer the questions, please mark an X on the tick that best represents the child’s waiting time. Use the ticks between the whole numbers to mark seconds. Each tick represents 10 seconds.

For example: If the child currently waits 2 minutes and 30 seconds before engaging in problem behavior, when he/she wants attention from the parent, the parent should place the X in between the numbers 2 and 3.

If the child currently waits more than 5 minutes before engaging in problem behavior, the caregiver should write the number of minutes the child waits on the line next to the word **Other**. If the question does not apply or the child does not engage in problem behavior in the context asked in the question, the caregiver should Circle **N/A**.

**SECTION I: ATTENTION**

1. If the child wants your attention and you are engaging in an activity (e.g., making dinner, driving, grading) and not paying attention to the child, after how many minutes will the child engage in problem behavior if you do not provide the attention requested?

2. If the child wants your attention and you are talking to another individual (e.g., family member, teacher) and not paying attention to the child, after how many minutes will the child engage in problem behavior if you do not provide the attention requested?

Provide additional information regarding the contexts in which the child engages in problem behavior to receive your attention.

**SECTION II: TANGIBLE**

3. If the child is playing or wants access to play with a preferred toy (e.g., tablet) and you take the item away or do not provide the item, after how many minutes will the child engage in problem behavior?

4. If someone else is playing with the child’s favorite item and the child wants to play with the item, after how many minutes will the child engage in problem behavior?

Provide additional information regarding the contexts in which the child engages in problem behavior to receive access to preferred items.

**SECTION III: ESCAPE**

5. If you tell the child to complete an activity/chore/task and the child does not want to complete it, after how many minutes will the child engage in problem behavior?

6. How long can the child work on a non-preferred activity/chore/task without engaging in problem behavior?

Provide additional information regarding the contexts in which the child engages in problem behavior when non-preferred tasks are presented.

**GOALS: WAITING TIME**

7. How long would it be appropriate for the child to wait without engaging in problem behavior to receive your attention?

8. How long would it be appropriate for the child to wait without engaging in problem behavior to receive access to his/her favorite item?

9. How long would it be appropriate for the child to wait without engaging in problem behavior to receive breaks from tasks?

**Scoring Summary (completed by Behavior Analyst):** Based on the caregiver’s answers, circle the condition in which problem behavior has the shortest latency (child waits the shortest duration before engaging in problem behavior).

<table>
<thead>
<tr>
<th>Attention</th>
<th>Tangible</th>
<th>Escape</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Current waiting duration Average: Treatment initial duration: Treatment final duration:
APPENDIX B:

WAITING ASSESSMENT INTERVIEW TOOL (SPANISH)

Claudia Campos & Sarah E. Bloom

<table>
<thead>
<tr>
<th>Nombre del familiar:</th>
<th>Relación con el niño:</th>
<th>Edad:</th>
<th>Origen/Raza:</th>
<th>Fecha:</th>
</tr>
</thead>
</table>

**Problema de conducta:**

Instrucciones: El propósito de este cuestionario es identificar cuanto tiempo el niño es capaz de esperar, ante diferentes situaciones, sin manifestar conductas inapropiadas. Para responder este cuestionario, por favor marcar con una X en la raya que mejor representa cuanto tiempo puede esperar el niño actualmente. Use las rayas entre los números para marcar los segundos. Cada raya representa 10 segundos.

Por ejemplo: Si el niño actualmente espera 2 minutos y 30 segundos antes de manifestar problemas de conducta cuando quiere la atención de usted, por favor marque la X entre los números 2 y 3.

Si el niño actualmente espera más de 5 minutos antes de presentar conductas inapropiadas, por favor escriba la cantidad de minutos que su hijo puede esperar en la línea Otro. Si su hijo no manifiesta conductas similares a los supuestos que sugieren las preguntas, usted debe circular N/A.

**SECCIÓN I: ATENCIÓN**

1. Si el niño quiere su atención y usted está ocupado (por ejemplo: cocinando, manejando, corrigiendo exámenes) y no está prestandole atención al niño, ¿Cuánto tiempo pasa antes de que el niño manifieste problemas de conducta?

2. Si el niño quiere su atención y usted está hablando con otra persona (por ejemplo: familiar, maestro) y no prestandole atención al niño, ¿Cuánto tiempo pasa antes de que el niño manifieste problemas de conducta?

Adicione información sobre las ocasiones en las cuales el niño demuestra conductas inapropiadas para recibir atención:

**SECCIÓN II: TANGIBLES**

3. Si el niño está jugando o pide jugar con su juguete preferido (ej., tableta) y usted le quita el juguete o le dice que no está disponible, ¿Cuánto tiempo pasa antes de que el niño manifieste problemas de conducta?

4. Si otra persona está jugando con el juguete preferido del niño y el niño quiere jugar con él, ¿Cuánto tiempo pasa antes de que el niño manifieste problemas de conducta?

