Utility of Formal Preference Assessments for Individuals Diagnosed with Autism Spectrum Disorder

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Abstract: The systematic use of reinforcers is an essential component of behavioral intervention for individuals diagnosed with Autism Spectrum Disorder. Today, the use of rigorous formal preference assessments, including paired-preference assessments, are widely conducted to help determine which items to use as reinforcers during intervention. Although paired-preference assessments are widely used there is no experimental evidence whether extensive advance sampling actually produces higher rates of responding compared to in-the-moment analysis of reinforcer effects. The present study compared the rate of responding on a simple sorting task when participants were provided items that were determined as preferred via an extensive paired preference assessment to a teacher selecting items without the use of a paired preference assessment, but rather with an in-the-moment analysis of reinforcer effects. The results indicated no clear difference in the rate of responding, but there were clear differences in terms of efficiency. Clinical implications will be discussed.

Reinforcement can be defined as the presentation of a stimulus causing an increase in the frequency of the targeted behavior in the future (Cooper, Heron, & Heward, 2007). Reinforcement can take many forms, which include: food (e.g., Schreibman, 1975), toys (e.g., Leaf, Sheldon, & Sherman, 2010), praise (e.g., Schreibman, 1975), tokens (e.g., Ayllon & Azrin, 1965), or escape from an undesired event (e.g., Piazza et al., 1997). The provision of reinforcement is widely used to decrease aberrant behaviors and to increase various adaptive behaviors (e.g., Leaf, Dotson, Oppenheim, Sheldon, & Sherman, 2010; Repp & Deitz, 1974). Unfortunately, it is often difficult to identify potential reinforcers for individuals diagnosed with autism spectrum disorders (ASD), which has led to the use of formal preference assessments.

Formal preference assessments are procedures utilized by clinicians to identify which stimuli are preferred by the learner and which stimuli are not preferred, with the presumption that the preferred stimuli are more likely to function as potential reinforcers during teaching. There have been several variations of preference assessments that have been utilized to identify reinforcers, including: interviews (e.g., Piazza, Fisher, Hagopian, Bowman, & Toole, 1996), single stimulus approaches (e.g., Green et al., 1988), paired preference assessments (e.g., Fisher et al., 1992), multiple-stimulus without replacement (e.g., Restar & Noell, 2008), and multiple stimuli with replacement (e.g., Leon & Iwata, 1996). Results from the studies on these various preference assessment procedures have shown that a learner’s preference identified from formal preference assessments is highly correlated with that item’s effectiveness as a reinforcer. Formal preference assessments have been utilized for a wide variety of populations ranging from typically developing children to children diagnosed with ASD (Leaf et al., 2012; Restar & Noell, 2008).

One type of preference assessment commonly evaluated and implemented is a paired-preference assessment (e.g., Fisher et al., 1992). A paired preference assessment consists of the following components. First, the teacher identifies (e.g., via interviews) several possible reinforcing items (e.g., toys, social...
reinforcers, and edibles). Next, the teacher presents the first pair of items (i.e., pairs item one against item two) and has the learner indicate which item he or she wants to interact with or consume. Third, the learner then has an opportunity to play with or consume the item that he or she selected. Pairings continue until every item is paired against all other items. Based upon the learner’s selections, the teacher creates a hierarchy from the learner’s most preferred items to least preferred items. The most preferred items are then used as reinforcers during teaching opportunities.

Fisher and colleagues (1992) were the first to empirically validate the paired preference procedure. In this study, the researchers compared the paired-preference assessment to a single stimulus preference assessment for four participants diagnosed with intellectual, physical, and developmental disabilities. The researchers utilized a concurrent operant paradigm to compare the two preference procedures. Results of the study indicated that, although both procedures were accurately able to differentiate highly preferred to less preferred items for the participants, the paired preference assessment was able to show greater differentiation amongst items. Since Fisher’s original study, the paired preference assessment has been used to identify highly preferred and less preferred items for a wide variety of populations, including high functioning individuals diagnosed with ASD (e.g., Leaf et al., 2012).

