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IDENTIFICATION OF PREFERENCE CATEGORIES

A Thesis

Presented to

The Graduate Faculty

Central Washington University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

Applied Behavior Analysis

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by

Katrina Rashelle Brooks

December 2017

CENTRAL WASHINGTON UNIVERSITY

Graduate Studies

We hereby approve the thesis of

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Candidate for the degree of Master of Science

APPROVED FOR THE GRADUATE FACULTY

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Dean of Graduate Studies

ABSTRACT

IDENTIFICATION OF PREFERENCE CATEGORIES

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A 16-item paired stimulus (PS) preference assessments was utilized to identify preference categories. A single item from both the highly-preferred (HP) and less preferred (LP) categories as well as two categorically similar but untested items were then utilized during a reinforcer assessment. An alternating treatments design with an initial baseline and final best treatment phase was implemented to assess the comparative effectiveness of the tested versus untested stimuli to act as reinforcers. The reinforcer assessment involved implementation of discrete trial teaching methods to instruct four separate but similar tasks. Each task was paired with an edible item. During treatment, correct responding resulted in contingent access to a small piece of the edible item that had been paired with the task. Five school-age children from a local public-school district served as participants. Results of the preference assessment indicated clear preferences categories for most participants. Results of the reinforcer assessment show that for three of the five participants, mastery criteria were met first with items from the HP category. Following a transition into the best-treatment only phase, each task met mastery criteria. The research supports the use of the PS preference assessment in identifying both categories and single items that can later be used as reinforcers in applied settings.

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CHAPTER I

INTRODUCTION

Reinforcement is a critical component of effective behavioral interventions. In fact, the Behavior Analyst Certification Board's (2016) *Professional and Ethical Compliance Code for Behavior Analysts* states, "Behavior analysts recommend reinforcement rather than punishment whenever possible" (p. 13). While behavior analysts make an effort to identify and utilize functional reinforcers (e.g., escape or attention) as part of behavior change programs, efforts to increase skill acquisition (e.g., learning to tact objects or name letters) may require the identification and utilization of other effective reinforcers such as edibles or tangible items that are not necessarily related to the function of significant behaviors. Within applied settings identification of effective reinforcers for individuals with disabilities can be challenging as many members of this population have restricted interests or may be unable to self-report their desired preferences. As a result, researchers and practitioners have developed procedures to assess individual preference for edible or tangible items, auditory stimuli, and leisure activities. These preference assessment procedures consist of indirect measures (e.g., staff or caregiver interviews and informal observation of the individual), direct measures (e.g., paired- or multiple-stimulus preference assessments), or a combination of both. While preference assessment procedures have been effective at identifying potential reinforcers for a number of behavior reduction and skill acquisition programs (Athens & Vollmer, 2013; Boudreau, Vladescu, Kodak, Argott, & Kisamore, 2015; Kurtz, Chin, Huete, Tarbox, O'Connor, Paclawskyj, & Rush, 2003; Lomas, Fisher, & Kelley, 2010;

Newquist, Dozier, & Neidert, 2012; Roscoe, Iwata & Zhou, 2013; Green, Reid, and White,1988) found that direct preference assessment procedures typically result in more accurate identification of potential reinforcers than indirect methods alone.

Direct preference assessments include single stimulus (SS), paired stimulus (PS), multiple stimulus (MS), and multiple stimulus without replacement (MSWO). Each assessment method begins with the practitioner or researcher amassing a number of potentially reinforcing stimuli. Variations in preference assessment procedures occur regarding the manner in which stimuli are presented to clients or participants. SS approaches consist of repeated presentations of one stimulus (e.g., edible, tangible, auditory stimuli) at a time in a variety of orders to a client or participant while the researcher or practitioner records his or her response (approach or lack of approach) to the stimuli (Pace, Ivancic, Edwards, Iwata, & Page, 1985). During PS assessments pairs of randomized sets of stimuli are presented to the individual and the client's approach responses to one stimulus over the other are recorded (Fisher & Piazza, 1992). MS procedures include the presentation of three or more stimuli concurrently with approach responses resulting in replacement of unselected stimuli with potential alternatives (Windsor, Piche, & Locke, 1994). MSWO methods are the same as the MS procedure except stimuli selected by the individual are removed from the array and no replacement is offered (DeLeon & Iwata, 1996). During both procedures, approach responses are recorded. In the chapter that follows, previous research comparing various preference assessment methods as well as research performed utilizing specifically PS assessment methods will be reviewed. In sum, the literature review will conclude with the proposal to extend the research conducted by Ciccone, Graff, and Ahearn (2015) that examined the

efficiency of paired stimulus preference assessment through the identification of preference categories that will be tested utilizing reinforcer assessments for both tested and untested edible stimuli from various preference categories.

In the current research, PS preference assessments were utilized in the identification of preference categories. The 16-item PS preference assessment was used to create both hierarchal item and preference categories for five participants. A single item from both the highly-preferred (HP) and less preferred (LP) categories as well as two categorically similar but untested items were then tested during a reinforcer assessment. An alternating treatments design with an initial baseline and final best treatment phase was implemented to assess the comparative effectiveness of the tested versus untested stimuli to act as reinforcers.

CHAPTER II

LITERATURE REVIEW

Comparison Studies

DeLeon and Iwata (1996) compared the results of three common direct preference assessment procedures across seven adults with developmental disabilities: paired-stimulus (PS), multiple-stimulus with replacement (MS), and multiple-stimulus without replacement (MSWO). DeLeon and Iwata found that the three different preference assessment methods resulted in similar items being ranked as highly preferred across the resulting preference hierarchies of each participant. When examining the absolute number of items within each hierarchy, they found that the MS procedure resulted in fewer total potentially reinforcing items than the other two assessments. Additionally, they found that the PS assessment took the most time to conduct while the MS assessment took the least amount of time (Deleon & Iwata, 1996).

In the second part of their study, DeLeon and Iwata (1996) evaluated the reinforcing effectiveness of various items within four participants' preference hierarchies. Specifically, they examined the reinforcing effectiveness of stimuli not selected during the MS assessment that were selected during the PS or MSWO assessments. Results from the second experiment demonstrated that, for most of the participants, items selected during the PS or MSWO assessments functioned as reinforcers. Given these results, the authors concluded that the MS assessment may not identify potential reinforcers that would be identified using the PS or MSWO assessments. They also concluded that the MSWO assessment may be able to identify potential reinforcers in less time compared to

the PS assessment. With DeLeon and Iwata's results in mind, both the MSWO and PS assessments can result in a wealth of potential reinforcers to be utilized in behavioral interventions with clients. As is common among clients with developmental disabilities, impulsivity, reduced ability to attend, and challenges in the ability to scan larger arrays of stimuli could impact their ability to participate in MSWO assessments. Though more time consuming, PS assessments may produce more reliable preference hierarchies for individuals that may generate approach responses to the initial stimuli encountered or may be unable to scan arrays of more than two items (DeLeon & Iwata, 1996).

To further compare the efficacy of various preference assessment procedures, a multiphase experiment comparing potential reinforcers identified utilizing an SS method and a PS method in terms of their ability to later function as reinforcers in concurrent and single schedules of reinforcement was conducted (Roscoe, Iwata, & Kahng, 1999). Participants included eight individuals with disabilities ranging in age from 25 to 63. The initial phase included an SS preference assessment where 10 food times were presented to each participant one at a time and approach responses were recorded. PS assessments utilized the same 10 stimuli, but stimuli were randomly presented in pairs to each participant. Participants' approach responses to a single stimulus from the pair was recorded. Results from the assessments demonstrated high response rates for the majority of the stimuli presented in the SS method across participants while results from the PS method showed greater participant response differentiation (some stimuli resulted in high rates while other stimuli resulted in lower rates) (Roscoe, Iwata, & Kahng, 1999).

During the second phase Roscoe, Iwata, and Kahng (1999) compared stimuli that the assessments demonstrated may be highly preferred according to both measures and

stimuli that produced differing rates of responding during the two assessments. Free operant responding in a reversal design was employed to assess the selected stimuli in terms of their ability to act as reinforcers. Concurrent schedules of reinforcement compared high-preference stimuli to low-preference stimuli where the target behavior (lever pressing or writing) resulted in access to either the HP or LP item contingent on which corresponding lever or pad was selected by the participant. Items considered LP were utilized in a single schedules of reinforcement condition where a single response modality was available and the target response resulted in contingent access to only those items categorized as LP during preference assessments. Results demonstrated that the majority of participants had comparatively higher rates of responding when the HP items were available in the concurrent schedule conditions. However, the majority of participates responded at similar rates to the LP items during the single schedule condition. Given these findings, the authors conclude that the PS assessment may be well suited for creating a hierarchy of potential reinforcers that would likely function as such if subjected to reinforcer assessment procedures. Creation of preference hierarchies that contain stimuli that will likely act as reinforcers when provided to clients contingent on desirable responding demonstrates the utility of the PS assessment in applied settings. Further, the authors demonstrated that the PS assessment was able to identify a number of potential reinforcers that would likely promote high rates of responding. Given that high rates of responding can be critical during initial skill acquisition; this study demonstrates the utility of the PS assessment in identifying reinforcers needed to support client behavior (Roscoe, Iwata, & Kahng, 1999).