Adicione información sobre las ocasiones en las cuales el niño demuestra conductas inapropiadas para recibir objetos:

**SECCIÓN III: ESCAPE**

5. Si usted le dice al niño que complete una actividad/tarea/trabajo y el niño no quiere continuar, ¿Cuánto tiempo pasa antes de que el niño manifieste problemas de conducta?

6. Si el niño está haciendo una actividad que no es de su preferencia (por ejemplo: tarea), ¿Cuánto tiempo pasa antes de que el niño manifieste problemas de conducta?

Adicione información sobre las ocasiones en las cuales el niño demuestra conductas inapropiadas para recibir un recesso:

**METAS: TIEMPO DE ESPERA**

<table>
<thead>
<tr>
<th>1. ¿Cuánto tiempo piensa usted que sería apropiado que el niño espere sin manifestar problemas de conducta para recibir su atención?</th>
<th>5 - 10 - 15 - 20 - 25 - 30 - 35 - 40 - 45 - 50 - 55 - 60 s/min</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. ¿Cuánto tiempo piensa usted que sería apropiado que el niño espere sin manifestar problemas de conducta para recibir juguetes preferidos?</td>
<td>5 - 10 - 15 - 20 - 25 - 30 - 35 - 40 - 45 - 50 - 55 - 60 s/min</td>
</tr>
<tr>
<td>3. ¿Cuánto tiempo piensa usted que sería apropiado que el niño espere sin manifestar problemas de conducta para recibir un recesso cuando está trabajado (ejemplo: haciendo tareas)?</td>
<td>5 - 10 - 15 - 20 - 25 - 30 - 35 - 40 - 45 - 50 - 55 - 60 s/min</td>
</tr>
</tbody>
</table>

Resumen (completado por Analista de Conducta): Basado en las recomendaciones del familiar / maestro(s), circule la condición en la cual el problema de conducta tiene la latencia más corta (el niño espera el menor tiempo). Atención Tangibles Escape

Promedio de espera actual: Tiempo de espera de tratamiento: Inicial Final
APPENDIX C:

DEMOGRAPHIC QUESTIONNAIRE

**Please answer the questions by circling the answer that best applies to you.**

Questions About the Participant

1. What is the participant’s gender?
   - Male
   - Female

2. What is the participant’s age?
   __________

3. What is the participant’s primary language?
   - English
   - Spanish
   - French
   - Other ______________

4. What is the participant’s ethnicity?
   - Hispanic or Latino
   - Not Hispanic or Latino
   - Other: ______________

5. What’s the participant’s race?
   - American Indian/Alaskan Native
   - Asian
   - Native Hawaiian/Pacific Islander
   - Black or African American
   - White
   - Other: ______________

6. What is the participant’s diagnosis?

__________________________
APPENDIX D:

FUNCTIONAL ANALYSIS SCREENING TOOL (FAST)

Functional Analysis Screening Tool

Client: ___________________ Date: ___________________
Informant: ___________________ Interviewer: ___________________

To the Interviewer: The FAST identifies environmental and physical factors that may influence problem behaviors. It should be used only for screening purposes as part of a comprehensive functional analysis of the behavior. Administer the FAST to several individuals who interact with the client frequently. Then use the results as a guide for conducting a series of direct observations in different situations to verify behavioral functions and to identify other factors that may influence the problem behavior.

To the Informant: Complete the sections below. Then read each question carefully and answer it by circling “Yes” or “No.” If you are uncertain about an answer, circle “N/A.”

Informant-Client Relationship
1. Indicate your relationship to the client: [ ] Parent [ ] Instructor [ ] Other
2. How often do you interact with the client? [ ] Daily [ ] Weekly
3. Do you interact with the client daily? [ ] Yes [ ] No

Problem Behavior Information
1. What is the client's problem behavior? [Check and describe]:
   - Aggression:
   - Self-injury:
   - Stereotypy:
   - Property destruction:
   - Disruptive behavior:

2. Frequency:
   - Hourly
   - Daily
   - Weekly
   - Less

3. Severity:
   - Mild: disruptive but little risk to property or health
   - Moderate: property damage or minor injury
   - Severe: significant threat to health or safety

4. Situations in which the problem behavior is most likely:
   - Days/Time:
   - Settings/Activities:
   - Persons present:

5. Situations in which the problem behavior is least likely:
   - Days/Time:
   - Settings/Activities:
   - Persons present:

6. What is usually happening to the client right before the problem behavior occurs?

7. What usually happens to the client right after the problem behavior occurs?

8. How do you handle the behavior when it occurs?

9. Comments:

10. Does the client usually engage in the problem behavior when he/she is being ignored or when caregivers are paying attention to someone else?

11. Does the client usually engage in the problem behavior when requests for preferred activities [games, snacks] are denied or when these items are taken away?

12. When the problem behavior occurs, do you or other caregivers usually try to calm the client down or try to engage the client in preferred activities?

13. Is the client usually well behaved when he/she is getting lots of attention or when preferred items or activities are freely available?