Windsor, Piche, and Locke (1994) compared a paired preference method, a group preference method, and a staff ranking method to identify preferences amongst food and drink stimuli for eight adults with profound developmental disabilities. Results of the study showed that the group presentation and paired preference assessment yielded similar results. However, the results indicated that staff rankings did not match the paired preference assessment in differentiating between the different stimuli. In a more recent study, Cote and colleagues (2007) compared teacher report to a paired-preference assessment in identifying and determining the reinforcement value of various stimuli for typically developing toddlers. The results of this study indicated that items identified as more preferred in the paired preference assessment were more reinforcing than the items identified through teacher rankings; however, the items selected through both procedures served as reinforcers.

The research on paired preference assessments has resulted in widespread clinical use. Graff and Karsten (2012) surveyed 406 professionals, 32% of whom were Board Certified Behavior Analysts (BCBA) or Board Certified Assistant Behavior Analysts (BCaBA), on their use of a wide variety of formal preference procedures. Fifty two percent of all respondents reported using at least one direct formal preference assessment; 89% of BCBAs or BCaBAs reported using at least one direct preference assessment throughout the course of intervention. Furthermore, 36% of all respondents and 70% of BCBAs/BCaBAs have reported previously using a paired-preference assessment. Finally, Graff and Karsten reported that approximately 45% of BCBAs use a preference assessment at least on a monthly basis; ranging from 3% using formal preference assessments several times a day, 18% using formal preference assessments at least once a month, and 24% using formal preference assessments somewhere in between.

Previous research has shown that paired preferences are: (a) effective in identifying highly preferred and less preferred stimuli, which are highly correlated with reinforcement value; (b) able to differentiate the relative preference value of various stimuli across different populations; (c) more accurate than staff interviews or surveys; and (d) widely implemented clinically. What is not known, however, is whether paired preference assessments are actually necessary in changing the behavior for individuals diagnosed with ASD or if there is an alternative procedure that can produce similar effects.

In-the-moment reinforcer analysis requires a teacher to select which item is best suited as a reinforcer based upon current circumstances, instead of selecting an item based upon (prior) formal preference assessments. In-the-moment reinforcer analysis takes into account: (a) analyzing learner affect (e.g., facial expressions, verbal statements, body language); (b) analyzing how the learner interacts with the item; (c) how often the teacher utilized the item during previous sessions or trials; (d) the learner’s motivation to gain ac-
cess based upon responding; (e) identifying features of other preferred items and incorporating those features into the new item; and (f) the teacher’s ability to condition alternative items as reinforcers as described by Leaf et al. (2012). In the 2012 study, Leaf and colleagues utilized a similar in-the-moment reinforcer analysis strategy combined with an observational conditioning procedure to increase a participant’s preference for items that were originally non-preferred.

The purpose of the present study was to evaluate the utility of a formal paired preference assessment as compared to in-the-moment reinforcer analysis of reinforcer effects in maintaining or increasing the rate of responding during a simple sorting task for three children diagnosed with ASD. Specifically, we evaluated whether there was a difference in responding under the two conditions and the total time the participant spent in each condition.

**Method**

**Participants and Setting**

Wyatt was a four-year-old boy independently diagnosed with Autistic Disorder. Wyatt had a Wechsler Preschool and Primary Scale of Intelligence-IV (WPPSI-IV) full scale IQ score of 86, a Vineland Adaptive Behavior Scales (VABS) composite score of 83, a Gilliam Autism Rating Scale-2 (GARS-2) Autism Quotient of 100 (probability of autism: very likely), and a Social Skills Improvement System-Parent Version (SSIS-P) standard score of 92. Wyatt was conversational and displayed beginning play skills (e.g., imaginative play and parallel play). Wyatt also displayed several stereotypic behaviors, including: twirling items, lining up items, stacking items, and making perseverative statements. Prior to the study, Wyatt had received seven months of intensive early behavioral intervention.

Henry was a five-year-old boy independently diagnosed with Autistic Disorder. Henry had a WPPSI-IV full scale IQ score of 85, a VABS composite score of 72, GARS-2 Autism Quotient of 87 (probability of autism: very likely), a SSIS-P standard score of 88, and a Autism Diagnostic Observation Schedule (ADOS) total score of 19 (consistent with Autistic Disorder). Henry was conversational and displayed advanced play skills (e.g., imaginative play, parallel play, cooperative play, and game play). Henry displayed a few stereotypic behaviors, including perseveration on topics of special interest. Prior to the study, Henry had received 14 months of intensive early behavioral intervention.