Additional research pertaining to preference assessments and the creation of stimulus hierarchies compared the efficacy of the SS preference assessment and a PS preference assessment with four participants with developmental disabilities (Fisher, Piazza, Bowman, Hagopian, Owens, & Slevin, 1992). The SS method included repeated presentations of individual stimuli with the percentage of participant approaches dictating position within a stimulus hierarchy. The PS method involved repeated presentation of stimuli in pairs with the percentage of participant approaches determining position within the hierarchy. Utilizing a concurrent operants paradigm, the utility of the stimuli within the hierarchies created by both direct preference assessments to function as reinforcers was compared. A comparison was made between the duration with which responding (in-square behavior or in-seat behavior) occurred when access to preferences determined by the SS method were utilized and the duration with which responding occurred when access to preferences determined by the PS method were available. Data demonstrated that the duration of responding was higher when items from the hierarchy developed utilizing the PS method were provided in a contingent fashion as compared to the items selected from the SS method (Fisher et al., 1992). This comparison demonstrated support for the PS method in that stimuli selected from PS method better predicted which stimuli would later function as reinforcers. Further, in applied settings, practitioners often attempt to increase the duration of client behaviors. Since the items from a PS assessment can support an increase in the duration of participant responding and practitioners often attempt to increase the duration of client behaviors, the aforementioned study supports the use of PS assessments when practitioners are attempting to identify potential reinforcers for behaviors that need to occur for longer periods of time.

Paired Stimulus Studies

Research utilizing PS preference assessments aimed to investigate the use of auditory stimuli as potential reinforcers as well as the ability of the auditory stimuli selected through the assessment to influence participant behavior (Horrocks & Higbee, 2006). Six youth with disabilities currently receiving special education services participated. The PS preference assessment included the presentation of two auditory stimuli (music) through identical CD players that were rotated to control for sequence effects. A total of 30 trials were conducted to assess preference for 6 individually selected auditory stimuli per participant. At the end of each trial the participant was prompted to select their preferred stimulus. Following the completion of the preference assessment, a preference hierarchy was created for each participant which delineated both preferred and non-preferred stimuli. Items from the hierarchy were then utilized during a reinforcer assessment that followed an alternating treatments design. Target behaviors selected (e.g., sorting, reading Braille numbers, assembling grooming kits) were addressed in each participant's current Individualized Education Plan (IEP) which could be considered a free-operant task. Results from the reinforcer assessment demonstrated a comparative increase in rates of responding when responses were reinforced with high preference auditory stimuli. Rates of responding during low preference conditions were also noted to be higher when compared to baseline conditions. Given these results, the authors conclude that paired stimulus assessments can be utilized to select individual preference for auditory stimuli and that those selected during the assessment can then function as reinforcers (Horrocks & Higbee, 2006). As applied to the currently proposed research, Horrocks and Higbee's research demonstrates that PS assessments not only provide

practitioners with stimuli that could elicit high rates of responding but also other potential reinforcers that elicit responding higher than baseline rates. HP items could then be utilized during instruction of new skills while LP items could be utilized to support skills that are currently at maintenance levels. Lastly, HP items and LP items could be alternated during lengthy instructional sessions where reinforcer satiation is a concern without precipitous decreases in response rates.

In an examination of the relationship between stimuli of various preference levels and the amount of work maintained by contingent access to those stimuli, researchers utilized a PS preference assessment to develop a reinforcer hierarchy (DeLeon, Frank, Gregory, & Allman, 2009). Participants included four persons with developmental disabilities ranging in age from 9 to 20 years. PS preference assessments were conducted in which each participant was exposed to repeated presentations of 12 stimuli (leisure items) in pairs. Percentage of participant approaches determined position within the hierarchy as high-preference (HP), medium-preference (MP), or low-preference (LP). For each individual, a single stimulus from each category (HP, MP, and LP) was utilized in the three progressive-ratio analyses (one for each category). Specifically, during the reinforcer assessment the authors required a single target response to access one of the selected stimuli. After accomplishing the task the first time, each participant needed to produce one additional response per trial (2 responses then 3 responses in the next trial, for example) prior to accessing the selected stimuli. When participants failed to continue responding for a specific duration, the researchers terminated the session and used the data to create a mean breaking point (the largest ratio completed under a progressive ratio schedule of reinforcement). Target behaviors included either block or peg placement.

Results demonstrated that 3 of 4 participants had higher mean breaking points when HP stimuli was provided contingent on responding, each participant had higher mean breaking points when contingent access to an HP stimulus was provided compared to the LP stimuli, and for 3 of 4 participants contingent access to MP stimuli resulted in higher mean breaking points when compared to LP stimuli. Using these data, the authors then suggest that HP stimuli may produce more responding than LP stimuli when provided contingently. Further, the location of preferences within the hierarchy may be indicative of the amount of work individuals are willing to complete in order to access reinforcing stimuli. These findings support the use of PS assessments and the resulting hierarchies as a component in behavior change programming as practitioners are often seeking reinforcers for their clients that will support higher rates of responding. The ability of the resulting hierarchy to delineate which potential reinforcers would likely support the highest rates of responding for the smallest total number of contingent reinforcers could be utilized to prevent client reinforcer satiation.

Utilizing a paired stimulus preference assessment and a concurrent operants arrangement to assess potential reinforcers, Bowman, Piazza, Fisher, Hogpian, and Kogan (1997), investigated participant preferences for either varied or constant reinforcers. Participants included 7 youth with disabilities ranging in age from 8 to 16 years. Caregiver interviews were utilized to create lists of potentially reinforcing stimuli (e.g., edible and social stimuli) to be assessed during the PS preference assessment. During the preference assessment pairs of stimuli were presented to each participant where approach responses were recorded and converted into percentage of trials selected. These data were utilized to create a reinforcer hierarchy that was then divided into

categories (HQ = higher quality and SLQ = slightly lower quality) for use in the reinforcer assessment where the HQ category was the highest rank and the SLQ was the second, third, and fourth rank. Target behaviors addressed in the reinforcer assessment varied by participant and included sitting in a chair, standing in a square, pressing a microswitch, and stuffing an envelope. During the concurrent operants arrangement, three identical response options were available for each participant (e.g., three microswitches) with one of three conditions assigned to each response option (HQ access, SLQ access, or control). Access to the potentially reinforcing stimuli was contingent on either the occurrence or duration of the target behavior depending on which response was required. Data demonstrated that for four participants longer durations or higher rates of responding were allocated to response options that resulted in access to the varied SLQ reinforcement. For two participants, higher rates or longer durations were associated with the HQ response option. The authors suggest these data demonstrate the significance of comparative stimulus preference to determining how effective providing variation in reinforcing stimuli will be. Further, they highlight the importance of determining under which conditions reinforcing stimuli could be varied and offer the methods utilized in their study as a potential avenue for making that determination. These findings also suggest that providing a variety of potential reinforcers to clients during skill acquisition programming may result in higher rates of responding and that isolating a multitude of potential reinforcers through a PS assessment could provide such an avenue for practitioners seeking to provide clients with a multitude of effective reinforcers for use in behavior change programs (Bowman, Piazza, Fisher, Hogpian, & Kogan, 1997).

In the final study reviewed for the current proposed research, a paired stimulus preference assessment was utilized to create a hierarchy which was further examined to create potential reinforcer categories (Ciccone, Graff, & Ahearn, 2015). Concurrent operants procedures were then implemented to determine the ability of untested stimuli considered part of the same potential reinforcer category to function as a reinforcer. Participants included six individuals with developmental disabilities ranging in age from 14 to 19 years. The paired stimulus preference assessment included repeated presentation of edible stimuli in pairs to each participant. Participants were then prompted to make a selection and approach responses were recorded over 120 trials. Stimuli used in the preference assessment were categorized into four groupings according to flavor and texture. Silverware sorting was the target response and two response options were available. Contingent on which response option was selected (which color silverware was sorted) access to potentially reinforcing stimuli was provided. Two concurrent operants conditions and a baseline condition were implemented in a multi-element design with reversal. During the first condition, target responding provided contingent access to either an HP stimulus or an LP stimulus dependent on which response option was selected. During the second condition target responding resulted in contingent access to either a stimulus that was not tested but categorically similar to the HP stimulus or a stimulus that was not tested but categorically similar to the LP stimulus dependent on which response option was selected. Completion of target behavior resulted in access to a small piece of the associated tasks assigned reinforcer. Some participants' schedules of reinforcement changed through the first session but were held constant for the remaining sessions. Results of the paired stimulus assessment demonstrated that within each participant's

potential reinforcer hierarchy, items that fit within the four categories tended to fall near each other in rank order. Additionally, items in the top ranked positions in the hierarchy tended to be in the same category and the lowest ranked items also tended to be within the same category. Results of the reinforcer assessment demonstrated that each participant responded more often to the tasks associated with the HP stimuli and untested stimuli from the same category. Further, little responding occurred to the tasks associated with the LP stimuli and untested stimuli from the same. Given these results, the authors suggest it may be possible to deduce a stimulus's ability to act as a reinforcer by comparing it to a participant's known preference categories. Lastly, the authors argue that their results have implications for those working with similar populations in applied settings. Of importance to the current proposed research, the authors suggest that following an initial preference assessment, staff may not need to conduct additional assessments to isolate potential reinforcers. This could be especially important under circumstances where a particular stimulus previously selected during a preference assessment is no longer available, reinforcer satiation has or could become problematic, or staff ability to conduct frequent reinforcer assessments is limited (Ciccone, Graff, & Ahearn, 2015).