14. Is the client resistant when asked to perform a task or to participate in group activities?

15. When the problem behavior occurs, is the client usually given a break from tasks?

16. Does the client usually engage in the problem behavior when asked to perform a task or to participate in group activities?

17. Is the client usually well behaved when he/she is not required to do anything?

18. Does the problem behavior seem to be a “ritual” or habit, repeatedly occurring the same way?

19. Does the client usually engage in the problem behavior even when no one is around or watching?

20. Does the client prefer engaging in the problem behavior over other types of leisure activities?

21. Does the problem behavior appear to provide some sort of sensory stimulation?

22. Does the client usually engage in the problem behavior more often when he/she is ill?

23. Is the problem behavior cyclical, occurring at high rates for several days and then stopping?

24. Does the client have recurrent painful conditions such as ear infections or allergies? If so, please list:

Scoring Summary - Circle the number from above of each question answered “Yes”.

<table>
<thead>
<tr>
<th>Items circled “Yes”</th>
<th>Total</th>
<th>Potential Source of Reinforcement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3 4</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>7 8</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>11 12</td>
</tr>
<tr>
<td>13</td>
<td>14</td>
<td>15 16</td>
</tr>
</tbody>
</table>

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APPENDIX E:
IRB APPROVAL LETTER

10/24/2017

Claudia Campos
ABA-Applied Behavior Analysis 4202 E Fowler Ave
Tampa, FL 33620

RE: Expedited Approval for Initial Review

IRB#: Pro00030383

Title: Evaluation of the waiting assessment interview tool (WAIT) and individualized waiting durations in signaled reinforcement

Study Approval Period: 10/23/2017 to 10/23/2018

Dear Ms. Campos:

On 10/23/2017, the Institutional Review Board (IRB) reviewed and APPROVED the above application and all documents contained within, including those outlined below.

Approved Item(s):
Protocol Document(s):
WAIT and Signal Reinforcement Protocol_IRB_Version 1_10.1.17.docx

Consent/Assent Document(s)*:
WAIT and signal reinforcement_Parenand Parental Consent_Version 1_10.10.17 No HIPAA.docx.pdf
WAIT and signal reinforcement_Parent and Parental Consent_Version 1_8.30.17.docx.pdf
***WAIT and Signaled Reinforcement_Verbal Consent_10.1.17.docx
***WAIT and Signaled Reinforcement_Verbal Consent with HIPAA Auth.docx
Please use only the official IRB stamped informed consent/assent document(s) found under the "Attachments" tab. Please note, these consent/assent documents are valid until the consent document is amended and approved.***Consent forms with waiver are not stamped.

It was the determination of the IRB that your study qualified for expedited review which includes activities that (1) present no more than minimal risk to human subjects, and (2) involve only procedures listed in one or more of the categories outlined below. The IRB may review research through the expedited review procedure authorized by 45CFR46.110 and 21 CFR 56.110. The research proposed in this study is categorized under the following expedited review category:

(6) Collection of data from voice, video, digital, or image recordings made for research purposes.

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your study qualifies for a waiver of the requirements for the documentation of informed consent for screening/recruitment purposes as outlined in the federal regulations at 45CFR46.117(c) which states that an IRB may waive the requirement for the investigator to obtain a signed consent form for some or all subjects if it finds either: (1) That the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject's wishes will govern; or (2) That the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.

Your study qualifies for a waiver of the requirement for signed authorization as outlined in the HIPAA Privacy Rule regulations at 45CFR164.512(i) which states that an IRB may approve a waiver or alteration of the authorization requirement provided that the following criteria are met (1) the PHI use or disclosure involves no more than a minimal risk to the privacy of individuals; (2) the research could not practicably be conducted without the requested waiver or alteration; and (3) the research could not practicably be conducted without access to and use of the PHI. An alteration of HIPAA Authorization is granted for participants recruited from Engage Behavioral Health or the Silver Center at USF whose parents will provide Authorization verbally as part of the screening/recruitment process. This alteration exempts the study team from the Privacy Rule's requirement that Authorizations obtained during screening be signed and dated. Written Authorization will be obtained from the parents of those participants from these centers who meet inclusion criteria and decide to participate in the research as part of the informed consent process. As the PI is not part of the USF Covered Entity (CE), Authorization is not required from participants who are recruited from non-CEs.

This study involving child participants falls under the minimal risk category 45 CFR 46.404:
Research not involving greater than minimal risk.
As the principal investigator of this study, it is your responsibility to conduct this study in accordance with IRB policies and procedures and as approved by the IRB. Any changes to the approved research must be submitted to the IRB for review and approval via an amendment. Additionally, all unanticipated problems must be reported to the USF IRB within five (5) calendar days.

We appreciate your dedication to the ethical conduct of human subject research at the University of South Florida and your continued commitment to human research protections. If you have any questions regarding this matter, please call 813-974-5638.

Sincerely,

Kristen Salomon, Ph.D., Vice Chairperson

USF Institutional Review Board