Marty was a four-year-old boy independently diagnosed with Autistic Disorder. Marty had a WPPSI-IV full scale IQ score of 93, a VABS composite score of 81, GARS-2 Autism Quotient of 78 (probability of autism: possible), and a SSIS-P standard score of 78. Marty was conversational and displayed advanced play skills (e.g., imaginative play, parallel play, cooperative play, and game play). Marty displayed stereotypic behaviors, including perseverations and rigidity. Additionally, Marty displayed non-compliance, tantrums, and aggression towards staff members. Prior to the study, Marty had received two years of early intensive behavioral intervention.

For Wyatt and Henry, research sessions took place in a small research room located at the private agency that provides behavioral intervention for individuals diagnosed with ASD. For Marty, research sessions took place in the same research room and in his home therapy room.

**Teachers**

The study was conducted by teachers who were employed for at least seven months by a private agency that provides intensive behavioral treatment for individuals with ASD. Each teacher had a history with each of the participants. All teachers were trained in the principles of applied behavior analysis, reinforcement, and ASD. Each teacher was randomly assigned to either the preference assessment condition (described below) or the in-the-moment reinforcer analysis condition (described below). Teachers were kept blind from each other’s findings, so that they could not discuss the results of a session or the reinforcers utilized within each condition. Therefore, the teachers assigned to the in-the-moment reinforcer analysis did not know the results of the paired preference assessment. If a teacher was randomly assigned to the preference assessment condition, he or she was responsible for
running the two paired preference assessments and running all preference assessment condition sessions (described below). If a teacher was randomly assigned to the in-the-moment reinforcer analysis, he or she was responsible for running the in-the-moment reinforcer analysis (described below). Teachers assigned to either condition were able to run the control condition (described below).

Pre-Baseline

Ranking Reinforcers. To determine which potential reinforcers would be utilized in the reinforcement assessment (see below) the researcher (first author) emailed each member of the participant’s clinical team (i.e., teachers and program supervisors) requesting each member to provide a list of all items (e.g., light toys, bouncy balls, figurines, etc.) or social activities (e.g., red light-green light game, tickles, or high fives) that the participant enjoyed. The researcher asked that each member respond via email and that each member of the clinical team not discuss the list with other members of the team. Once the researcher received each member’s list, the researcher created a larger list consisting of all the items that were identified by any member of the clinical team.

Next, the researcher emailed each member of the participant’s clinical team the list of all of the reinforcers and asked each person to numerically rank the list from the participant’s presumed most preferred item to the participant’s presumed least preferred item. Once again, the researcher asked that the members of the clinical team not discuss their rankings with each other. Once the researcher received all of the rankings, he averaged the rankings across all members of the clinical team. The top seven presumed preferred items from this ranking were used in the paired preference assessment (described below) and in the in-the-moment reinforcer analysis (described below).

Paired Preference Assessments. Prior to the reinforcement assessment, two paired-choice preference assessments (Fisher et al., 1992), across two different days, were conducted in order to identify which three items were to be used as reinforcers in the preference assessment condition (see below). The teachers assigned to the preference assessment condition evaluated a total of 10 items; seven items were selected based upon staff rankings (described above) and three were not identified by the rankings but were selected because each item was an age appropriate toy or activity for the participant.

Prior to starting the first preference assessment, the participants were given the opportunity to play with each item for approximately 30 s. Next, the teacher conducted the paired preference assessment. The paired preference assessment consisted of the teacher holding out two items (one in each hand), asking the participant to select an item to play with, and having the participant physically touch that item. After the participant physically selected the item, the participant was provided with 30 s access to the item. During this time the teacher socially engaged with the participant and the item. This was continued until all items were compared against each other item one time.

The second day of the paired preference assessment was identical to the first day with the exception that the participant did not have 30 s access to each item before the assessment. The top three items that were selected most frequently across the two days were used as the reinforcers in the preference assessment condition and all ten items were used in the in-the-moment reinforcer analysis condition. The top three preferred items identified for Wyatt were two big toy cars, a light spinner, and four small toy cars. The top three preferred items identified for Henry were a Magnadoodle, Hex Bug, and Batman and Joker figure. The top three preferred items identified for Marty were a Imaginix Dinosaur, Angry Bird stuffed animals, and two light sabers. Participants only had access to these items during research sessions, to minimize satiation effects.