Paired-stimulus preference assessments are one of a variety of direct assessments that lend themselves to the creation of a reinforcer hierarchy or a ranked list of stimuli that may function as a reinforcer for a specific individual's behavior. As many of the articles included in this review note, paired stimulus preference assessments are often a component in behavioral treatment methods aimed at increasing target responding for individuals with disabilities (Cohen-Almeida, Graff, & Ahearn, 2000; DeLeon, Frank,

Gregory, & Allman, 2009; Horrocks & Higbee, 2006; Roscoe, Iwata, & Kahng, 1999) but, in applied settings, persons working directly with individuals with disabilities may find identifying and regularly making available preferred stimuli challenging (Ciccone et al, 2015). Given that isolating potential reinforcers for this population may be challenging due to restricted preferences, preference hierarchies then allow staff working directly with clients to select stimuli that could act as reinforcers in interventions designed to assist in behavior change.

Research Question and Hypothesis

The purpose of the currently proposed research would be to extend the research conducted by Ciccone, Graff, and Ahearn (2015) pertaining to the efficiency of paired stimulus preference assessments through the identification of preference categories. The currently proposed research aims to apply similar preference assessment methodology to Ciccone et al., (2015) and the resulting preference hierarchies to a younger population (ages 5-15 years) with various diagnoses or qualifying categories and use those stimuli as reinforcers in the context of academic tasks in the real-world environment of the public school special education classroom(s). Specifically, the currently proposed research aims to assess if untested stimuli similar in category to stimuli identified as potential reinforcers will function as such in an applied setting where educational targets are instructed utilizing discrete trial training. The current author hypothesizes that items from similar preference categories will function in a similar fashion to other, tested items from the same category. Over all, the proposed research aims to add to the knowledge base pertaining to the identification of potential reinforcers for individuals with disabilities in applied settings where the availability of known reinforcers may not be constant,

reinforcer satiation has or could inhibit skill acquisition, and time has limited the occurrence of more frequent reinforcer assessments.

CHAPTER III

METHOD

Participants, Settings, and Materials

Five school-age children from a local public-school district served as participants. One girl and four boys between the ages of five and thirteen participated. One participant had been diagnosed with an Autism Spectrum Disorder and four with Developmental Delays. Each participant had an Individualized Education Plan where the associated goals were compatible with instruction utilizing discrete trial teaching (DTT). Each participant was given a pseudonym at the onset of the research that was utilized in all data collection and documentation. These pseudonyms are utilized hereafter.

Ralph, previously diagnosed with an Autism Spectrum Disorder, was a 13-year-old 7th grader at the time of the study. IEP related tasks included receptive identification of four separate letters (S, P, L, and K). Ralph had previous experience with DTT and no recent preference assessment on file. Nikki, a 7-year-old 2nd grader had a previous diagnosis of Developmental Delays. IEP related tasks included receptive identification of three letter words (you, eat, has, and big). Nikki had no previous experience with DTT and no recent preference assessment data on file. Allen, previously diagnosed with Developmental Delays, was 5 years of age and in Kindergarten. IEP related tasks included receptive identification of four letters (S, L, K, and U). Ben, a 6-year old 1st grader had a previous diagnosis of Developmental Delays, limited experience with DTT, and no recent preference assessment on file. Ben's IEP related tasks also included receptive identification of letters (S, L, P, and K). Johnny, a 7-year old diagnosed with Developmental Delays was a 2nd grader at the time of the study. Johnny had previous

experience with DTT and no recent preference assessment on file. IEP related tasks included receptive identification of four numbers (2, 3, 4, and 5).

PS preference assessments (Fisher et al., 1992) and reinforcer assessments were completed in each student's classroom in the location(s) the student most often received instruction pertaining to their IEP goals. Both assessments utilized edible items categorized according to flavor and/or texture. For example: chocolate (e.g., M&Ms, chocolate chips, white chocolate chips, Kit Kats), salty and crunchy (e.g., popcorn, potato chips, Doritos, pretzels), gummy (e.g., Gummy Bears, Starburst, Skittles, Swedish Fish), and fruit and vegetable (e.g., cucumber, carrots, apples, and grapes). As in Ciccone et al. (2015), specific categories and items were determined by individual participant preferences. Initial items chosen to be utilized in the PS preference assessment were informed by caregiver and teacher report by utilizing the portion of the Reinforcement Assessment for Individuals with Severe Disabilities (RAISD) which applies to edible preferences as shown in Appendix A (Fisher, Piazza, Bowman, & Amari, 1996).

Response Measurement

During the PS preference assessment, the investigator recorded approach responses or instances when a participant made physical contact with one of the stimuli. Percentage of approach responses was calculated in order to create a preference hierarchy (see Appendix B). As in Ciccone et al. (2015), each participant's preferred category was determined by adding the mean percentage of approach responses for all stimuli that comprise each individual category, and dividing by four. The resulting mean percentage of approach responses was utilized to create categorical preference hierarchies (see Appendix B).

During the reinforcer assessments, the investigator recorded response errors, prompted responses, and independent correct responses on a trial by trial basis. Trial based data was collected utilizing a discrete trial data sheet (see Appendix B). Percentage of independent correct responses was utilized to determine when success criteria had been met. The aforementioned data was utilized to determine the point at which the participant was ready to move on to the next phase of the investigation.

Data Collection and Interobserver Agreement

During the PS preference assessment, data was collected on approach and selection responses which were defined as the participant making physical contact with one of the stimuli. During the reinforcer assessment, data was collected on correct, independent responses. What constituted a "correct, independent response" was dependent on the specific academic skill that was instructed utilizing DTT. A correct, independent response typically involves the respondent performing a response without being prompted to do so. During both the preference and reinforcer assessments, a second, trained investigator independently recorded trial-by-trial data. A second observer recorded trial-by-trial data during 46.6% of trials across participants during the preference assessment resulting in mean agreement of 100%. Mean agreement during the reinforcer assessments was 99.1% with 43.3% of all trials being recorded by a second observer. Interobserver agreement (IOA) percentage was calculated by dividing the number of agreements by the number of trials that occurred during the session and multiplying that number by 100.

Procedural Integrity

Procedural integrity was assessed during 33.3% of preference and 33.8% of reinforcer assessment trials across all participants. Mean integrity for the preference assessment was 100% and 97% for the reinforcer assessment. For the preference assessment sessions, data was collected on whether each step in the preference assessment was done correctly. For the reinforcer assessment sessions, data was collected on whether DTT procedures were implemented in the designated fashion (see Appendices D and E).

Preference Assessments

PS assessment procedures described by Fisher et al. (1992) were utilized to create individualized preference hierarchies. A total of 120 trials occurred for each PS assessment (see Appendix B). To prevent satiation, preference assessments were conducted in three 40 trial blocks, each block lasting approximately 20 minutes. During each trial, pairs of stimuli were held approximately 24 inches in front of each participant and approximately six inches apart from each other. The researcher then prompted the participant to make a selection by stating "pick one". The researcher then marked an item as approached if the participant made physical contact with one of the stimuli. Physical contact included any hand contact or consumption of the item. If during any trial, a participant did not approach one of the stimuli within 5 seconds of presentation, the researcher removed both stimuli and restarted the trial. If a participant did not approach either stimulus during the trial restart, both stimuli were removed and no data was recorded for that trial. The researcher then initiated the next trial. If a participant

attempted to make an approach response to both stimuli simultaneously, the researcher blocked the attempt by closing their hand around the items.

Reinforcer Assessments

Following the PS preference assessment and creation of a categorical hierarchy for each participant, reinforcer assessments were conducted. Assessment tasks were selected in accordance with the individual participant's IEP goals. Behaviors that would lend themselves to measurement during an alternating schedule and that could be taught utilizing DTT were instructed during the reinforcer assessment. The effects of reinforcement were examined using an initial baseline and a final best-treatment-only condition. Four complete sets of materials needed for each participant to complete their task were created (Task A, B, C, and D). Each set of materials was nearly identical with variations occurring in a single stimulus feature such as specific number, word, or letter presented. Successful completion of Task A was initially followed by the presentation of the stimuli identified as HP and successful completion of Task B was initially followed by the presentation of the stimuli identified as LP. Similarly, Tasks C and D will initially be assigned stimuli that may act as reinforcers following task completion though these stimuli will not have been directly tested during the preference assessment procedures however, the stimuli will be categorically the same as the identified HP and LP stimuli.

Baseline. During baseline conditions a single set of each participants' IEP goal specific materials (Task A, B, C and D) were presented non-concurrently. During baseline DTT procedures were utilized (i.e., each student was sitting facing a set of instructional materials and the researcher provided a discriminative stimulus in the form of a verbal instruction). However, during baseline conditions, correct responses did not

result in the delivery of a potential reinforcer and errors did not result in response blocking or error correction procedures. Each task was presented during a total of three sessions each for a total of 12 sessions during baseline phase.

Multiple Schedule - tested stimuli. Prior to the onset of the first session, a single stimulus from the HP category and a single stimulus from the LP category was assigned at random to each of the participant's tasks (Task A and Task B). Sessions comprised of 40 trials (10 trials for each task; A, B, C, and D) occurred until the student reached mastery criteria (80% accuracy over three consecutive sessions) for one of the two tasks paired with tested stimuli. Responding during sessions was reinforced with contingent delivery of a small piece of the corresponding food item on a fixed-ratio (FR) 1 schedule of reinforcement. Any errors that occurred during the reinforcer assessment resulted in the implementation of an error correction procedure. Following errors or instances where participants did not respond, corrective feedback was provided, the verbal prompt was restated and the trial was restarted. If an additional error occurred following corrective feedback, least-to-most prompting was utilized and faded as needed. Once mastery criteria were met, the stimulus that was being provided contingent on correct responding for the task that met criteria was provided contingent upon correct responding during the task that had yet to meet mastery criteria until mastery criteria were met for the second task. As tasks met mastery criteria, the number of trials per session decreased as the previously mastered tasks were no longer being instructed.