General Procedure

Research sessions were conducted three days per week for Wyatt and Marty and four days per week for Henry. A single research session was conducted per day, which consisted of the preference assessment condition, in-the-moment reinforcer analysis condition, and control condition. The order of each of these
conditions was randomized and counterbalanced. Participants received at least a 10 min break in between each of the conditions.

The general procedure across all three conditions was as follows. First, the teacher would bring the participant in the room and place a color mat that corresponded with one of the conditions (i.e., a red mat for the in-the-moment reinforcer analysis condition, a blue mat for the preference assessment condition, and a white mat for the control condition) on the table. Next, the teacher placed one large bin containing 450 poker chips (i.e., 150 red chips, 150 green chips, and 150 white chips) on the table and placed three smaller bins next to the larger bin. The three smaller bins each had a single color poker chip placed at the bottom of the bin; one bin had a red poker chip, one bin had a green poker chip, and one bin had a white poker chip placed at the bottom.

The teacher then called the participant over to the table and had the participant sit directly across from him/her. The teacher then provided the following instruction: “I want you to sort the chips (while pointing to the large bin), the red chips go in here (pointing to the bin with the red chip placed in it), the green chips go in here (pointing to the bin with the green chip placed in it), and the white chips go in here (pointing to the bin with the white chip placed in it). You can do as many as you want, but you do not have to do any if you do not want to. You will be working for toys this time (during the preference and in-the-moment reinforcer analysis conditions) or there will be no toys this time (during baseline or control condition). Ready, set, go!” The teacher then started an electronic timer and gave the participant one-minute to sort as many chips as he chose to sort. The teacher provided no prompts, did not redirect any off-task behavior, provided no reinforcement, nor any social interaction during the one-minute period of time. The participant was allowed to sort as many chips as he chose; if the participant engaged in off-task behavior (e.g., falling to the floor), he was allowed to do so.

Once the timer rang, the teacher told the participant to “stop” and blocked the participant from placing any additional chips in the smaller baskets. Next, the teacher counted out loud the number of chips that were correctly sorted in each of the buckets, while placing those chips back into the larger bin. Finally, a consequence was provided dependent upon the condition and whether the participant reached the targeted number (described below). There were a total of six trials per condition per session.

Each day the researcher informed the teachers the number of chips that the participant had to sort in order to receive reinforcement in the preference assessment condition and the in-the-moment reinforcer analysis condition. This number was never revealed to the participants. During the first session of intervention, in order to earn reinforcement, participants were required to sort 20% more chips than their average during the baseline session. After every two consecutive sessions in which the participant reached the targeted number of chips, in either the preference assessment condition or the in-the-moment reinforcer analysis condition, the targeted number of chips was increased by 20%. If, after three consecutive sessions, the participant was unable to meet the targeted number in any of the conditions, then the researcher reduced the targeted number by 20%.

Conditions

Baseline. A single baseline session was conducted to determine the initial average rate of chip sorting per trial for each participant. This session consisted of six trials as described above. At the end of each trial the teacher thanked the participant regardless of the amount of chips he sorted correctly. No further reinforcement was provided during baseline.

Preference Assessment Condition. Each preference assessment condition session consisted of six total trials. The teachers who were randomly assigned to this condition ran every research session. Each trial was run using the procedure described above. If the participant sorted enough chips to reach or exceed the target number, the teacher provided him with one-minute access to one of the three items or activities. The three top items selected in the paired preference assessment were evenly dispersed across the six trials; the participant had an opportunity to earn each item two times.
per session. The order of delivery of the reinforcers was predetermined prior to each session. Only one item was provided to the participant per trial. If the participant sorted enough chips they were told “You got enough, we can play with . . .”; if the participant did not sort enough chips to reach or exceed the target number, the teacher told the participant, “You did not sort enough chips and there will be no toy this time.”

**In-The-Moment Reinforcer Analysis Condition.** Each in-the-moment reinforcer analysis condition session consisted of six total trials. The teachers who were randomly assigned to this condition ran every research session. Each trial was run using the procedures described above. If the participant sorted enough chips to reach or exceed the target number, the teacher provided him with one-minute access to any of the ten items that were assessed in the paired preference assessment. The teacher had the freedom to select any of the items at his or her own discretion. For example, the teacher could select the same item several times throughout the session or could choose a different item each trial. Only one item was selected per trial. If the participant sorted enough chips, they were told “You got enough, we can play with . . .”; if the participant did not sort enough chips to reach or exceed the target number, the teacher told the participant, “You did not sort enough chips and there will be no toy this time.”