Alternating Schedule - untested stimuli. The aforementioned procedures pertaining to the alternating treatments procedure for tested stimuli were utilized with the exception that tested stimuli were replaced with items not directly tested during the PS

preference assessment. Two sets of untested stimuli per participant were selected. One stimulus was categorically similar to stimuli that comprised participants' HP category and one stimulus that was categorically similar to those stimuli that fell within their LP category as determined by the preference assessment. For example, if a participant's lowest ranked category was gummy, one as yet unidentified stimulus that was considered a gummy edible, was provided contingent on task completion. During the conditions where untested stimuli were utilized, one untested HP item and one untested LP item were provided contingent on task completion as in the tested stimuli conditions.

Research Design

An alternating treatments design with an initial baseline and final best treatment phase was utilized for both the tested and untested (but categorically similar) stimuli (Cooper, Heron, & Heward, 2007). The purpose of the baseline phase when utilizing this design was to ensure that participants were not yet able to perform the task requested of them at the onset of the study. The first treatment phase included DTT where correct responding was reinforced with either an HP or LP item as identified in the preference assessment. The final phase or best treatment phase involved taking the stimuli that reinforced the task that met mastery criteria first and providing that stimuli contingent on successful completion of the task that had not yet met mastery criteria. The aforementioned phases additionally applied to the untested stimuli that were categorically similar to the identified stimuli utilized in the initial alternating treatments phase. Benefits of utilizing an alternating treatments design with an initial baseline and final best treatment phase include the prevention of withdrawal of effective treatment and a potential decrease in the amount of time spent actively comparing treatments by

permitting a faster transition to the best-treatment only phase as soon as criteria permit (Cooper, Heron, & Heward, 2007).

Data Analysis

Visual analysis of the data pertaining to results of the reinforcer assessments was conducted. Comparisons between the percent accuracy on tasks associated with identified HP stimuli and LP stimuli will be made as well as between unidentified but categorically similar HP and LP stimuli. Further a visual comparison between percent accuracy on tasks associated with identified and unidentified HP stimuli will occur. A final comparison will be made between identified and unidentified LP stimuli. More specifically, the visual analysis within conditions in terms of the variability, level, and trend. Further, visual analysis will occur between the conditions that utilize tested and untested stimuli in terms of variability, level, and trend.

CHAPTER IV

RESULTS

Preference Assessment

The resulting hierarchy from the PS preference assessments for each participant is summarized in Table 1. Similar to Ciccone et al. (2015) items for four of the five participants were in particular categories that grouped. For Ralph, three of the four items that comprised the chocolate category ranked 2, 3, and 4 overall and three of the four items that comprised the gummy category ranked 5, 6, and 7 overall. Nikki's preference hierarchy also demonstrated similar groupings of items within categories with three of the four gummy items ranking in the top five items and each item in the fruit and vegetable category ranking in the bottom six items. Categorical groupings were also found in Allen's hierarchy with chocolate items ranking 4, 6, and 7 and fruit and vegetable items ranking 13, 14, and 15. Johnny's preference assessment results contained three distinct categorical groupings with gummy items ranking 4, 5, 6, and 8; items in the crunchy sweet category ranked 9, 10, and 11; and items within the crunchy salty category ranked 12, 13, 14, and 15 within the hierarchy. Categorical differentiation was less clear in Ben's hierarchy. His top ranked category, crunchy salty, occupied ranks 1, 3, 9, and 12. The second ranked category had items that occupied ranks 2, 4, 8, and 13. Additionally, the third ranked category included items that ranked 6, 7, 11, and 14. For 4 of the 5 participants, gummy and chocolate categories ranked in the top two. For all but one participant, the fruit and vegetable category held the lowest rank. For each participant, two of the top three items in their item hierarchy matched their top ranked overall category.

Table 1

Item and Category Hierarchy

	Participant				
	Ralph	**Nikki**	**Allen**	**Ben**	**Johnny**
1	Candy Corn	Gummy Bears	Gummy Bears	Potato Chips	Pineapple
2	Kit Kat	Skittles	Skittles	Mike & Ikes	Whoppers
3	Chocolate Chips	Popcorn	Cheetos	Popcorn	Grapes
4	White Chips	Chocolate Chips	Coco Puffs	Swedish Fish	Mike & Ikes
5	Skittles	Mike & Ikes	Potato Chips	Apples	Root Beer Gummies
6	Gummy Bears	Whoppers	White Chips	Coco Puffs	Gummy Bears
7	Marshmallows	White Chips	Whoppers	White Chips	Cucumber
8	Corn	Ritz	Goldfish	Red Vines	Red Vines
9	Pretzels	Pretzels	Bananas	Goldfish	Peanut butter cereal
10	Goldfish	Goldfish	Marshmallows	Strawberries	Graham Crackers
11	Banana	Grapes	Ritz	Chocolate Chips	Cinn. Chips A Hoy
12	Red Peppers	Apples	Chocolate Chips	Pretzels	Popcorn
13	Apples	Coco Puffs	Corn	Skittles	Puff Cheetos
14	Coco Puffs	Marshmallows	Apples	Whoppers	Pretzels
15	Kix	Carrots	Cucumber	Carrots	Potato Chips
16	Popcorn	Cucumber	Red Vines	Broccoli	Red Peppers
Category					
1	Chocolate	Gummy	Gummy	Crunchy Salty	Fruits & Vegetables
2	Gummy	Chocolate	Chocolate	Gummy	Gummy
3	Crunchy Salty	Crunchy Salty	Crunchy Salty	Chocolate	Crunchy Sweet
4	Fruits & Vegetables	Fruits & Vegetables	Fruits & Vegetables	Fruits & Vegetables	Crunchy Salty

Reinforcer Assessment

Figures 1-5 show the results of the reinforcer assessments for all five participants. Baseline for each participant showed consistent low accuracy responding (e.g., between 0-50 % accuracy) across sessions. Visual analysis of Figure 1 which depicts all three conditions for Ralph indicates that mastery criteria was met on Task A after 50 trials, Task B after 90 trials, Task C after 90 trials, and Task D after 100 trials. The task associated with the HP stimuli (Kit Kats) met criteria 40 trials before the tasks associated with the LP and UHP stimuli and 50 trials before the ULP stimuli. The later three tasks

(A, B, and C) met criteria following a comparable number of trials. More variability occurred with tasks associated with the untested stimuli compared to the tested stimuli.