**Control Condition.** Both teachers assigned to the preference assessment condition and the in-the-moment reinforcer analysis condition ran control sessions. Control sessions consisted of six trials as described above. Participants were made aware that they would not be working for items during this condition (described above). At the end of each trial the teacher thanked the participant, regardless of the amount of chips he sorted correctly, and immediately began the next trial. No further reinforcement was provided during control condition sessions.

**Dependent Variable and Measures**

There were three dependent variables evaluated in this study. The primary dependent variable was the average rate of responding per trial in each condition. At the end of each session, for each condition, the researchers calculated the total number of chips the participant sorted in the session and divided that number by the total number of trials (n = 6).

The second dependent variable was an efficiency measure. This was determined by the total amount of time the participant spent in each of the three conditions. For the preference assessment condition the total time included both the time the participants spent in the preference assessment condition and the time the participants spent in the two paired-preference assessments.

The third measure evaluated was the stimuli selected by the teacher in the in-the-moment reinforcer analysis condition. The researchers evaluated the percentage of times the teacher selected each of the ten stimuli across all in-the-moment reinforcer analysis sessions.

**Design**

An alternating treatments design was used to evaluate the effects of the three conditions (described above) on chips sorted per session. The sequence of the conditions each research session was randomly determined ahead of time and counterbalanced to control for sequence effects.

**IOA and Treatment Fidelity**

The teacher running the session scored the participant’s responses during every session. A second observer (first author) simultaneously and independently recorded participant responses during 100% of baseline sessions, 48% of preference assessment condition sessions, 68% of in-the-moment reinforcer analysis sessions, and 56% of control condition sessions. Inter-observer agreement was calculated by totaling the number of agreements (i.e., number of trials in which both observers scored the same amount of chips sorted) divided by the number of agreements plus disagreements and converting this ratio to a percentage. IOA was 100%.

A second observer (first author) independently scored whether the teacher assigned to the preference assessment condition and the teacher assigned to the in-the-moment analysis condition, and the teachers implementing the control condition implemented correct
instructor behaviors in 48%, 68%, and 56% of sessions, respectively. Correct instructor behaviors per trial consisted of: (a) placing all four bins on the table; (b) reading the script (described above) correctly; (c) setting a timer for one-minute and allowing the participant to sort the chips for one-minute; and (d) providing the correct reinforcer or providing no reinforcer in the control condition. Treatment fidelity was 100%.

Results

Rate of Responding

The primary dependent variable was each participant’s responding during the three conditions. The results of this measure are depicted in Figure 1 and Figure 2. For Figure 1, each panel depicts a different participant’s responding. Across the x-axis is the number of sessions and across the y-axis is the average number of chips sorted per trial within a given session, across the three conditions. It must be noted that the range along the y-axis varies from panel to panel, due to the amount of chips that each participant sorted. Participant responding during the single baseline session is not represented on the graph, but rather reported in the text below. For Figure 2, the x-axis represents each of the three participants and the y-axis depicts the average number of chips sorted per trial throughout all sessions.

Wyatt’s data per session is reported in the top panel of Figure 1 and overall responding on Figure 2. During the baseline session, Wyatt sorted an average of 7.3 chips per trial. Following the baseline session, Wyatt participated in five research sessions; Wyatt’s average rate of responding was 10.09, 10.34, and 1.77 chips sorted for the preference assessment, in-the-moment reinforcer analysis, and control condition, respectively (see Figure 2). This represents a 38% and 41% increase from baseline levels for the preference assessment condition and in-the-moment reinforcer analysis condition, respectively. Results show that, for Wyatt, there were no discernible differences in responding across the two conditions; both conditions resulted in increases in responding from baseline levels. Additionally, a clear extinction effect was observed during the control condition; his rate of responding steadily and quickly decreased.

Henry’s data per session is reported in the middle panel of Figure 1 and overall responding on Figure 2. During the baseline session, Henry sorted an average of 28.1 chips per trial. Following the baseline session, Henry participated in 13 research sessions; Henry’s average rate of responding was 25.46, 25.57, and 23.9 for the preference assessment condition, in-the-moment reinforcer analysis condition, and control condition, respectively (see Figure 2). Although this does not represent an overall increase from baseline, Henry’s data was variable; on some days an increase was seen and on other days a decrease was demonstrated (see Figure 1). Therefore, for Henry, there was no discernible effect on the rate of responding in either of the reinforcement conditions.