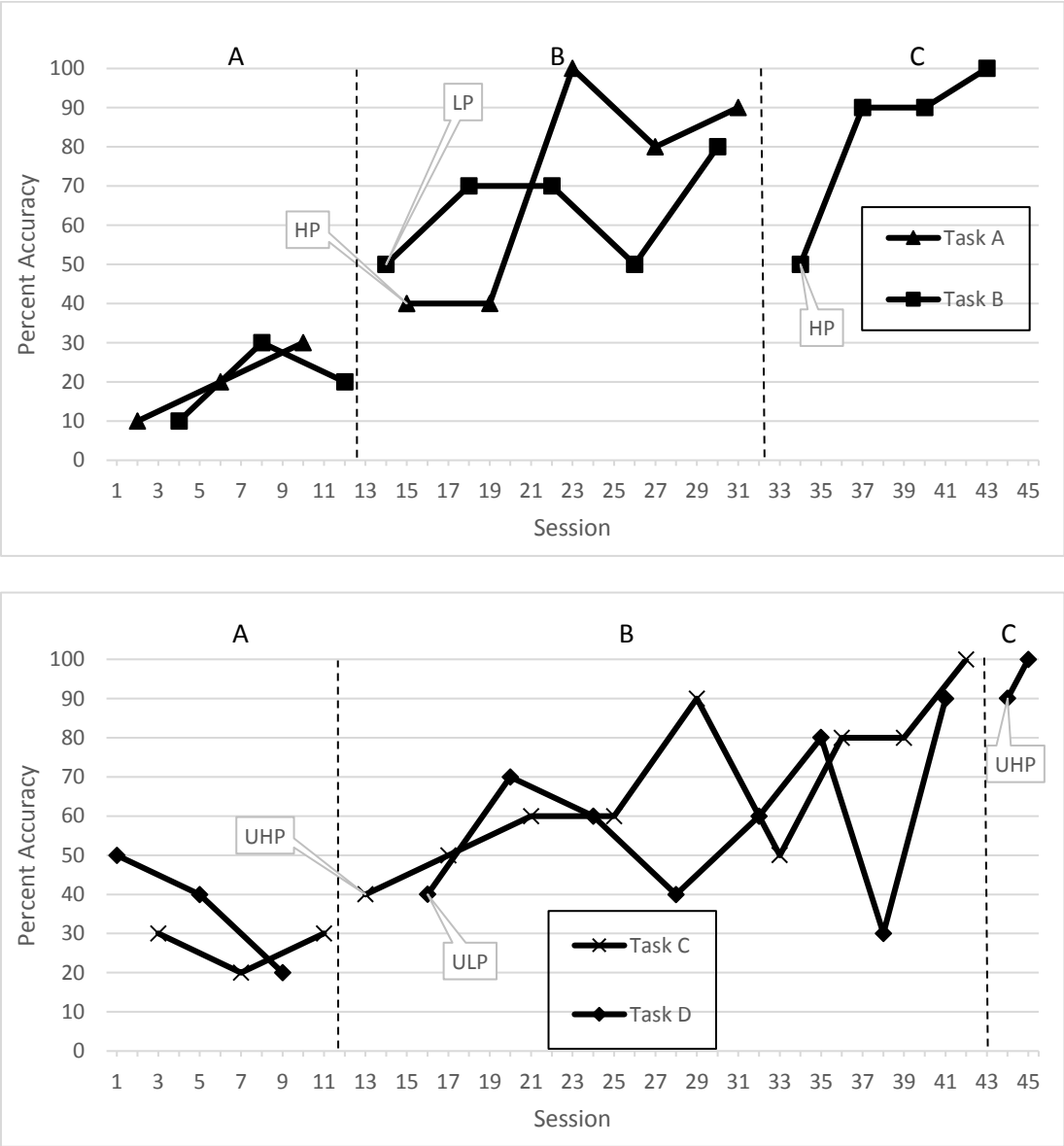

Figure 1. Percentage accuracy in responding for Ralph across baseline (A), alternating treatment conditions, and best-treatment only conditions. The top graphs show Task A (reinforced with HP stimuli) and Task B (LP stimuli). The bottom graph shows Task C (untested HP stimuli) and Task D (untested LP stimuli).

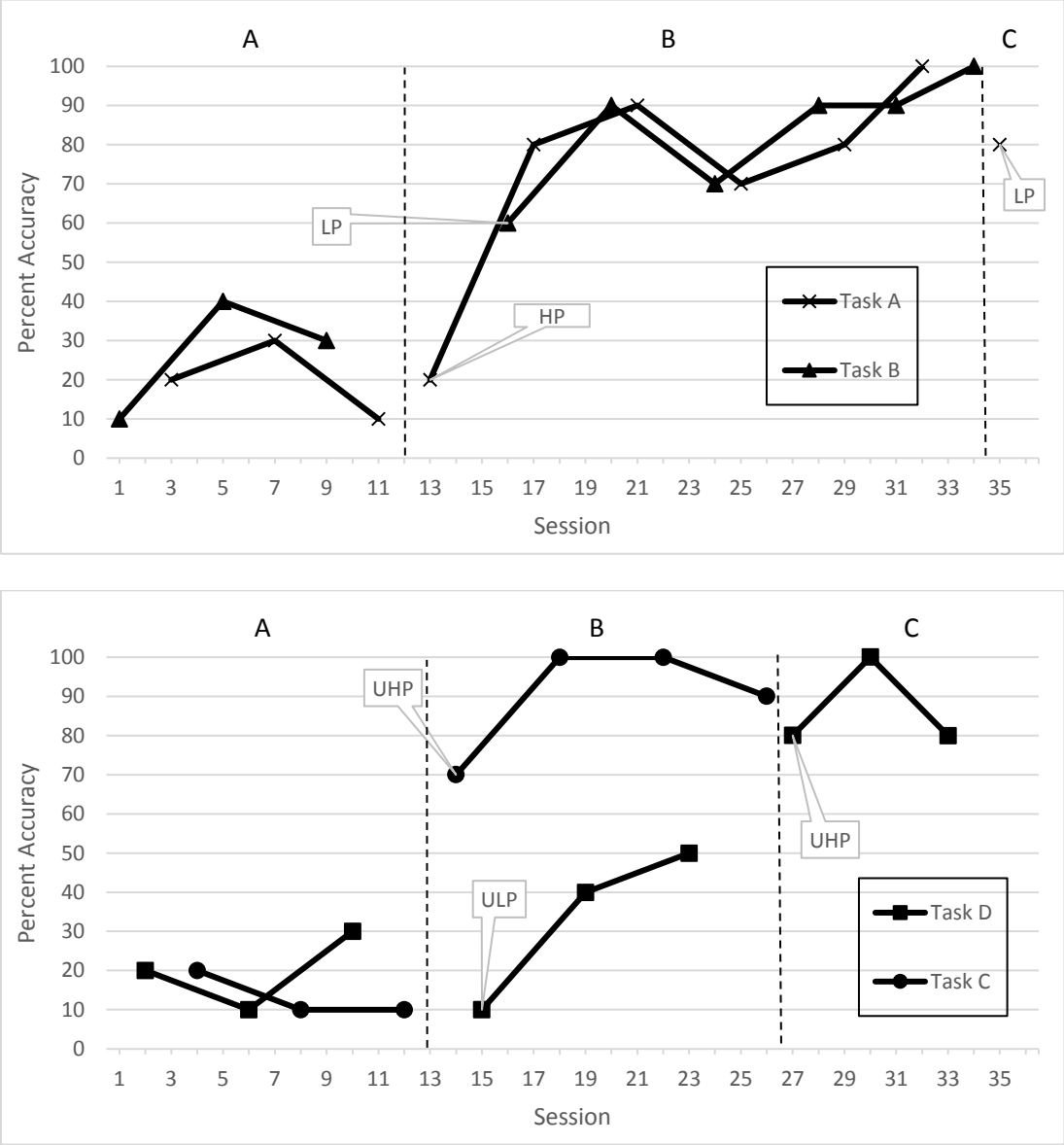

Figure 2. Percentage accuracy in responding for Nikki across baseline (A), alternating treatment conditions, and best-treatment only conditions. The top graphs show Task A (reinforced with HP stimuli) and Task B (LP stimuli). The bottom graph shows Task C (untested HP stimuli) and Task D (untested LP stimuli).

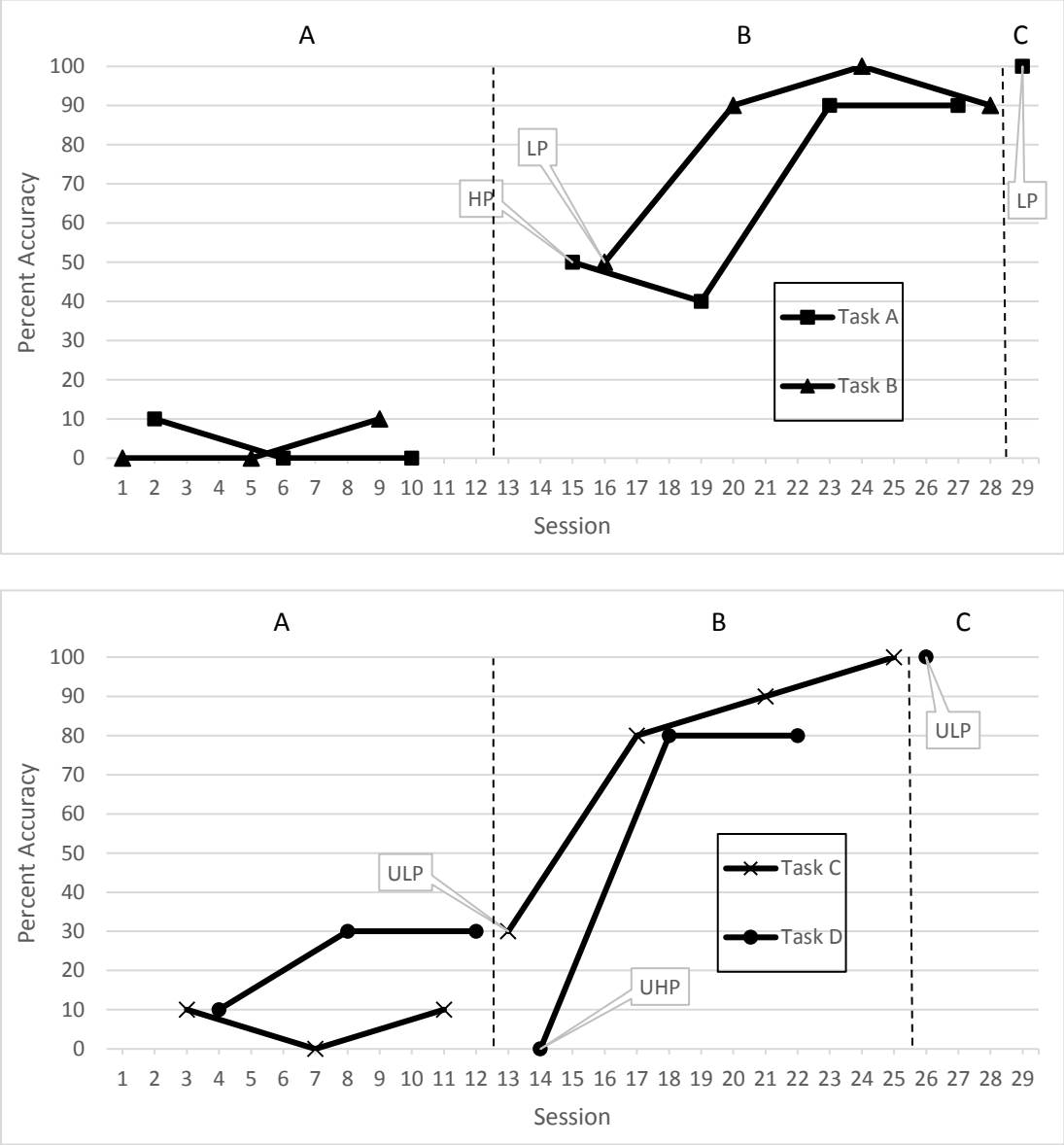

Figure 3. Percentage accuracy in responding for Allen across baseline (A), alternating treatment conditions, and best-treatment only conditions. The top graphs show Task A (reinforced with HP stimuli) and Task B (LP stimuli). The bottom graph shows Task C (untested HP stimuli) and Task D (untested LP stimuli).