Marty’s data per session is reported in the bottom panel of Figure 1 and overall responding on Figure 2. During the baseline session, Marty sorted an average of 10.3 chips per trial. Following the baseline session, Marty participated in 7 research sessions; Marty’s average rate of responding was 17.11, 18.44, and 9.53 for the preference assessment condition, in-the-moment reinforcer analysis condition, and control condition, respectively (see Figure 1). This represents a 66% and 79% percent increase from baseline levels for the preference assessment condition and in-the-moment reinforcer analysis condition, respectively. Results show that there was a slightly stronger reinforcement effect in the in-the-moment reinforcer analysis condition. Additionally, a clear extinction effect was observed during the control condition; his rate of responding steadily and quickly decreased.

Efficiency Measure

Table 1 displays the efficiency results across the three participants. Efficiency was measured by the total amount of time a participant spent in each condition; for the preference condition, efficiency included the total amount of time spent in the paired preference assessments. Wyatt spent approximately one-minute longer in the in-the-moment reinforcer analysis condition than the
preference assessment condition. However, when including the time required to conduct the two paired preference assessments, Wyatt spent approximately 85 minutes longer in the preference assessment condition to achieve similar results. Henry spent approximately 13 minutes longer in the in-the-moment reinforcer analysis condition than the preference assessment condition. However, including time for the two paired preference assessments, Henry spent approximately 78 minutes longer in the preference assessment condition.

Figure 1. Participants Average Rate of Responding Per Trial Per Session.
to achieve similar results. Marty spent approximately one minute longer in the in-the-moment reinforcer analysis condition than the preference condition. However, with time for the two paired preference assessments included, Marty spent approximately 85 minutes longer in the preference assessment condition to achieve similar results.

**Distribution of Stimulus Selection**

Figure 3 depicts the percentage of trials that each of the 10 reinforcers was delivered by the teacher during trials in which the participant reached or exceeded the target number in the in-the-moment reinforcer analysis condition. Along the x-axis are the ten different toys that the teacher could have selected; the items are placed in order of preference based upon the results of the paired preference assessments, with the most preferred reinforcer being closer to the y-axis and the least preferred item being farthest away from the y-axis. Along the y-axis is the percentage of selections for each of the items during trials in which the participant responded rapidly enough to earn a reinforcer. Each panel represents the results for a different participant.

For Wyatt (top panel), the two items that were delivered most frequently were two big toy cars (22.2%) and a toy pirate ship (22.2%). The big toy cars was the item that...
The purpose of this study was to determine if there would be a differential rate of responding for three young children diagnosed with ASD when a teacher used the top three toys identified by a formal paired preference assessment, versus a teacher using in-the-moment reinforcer analysis to select amongst ten items, versus a control condition (no external reinforcement). Results of this study showed that for two participants (Wyatt and Marty) there was a slightly higher rate of responding in the in-the-moment reinforcer analysis condition as compared to the preference assessment condition, and both reinforcement conditions were considerably superior to the control (extinction) condition. Thus, for these two participants, external reinforcement
Figure 3. In-The-Moment Reinforcer Analysis Teacher Percentage of Selection across All Items and All Sessions.
was necessary to evoke high rates of responding. For the third participant (Henry), there was little difference in the rate of responding among the three conditions indicating that external reinforcement was not necessary to produce a high rate of responding. Finally, there was a considerable degree of overlap in reinforcer selection between teachers assigned to the in-the-moment reinforcer analysis and teachers assigned to the preference assessment conditions; therefore, it is not surprising to see similar rates of responding across the two conditions. However, the teachers assigned to the in-the-moment reinforcer analysis condition were able to select these reinforcers without the use of formal assessments.

Secondly, the efficiency results show that conducting paired preference assessments significantly adds to the total amount of teacher and learner time spent in the preference assessment condition in order to achieve a high rate of responding. The efficiency results also show that selecting a range of items, based on in-the-moment reinforcer assessment can produce responding that is equal to selecting only items deemed highly preferred via paired preference assessments. Therefore, the results for this study showed that conducting paired preference assessments provided no real advantage in performance level for these three participants, and carried the disadvantage of taking more time.