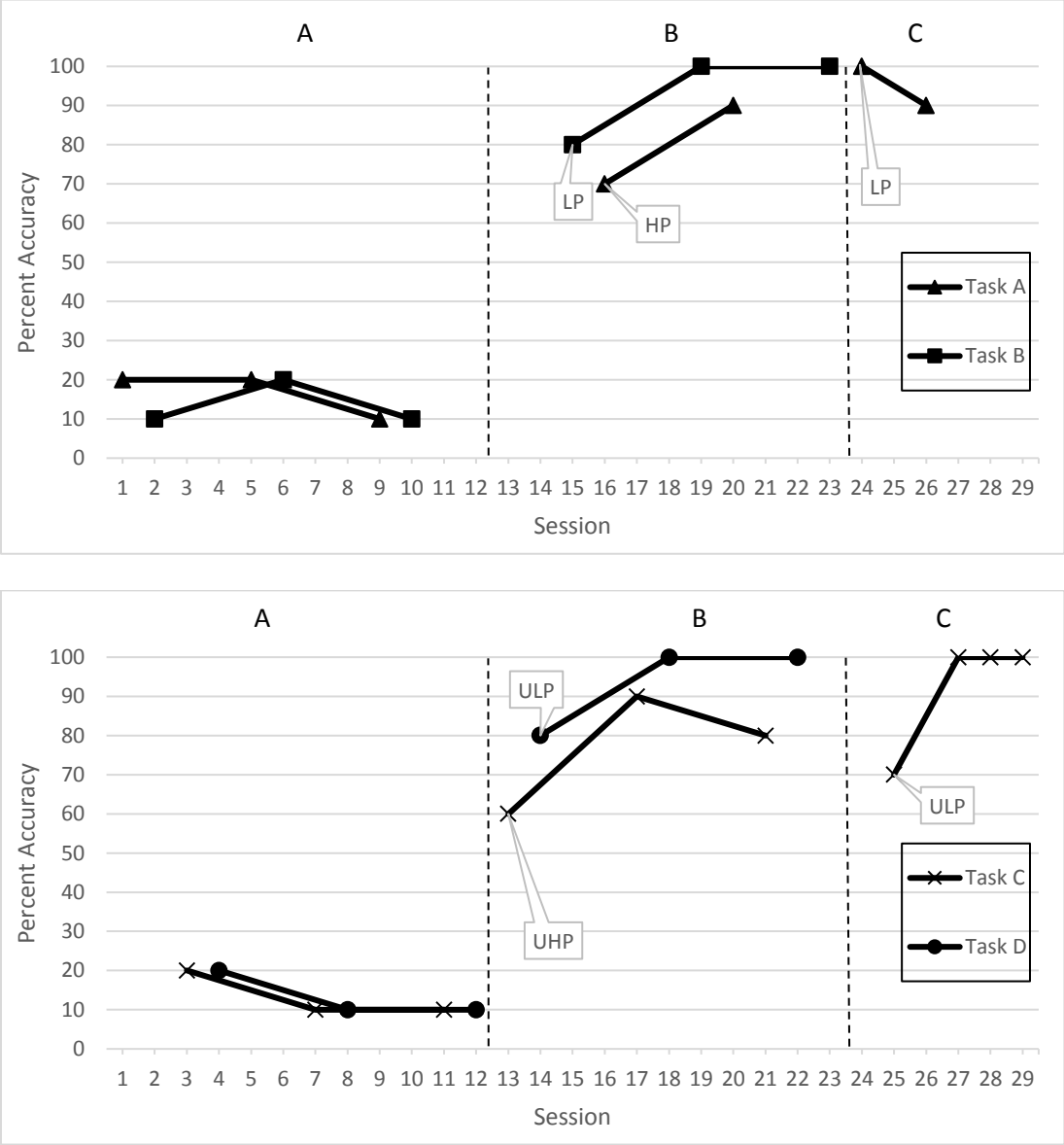

Figure 4. Percentage accuracy in responding for Ben across baseline (A), alternating treatment conditions, and best-treatment only conditions. The top graphs show Task A (reinforced with HP stimuli) and Task B (LP stimuli). The bottom graph shows Task C (untested HP stimuli) and Task D (untested LP stimuli).

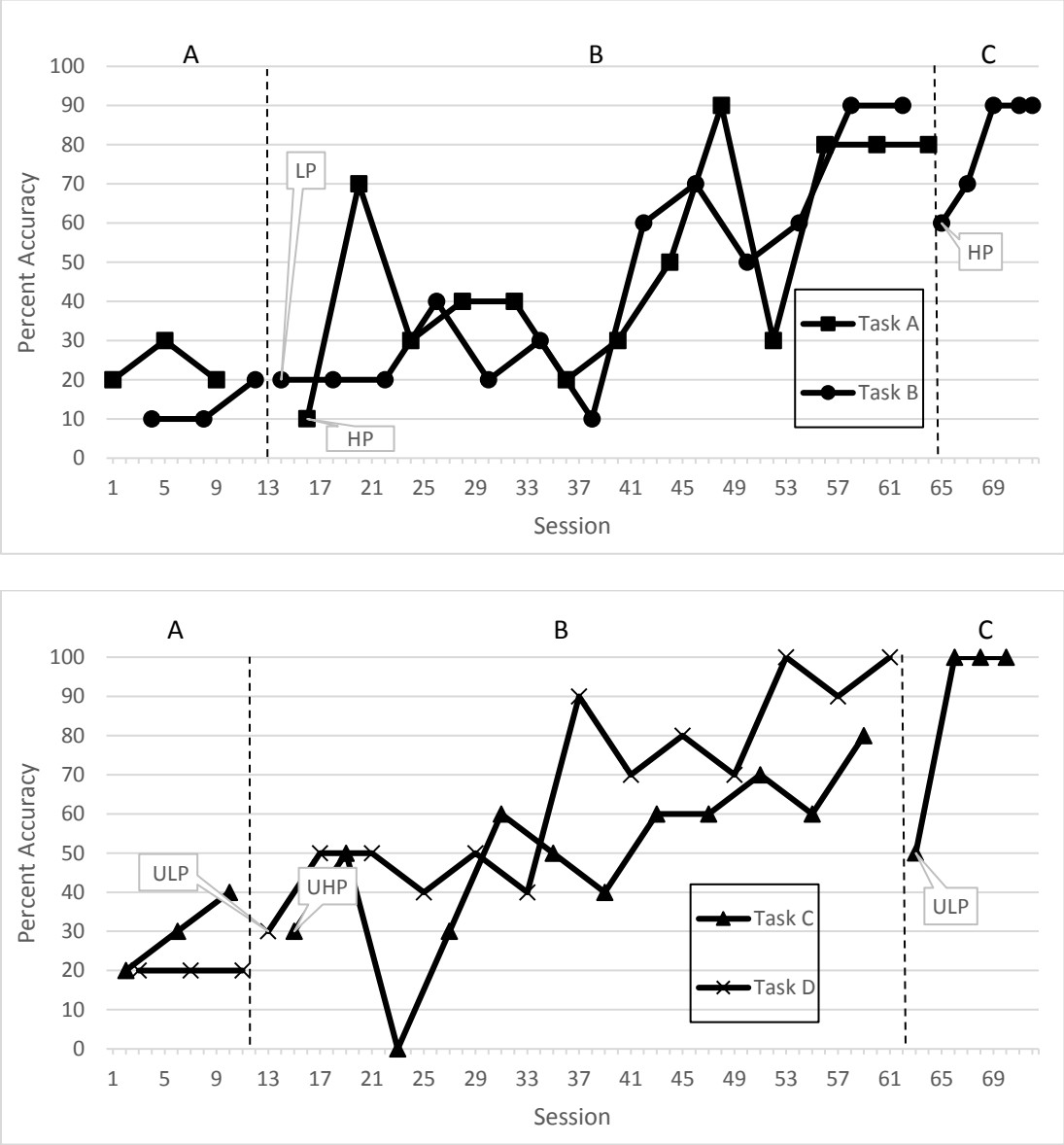

Figure 5. Percentage accuracy in responding for Johnny across baseline (A), alternating treatment conditions, and best-treatment only conditions. The top graphs show Task A (reinforced with HP stimuli) and Task B (LP stimuli). The bottom graph shows Task C (untested HP stimuli) and Task D (untested LP stimuli).

Figure 2 depicts Nikki's data across all conditions for both the tested and untested stimuli and associated tasks. Mastery criteria was met following 60 trials for Task A, 70 trials for Task B, 40 trials for Task C, and 60 trials for Task D. Task A and C, associated with the HP category (gummy) were mastered in fewer trials than tasks associated with the LP category (fruits and vegetables). Task C which was paired with the UHP (Starbursts) met criteria in fewer trials than Task A which was paired with the HP stimuli (Skittles). Tasks associated with the tested LP and ULP met criteria after a comparable number of trials. Unlike the tasks associated with the HP, LP, and UHP items, accurate responding on Task D did not rapidly increase once contingent access to the associated edible item was provided. Accuracy only approached mastery criteria once the UHP stimuli was transferred to that task.

As shown in Figure 3, Allen met mastery criteria after 40 trials of instruction for each Task B, C, and D, while Task A met criteria after 50 trials. For both tasks associated with the LP category items (apples and grapes), mastery criterion was met before the tasks associated with the HP category (gummy bears and Starburst). Tasks assigned to untested stimuli required fewer trials to mastery than the task associated with the tested HP item; though, all tasks were mastered in either 40 or 50 trials. In total, only 20 trials occurred in the best-treatment phase for this participant as progress toward criteria began during the original treatment phase for each task.

Visual analysis of Figure 4 shows Ben's progress through each condition. Mastery criterion was met for Task A following 30 instructional trials, Task B after 40 trials, Task C after 70 trials, and Task D after 30 trials. Tasks associated with tested stimuli met criteria following a similar number of trials, 30 and 40 trials each, while those

associated with untested stimuli were dissimilar, requiring 30 and 70 trials. Tasks that provided contingent access to items from the HP category (crunchy salty) met mastery criteria after a greater number of trials than those that garnered access to items from the LP category (fruits and vegetables). Following the introduction of edible stimuli contingent on accurate responding, Ben obtained 80% accuracy during Task D and Task B. Of all participants, Ben required the fewest total number of trials to mastery for all tasks.

Johnny's data shown in Figure 5 is unique compared to the previous data sets. Johnny required a significantly longer period of time and more trials to meet criteria. For Johnny, Task A required 130 trials, Task B 180 trials, Task C 160 trials, and Task D 130 trials. Visual analysis also shows that more variability was present in the data with fluctuations in accuracy occurring for all tasks during the instructional phase. Mastery criterion was met in the fewest trials for the tasks associated with the HP item (pineapple) and ULP item (Doritos). Task B, which was paired with the LP item (Cheetos), met criteria following the largest number of trials (180). Other factors not included on this graph may have impacted this student's responding during trials. These potential variables are addressed in the discussion section.

Visual analysis across participants indicates that mastery criteria was met for four of the five participants first in tasks that were reinforced with access to an item from the individual participants' HP category. In three of the five participants, tasks associated with items from the LP category required the most trials to mastery. For all participants, at least two tasks were mastered following the same number of trials. Additionally, three of the five participants mastered tasks where the HP items were used as the reinforcer

first. Tasks that garnered access to tested HP items were more likely to meet mastery criteria in the same or fewer trials than untested HP items. Last, ULP associated tasks for three of the five participants met mastery criteria in the same or fewer trials than tested LP items. Overall, each participant was able to meet mastery criteria for each of their tasks in the best-treatment phase for tasks that did not meet mastery criteria in the previous phase.

CHAPTER V

DISCUSSION

Identification of effective reinforcers for individuals with disabilities can be challenging in applied settings. Various methods have been developed to ascertain these individuals' preferences including the PS preference assessment. As in research conducted by Roscoe et al., (1999) the current research utilized a 16 item PS preference assessment to create a potential reinforcer hierarchy. The individual stimuli (edibles) hierarchy was then utilized to create categorical hierarchies according to taste and texture for each participant. Four edible stimuli, two directly identified during the PS preference assessment and two that were categorically similar but untested, were then selected to be utilized in the reinforcer assessment portion of the current research. During the reinforcer assessment which included baseline, treatment, and best-treatment only conditions, researchers measured accurate responding on four tasks that had been paired with one of the four stimuli (HP, LP, UHP, and ULP). Small bites of these stimuli were provided contingent on accurate responding during discrete trial teaching. Five school-age children, one diagnosed with an Autism Spectrum Disorder and four with Developmental Delays served as participants. Aforementioned tasks were selected based on each participants' Individualized Education Plan.

Results of the preference assessment and subsequent hierarchies show that four of the five participants had clear categorical differentiation as determined by the presence of groupings of items from the same category within their hierarchies. Chocolate and

gummy categories tended to rank higher for most participants and the fruits and vegetables category was ranked lowest for all but one participant. Reinforcer assessment results show that the number of trials to mastery varied greatly across participants with Allen and Ben meeting mastery criteria following 170 trials of instruction and Johnny after 600 trials. Results also show that mastery criteria were met by four of the five participants initially in the task associated with the HP category. Further, three of the five participants mastered tasks associated with the tested HP stimuli first. Overall, results of the reinforcer assessment demonstrated that each participant was able to meet mastery criteria for each task following the best-treatment only phase.

Results of the PS preference assessment provide support for the utilization of such assessment procedures in an applied setting as contingent access to items derived from the assessment later functioned as reinforcers for accurate responding during instruction for each participant. These results are in line with previous research that demonstrates the utility of PS preference assessments in identifying reinforcing stimuli (Horrocks et al., 2006; DeLeonet al., 2009; Bowman et al., 1997). Results also appear to support the use of categorical preference hierarchies in identifying preference categories as categorically similar items tended to group together within the hierarchy for four of the five participants and the same number of participants were able to meet mastery criteria during the reinforcer assessment utilizing items selected from the HP category before items from the LP category. Similar findings were identified in the research conducted by Ciccone et al., (2015) that suggested identification of categorical hierarchies may have practical utility in the applied settings by allowing clinicians to infer potentially reinforcing stimuli based on preference categories. Last, results of the preference

assessment and resulting reinforcer assessment suggest that, for most participants, the items utilized in the reinforcer assessment that were derived from their HP category did act as reinforcers when provided contingent on accurate responding during DTT.

Results of the reinforcer assessment suggest that, for most participants, mastery of a task would occur following fewer trials when contingent access to items from the HP category were provided. This may indicate that items from this category may be considered a more potent reinforcer in comparison to those from the LP category. Results also suggested that, for the majority of the participants, progress toward mastery criteria was occurring during the treatment phase for most tasks regardless of the associated potentially reinforcing item. In other words, most participants were approaching mastery criteria on multiple tasks concurrently even when the reinforcer was from the LP category. This phenomenon may be explained by other research that argues stimulus variation may impact rates of responding during reinforcer assessments (Bowman et al., 1997). Overall, data from the preference assessment and subsequent reinforcer assessment suggest that a number of reinforcing stimuli were identified utilizing the PS preference assessment as in DeLeon and Iwata (1996) and that items from both the HP category and LP category could act as reinforcers under the conditions tested for most participants.

While potentially anecdotal, a variety of events occurred during instructional procedures that may be worth noting. Each student experienced a variety of interruptions during teaching trials which, in applied settings like a public school, are commonplace. Examples of these interruptions include Ralph being required to move instructional locations due to a separate child's escalation, Allen missing approximately two weeks of

school due to illness following the first two sessions of treatment, and Johnny receiving a new pair of prescription glasses toward the end of treatment. Additionally, Ben did not consume his ULP and LP items but instead insisted on saving them to feed an imaginary animal (e.g., during one session there was a horse and the next session there was a wolf). As a result, it may be erroneous to assume that Ben, the only participant whose tasks associated with the LP category met criteria first, was being reinforced by consumption of the items earned. Each of these commonplace interruptions could have impacted participant responding. This highlights one of the many challenges of conducting applied research in environments such as public schools as participant responding can be altered by a variety of environmental variables that are not easily accounted for during research.

Broad implications of the aforementioned applied research suggest that PS preference assessments could be utilized to identify a large number of potentially reinforcing stimuli that could act as reinforcers in the public-school setting. Further, PS assessments, though more time consuming than other preference assessment methods, can result in stimulus hierarchies and ultimately categorical hierarchies where various stimuli from multiple categories could be used to assist in the instruction of students using a common instructional method found in special education classrooms. The multitude of potentially reinforcing stimuli identified could reduce the likelihood of school staff encountering issues related to satiation, limited access to stimuli, and selective eating preferences of their students.

The current study has limitations in that the design did not allow for a complete withdrawal or return to baseline. As such, determining what impact the removal of reinforcement would have on rates of responding is unknown. Additionally, a best-

treatment only condition was utilized where a stimulus paired with a task that had met criteria was utilized for a separate task that had yet to meet criteria. As a result, it is not known if those tasks that were continued during the best-treatment only condition would have met mastery criteria at a similar rate if the associated stimuli had remained the same throughout. An additional limitation includes the inability to control for the impact of social positive reinforcement on responding as verbal praise was paired with edible responding making it possible that other variables may have resulted in variations in data. Last, items initially nominated to the 16-item preference assessment were informed using parent and staff input resulting in individualized lists of items to be assessed. As noted by Favell and Cannon (1976), these reports may not be accurate and as a result, it is not known what impact a more accurate list of preferred items would have had on responding during either the preference or reinforcer assessment for each participant.

Future research could examine what impact, if any, the order of trials and associated potential reinforcers would have on responding during instructional trials. Further, researchers could examine the impact of stimuli on one another during preference assessments that utilize edible items to determine what impact if any the order of stimuli consumed has on preference assessment outcomes (i.e., does eating an orange before a piece of chocolate alter the resulting hierarchy in a fashion that does not represent the participants' actual preferences). Last, future researchers could conduct similar research with edible items more commonly found in special education classrooms instead of utilizing potentially costly individualized item lists during preference assessments.