Previous researchers have shown that formal preference assessments result in better identification and differentiation amongst several items and are more accurate in finding effective reinforcers as compared to interviews or staff opinions (e.g., Fisher et al., 1992). However, most of these studies compare the single item identified as most preferred via the formal preference assessment to the single item identified as most preferred via a staff interview or questionnaire, rather than using the top tier items (e.g., top three) identified as highly preferred via a formal preference assessment.

The other procedural difference in the present study is the use of the entire range of items identified as reinforcers via interviews and allowing the teacher to use discretion at each occurrence of reinforcement delivery versus the use of only the single item that was most frequently reported to be reinforcing based on interviews. While it is possible that the formal preference assessment condition in the present study may have been disadvantaged by the inclusion of the second-most and third-most preferred items, thereby reducing the overall average preference level, it is also possible that the use of three items was a benefit in mitigating satiation effects; further research is necessary to answer this question. Based on the procedures used in the present study, however, the similar responding rates across the two conditions and three participants, still clearly indicates that paired preference assessments provided no advantage over the in-the-moment reinforcement analysis, and the time spent conducting paired preference assessments may be detrimental to the participants.

The average amount of time to complete a single paired preference assessment was approximately 44 min. Although this time is not significant in length, it can be significant if a preference assessment is provided on a more frequent (e.g., several times a day or every day) basis. According to Graff and Karsten (2012), 3.8% of all BCBAs or BCaBAs reported that they implement formal preference assessments on a daily basis. Based upon our average amount of time spent (44 min) conducting a paired preference assessment, conducting one on a daily basis would result in approximately 3 hours and 40 min per week, or 190 hours and 40 min per year (approximately 9 weeks of a 20 hour behavioral program), of time spent just in formal preference assessments. If a clinician were to implement a paired preference assessment on a weekly basis, it would still result in approximately 38 hours and 8 min per year spent conducting paired preference assessments.

Given that there is no significant difference in the rate of responding, the large amount of time an individual may spend conducting preference assessments, and that previous research has shown that preferences can be switched from a highly preferred item to a less preferred item when a therapist uses conditioning procedures (Leaf et al., 2012), it would appear that the formal use of preference assessments is unjustified and that time would be better spent elsewhere.

This study is not without its limitations,
which precludes us from making global confirmative statements about the use of formal preference assessments. For one, the study only included individuals diagnosed with ASD who would be considered higher functioning. Although this population may not need the explicit use of formal preference assessments, researchers have conducted studies evaluating formal preference assessments for individuals who are typically developing (e.g., Restar & Noell, 2008) and, based upon the survey results from Graff and Karsten (2012), it can be presumed that formal preference assessments are being clinically implemented with similar populations. Anecdotally, that is certainly consistent with our observations. Nevertheless, future researchers should compare using items selected based upon a paired preference assessment to items selected based upon in-the-moment reinforcer analysis for a wider range of individuals diagnosed with ASD.

Second, this study only evaluated the utility of preference assessments as it applies to a simple rate response measure. Therefore, it is not known if differences would be observed for responding on more difficult rate tasks, on other learning tasks (e.g., receptive labeling or expressive labeling), or for decreasing aberrant behaviors. Third, Henry responded at equivalent rates for all three conditions thereby weakening the demonstration of functional control of his responding, since he continued to respond at a high rate during the control condition (extinction). Fourth, we only utilized a paired preference assessment, so it is not known what the results would have been if we had utilized other formal assessments. Finally, the research included teachers who were well trained in the principles of applied behavior analysis, ASD, and reinforcement. Therefore, it is not known what the effects would be using a novice teacher. Although the use of formal preference assessments may help novice teachers identify and utilize reinforcers more effectively, this should not preclude researchers and clinicians from finding effective ways to train teachers in better identifying, creating, and utilizing reinforcement.

Despite these limitations, results of the study showed that, for our three participants, there was no clear difference in the rate of responding; however, the amount of time a participant spent during the preference assessment condition was substantially longer than time spent in the in-the-moment reinforcer analysis condition. Therefore, the results of this study indicate that the use of paired preference assessments was not warranted for our three participants. Future researchers should expand the demonstration of clinical utility and effectiveness of reinforcers and take into account the time penalty required for conducting extensive preference assessments. Additionally, the in-the-moment reinforcer analysis could allow the learner to choose which of several reinforcers he or she would like to access on each occasion of reinforcer delivery.

References


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