In conclusion, the aforementioned research sought to assess if untested stimuli similar in category to stimuli identified as potential reinforcers utilizing a PS preference assessment would function as such in an applied setting. Data derived from both preference assessments and reinforcer assessments tend to support the assertion that items from similar preference categories to that of an identified potential reinforcer will function as reinforcers for most participants. Although most participants were able to meet mastery criteria in fewer trials when contingent access to edible items from the HP category were provided, tasks associated with the LP category may have met criteria shortly after if the best-treatment only condition did not occur. Further, the 16-item (4 category), potential reinforcer hierarchies, were utilized to support progress toward IEP specific tasks for these student participants. Item and category hierarchies could be utilized by classroom staff to further the instruction for these participants in their school environment without having to conduct frequent preference assessment procedures.

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Appendix A

Reinforcement Assessment for Individuals with Severe Disabilities (RAISD)

Student's Name: _____

Date: _____

Recorder: _____

The purpose of this structured interview is to get as much specific information as possible from the informants (e.g., teacher, parent, caregiver) as to what they believe would be useful reinforcers for the student. Therefore, this survey asks about categories of stimuli (e.g., visual, auditory, etc.). After the informant has generated a list of preferred stimuli, ask additional probe questions to get more specific information on the student's preferences and the stimulus conditions under which the object or activity is most preferred (e.g., What specific TV shows are his favorite? What does she do when she plays with a mirror? Does she prefer to do this alone or with another person?)

We would like to get some information on _____'s preferences for different items and activities.

1. Some children really enjoy looking at things such as a mirror, bright lights, shiny objects, spinning objects, TV, etc. What are the things you think _____ most likes to watch?

   _____

   Response(s) to probe questions:

   _____

2. Some children really enjoy different sounds such as listening to music, car sounds, whistles, beeps, sirens, clapping, people singing, etc. What are the things you think _____ most likes to listen to?

   _____

   Response(s) to probe questions:

   _____

3. Some children really enjoy different smells such as perfume, flowers, coffee, pine trees, etc. What are the things you think _____ most likes to smell?

   _____

   Response(s) to probe questions:

   _____

4. Some children really enjoy certain food or snacks such as ice cream, pizza, juice, graham crackers, McDonald's hamburgers, etc. What are the things you think _____ most likes to eat?

Response(s) to probe questions:

5. Some children really enjoy physical play or movement such as being tickled, wrestling, running, dancing, swinging, being pulled on a scooter board, etc. What activities like this do you think _____ most enjoys?

Response(s) to probe questions:

6. Some children really enjoy touching things of different temperatures, cold things like snow or an ice pack, or warm things like a hand warmer or a cup containing hot tea or coffee. What activities like this do you think _____ most enjoys?

Response(s) to probe questions:

7. Some children really enjoy feeling different sensations such as splashing water in a sink, a vibrator against the skin, or the feel of air blown on the face from a fan. What activities like this do you think _____ most enjoys?

Response(s) to probe questions:

8. Some children really enjoy it when others give them attention such as a hug, a pat on the back, clapping, saying "Good job", etc. What forms of attention do you think _____ most enjoys?

Response(s) to probe questions:

9. Some children really enjoy certain toys or objects such as puzzles, toy cars, balloons, comic books, flashlight, bubbles, etc. What are _____'s favorite toys or objects?

_____

Response(s) to probe questions:

_____

10. What are some other items or activities that _____ really enjoys?

_____

Response(s) to probe questions:

_____

After completion of the survey, select all the stimuli which could be presented or withdrawn contingent on target behaviors during a session or classroom activity (e.g., a toy could be presented or withdrawn, a walk in the park could not). Write down all of the specific information about each selected stimulus on a 3" x 5" index card (e.g., likes a female adult to read him the 'Three Little Pigs' story.) Then have the informant(s) select the 16 stimuli and rank order them using the cards. Finally, list the ranked stimuli below.

1. _____ 9. _____
2. _____ 10. _____
3. _____ 11. _____
4. _____ 12. _____
5. _____ 13. _____
6. _____ 14. _____
7. _____ 15. _____
8. _____ 16. _____

Appendix B

16 Item Paired Stimulus Preference Assessment Data Sheet

Student: _____ Assessor: _____ Start Date: _____

Stimuli	Overall Rank
1.	
2.	
3.	
4.	
5.	
6.	
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9.	
10.	
11.	
12.	
13.	
14.	
15.	
16.	

All Possible Pairs

8	11	R L
15	6	
2	5	
12	3	
10	16	
4	5	
13	11	
15	1	
3	7	
16	9	
14	15	
7	8	
11	5	
1	3	
2	14	
6	10	
4	13	
16	12	
15	13	
9	1	
10	12	
8	14	
6	1	
16	3	
14	9	
2	8	
7	6	

1	13	R L
12	4	
7	15	
10	11	
2	16	
9	3	
4	14	
13	2	
11	6	
5	7	
3	15	
8	4	
9	12	
16	1	
7	13	
4	11	
2	3	
6	8	
13	14	
15	10	
12	5	
9	2	
8	1	
7	11	
14	10	
2	6	
12	7	
5	8	

4	1	
15	9	R L
3	14	
16	5	
11	12	
13	10	
7	4	
6	3	
12	8	
1	11	
14	6	
9	7	
10	8	
10	1	
13	3	
7	16	
5	10	
12	14	
11	2	
8	15	
3	4	
14	7	
2	4	
16	13	
5	3	
6	4	
2	10	
9	5	

8	16	
15	12	
1	5	R L
4	9	
3	8	
16	6	
5	15	
14	1	
11	16	
6	9	
7	2	
10	4	
8	13	
2	15	
11	14	
10	9	
13	6	
15	11	
1	2	
16	14	
3	10	
5	13	
12	1	
9	8	
15	4	
4	16	
14	5	
2	12	

11	3	
1	7	
12	6	
9	11	R L
13	12	
9	13	
16	15	
10	7	
5	6	

1. _____ / _____ * 100 = _____ %
2. _____ / _____ * 100 = _____ %
3. _____ / _____ * 100 = _____ %
4. _____ / _____ * 100 = _____ %
5. _____ / _____ * 100 = _____ %
6. _____ / _____ * 100 = _____ %
7. _____ / _____ * 100 = _____ %
8. _____ / _____ * 100 = _____ %
9. _____ / _____ * 100 = _____ %
10. _____ / _____ * 100 = _____ %
11. _____ / _____ * 100 = _____ %
12. _____ / _____ * 100 = _____ %
13. _____ / _____ * 100 = _____ %
14. _____ / _____ * 100 = _____ %

15. _____ / _____ * 100 = _____ %

16. _____ / _____ * 100 = _____ %

Appendix C

Discrete Trial Data Sheet

Participant Name:_____ Assessor: _____

Date:_____

Target behavior:_____

SD:_____

Task	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	Trial 6	Trial 7	Trial 8	Trial 9	Trial 10	% Accurate
A											
B											
A											
B											

+ = Independent Correct Response

P = Prompted Response

/ = Error

Appendix D

Treatment Integrity Checklist – PS Preference Assessment

Participant: _____ Date: _____ Data Collector: _____

Directions: Circle **Yes** if the step has been completed in the correct manner. Circle **No** if the step is not completed in the correct manner. Refrain from circling either option if there was not an opportunity to complete the set in any manner.

40 Trial Block		
1. Were the correct two stimuli presented?	Yes	No
2.Were two stimuli placed within reach of the participant	Yes	No
3. Was the participant cued to select a stimulus by saying “pick one”?	Yes	No
4. Was the participant attending to the assessor or the items when the cue was provided?	Yes	No
5. If the participant did not respond to the first cue, did the assessor repeat the trial?	Yes	No
6. If the participant did not make a selection after a second presentation, did the assessor move on to the next trial?	Yes	No
7. After a stimulus was selected, did the assessor remove the stimuli from the array?	Yes	No
8. After a stimulus was selected, did the assessor allow the participant to consume the item?	Yes	No
9. Did the assessor block the participant from selecting both items?	Yes	No

Appendix E

Treatment Integrity Checklist – DDT / Reinforcer Assessment

Participant: _____ Date: _____ Data Collector: _____

Directions: Circle **Yes** if the step has been completed in the correct manner. Circle **No** if the step is not completed in the correct manner. Refrain from circling either option if there was not an opportunity to complete the set in any manner.

10 Trial Block		
1. Did the assessor provide a clear consistent verbal cue to start/complete the task?	Yes	No
2. Was the participant attending to the assessor when the cue was provided?	Yes	No
3. Were all necessary materials provided within reach of the participant when the cue was provided?	Yes	No
4. Was the participant given 3-5 seconds to respond?	Yes	No
5. Were errors blocked by the assessor?	Yes	No
6. Was the participant provided with corrective feedback following an error or lack of responding?	Yes	No
7. Was the participant provided a gestural prompt to start/complete the task?	Yes	No
8. Was the desired response modeled for the participant?	Yes	No
9. Was the participant provided a physical prompt to start/complete the task?	Yes	No
10. Was the participant given the edible only following correct responding?	Yes	No
11. Was the prompt given immediately after the verbal cue was provided?	Yes	No
12. Was the edible item visible to the participant prior to the start of the trial?	Yes	No

13. Was the appropriate high-preference or low-preference stimuli provided immediately following task completion?	Yes	No
14. After a stimulus was provided, did the assessor provide 10s for the participant to consume the item before starting the next trial?	Yes	No
15. Did the assessor mark the trial following the response?	Yes	No