

*EVALUATION OF A BRIEF  
MULTIPLE-STIMULUS PREFERENCE ASSESSMENT IN  
A NATURALISTIC CONTEXT*

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We evaluated a brief multiple-stimulus preference assessment within the context of an early intervention program for 3 children who had been diagnosed with autism. Subsequent curriculum-based reinforcer evaluations confirmed the predictions of the preference assessments. In addition, eight additional preference assessments that were conducted over a period of 1 month indicated generally stable preferences for 2 of the 3 participants.

DESCRIPTORS: reinforcer assessment, preference, autism

Research on the assessment of stimulus preference has become increasingly sensitive to the needs of practitioners. For example, DeLeon and Iwata (1996) demonstrated that multiple-stimulus (MSWO) preference assessments, in which stimuli were not replaced after selection, were approximately as effective in identifying preferences as a paired-stimulus assessment, in about half the administration time. Roane, Vollmer, Ringdahl, and Marcus (1998) reported similar results, but with a brief (5-min) free-operant multiple-stimulus (MS) assessment. These time-sensitive procedures are especially relevant because preference is a transitory phenomenon (Green, Reid, Canipe, & Gardner, 1991).

The purpose of the current investigation was to extend the research on MS assessments in two ways. First, we attempted to make the MSWO assessment reported by DeLeon and Iwata (1996) more efficient by reducing the number of stimulus-presentation arrays from five to three. Second, we

evaluated the effectiveness of our method in a naturalistic context for children diagnosed with autism. Our dependent measures were chosen from each participant's ongoing curriculum, and all sessions were conducted in the natural environment.

#### METHOD

Three children with primary diagnoses of autistic disorder participated in the study. Billy, Jill, and Todd were 2, 6, and 7 years of age, respectively, at the time of the study. All of the participants attended a university-based day program where they received 30 hr of one-to-one intensive behavioral therapy per week. All sessions were conducted in the participants' daily therapy rooms, which were approximately 4 m<sup>2</sup>. Eight edible and leisure (i.e., toys) stimuli were selected for each participant from parent and therapist nominations for use throughout the study (see Figure 1 for a list of each participant's stimuli). Because Jill received all nutrition through a gastrointestinal tube, all eight of her stimuli were leisure items. After the stimuli had been obtained, a therapist conducted a brief MSWO assessment and reinforcer evaluation with each participant. Both assessments were conducted during one period of time.

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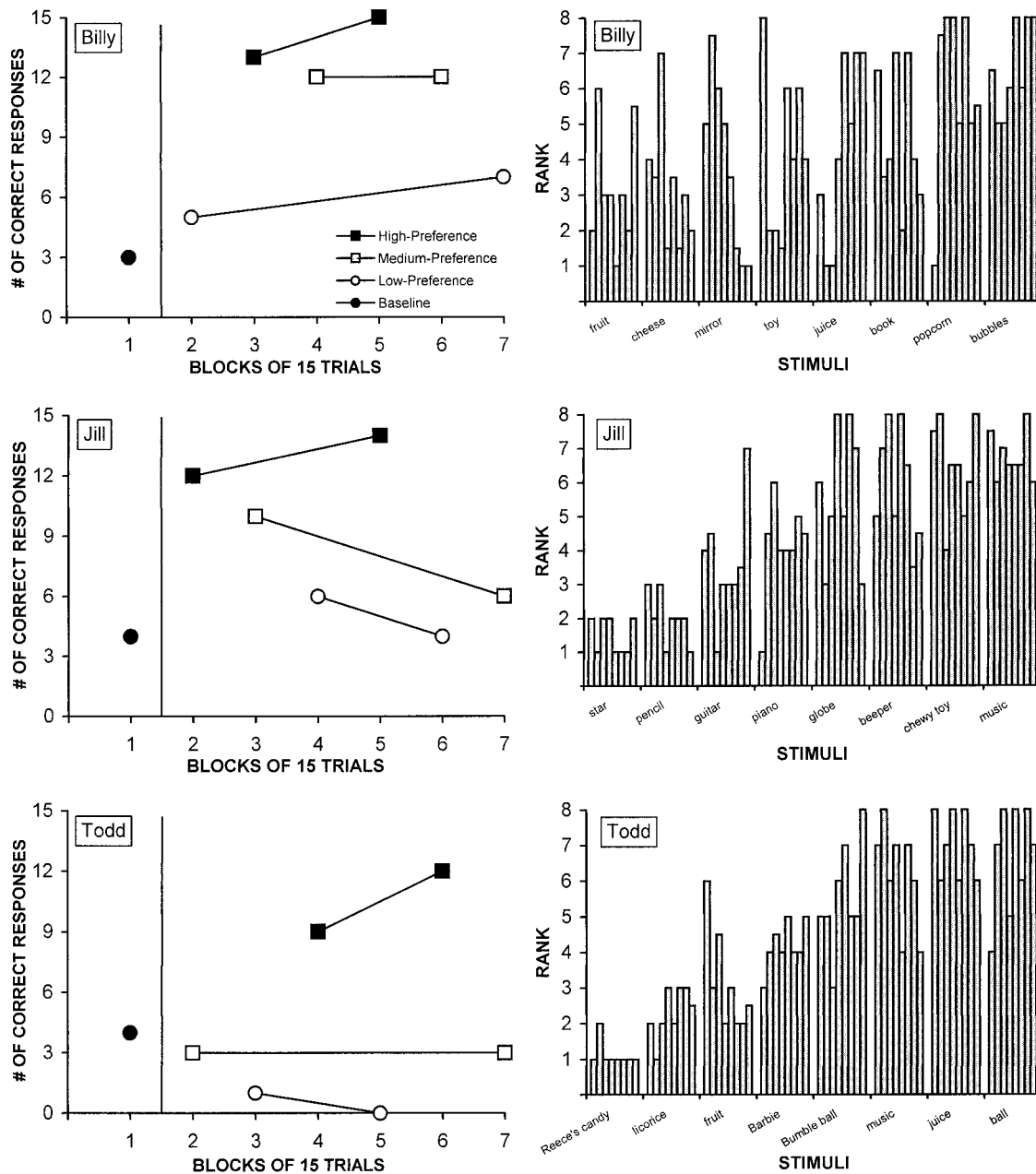


Figure 1. The graphs in the left column represent the number of correct responses in 15-trial blocks during reinforcer evaluations for Billy (top panel), Jill (middle panel), and Todd (bottom panel). The graphs in the right column represent the results of eight stimulus preference assessments conducted for Billy (top panel), Jill (middle panel), and Todd (bottom panel).

*Multiple-Stimulus (Without Replacement) Preference Assessment*

Procedures were similar to those reported by DeLeon and Iwata (1996), except that

three (instead of five) stimulus-presentation sessions were conducted with each participant. Before each session, the therapist placed a linear array of eight stimuli on a

table in front of the participant. The participant was then verbally instructed to select one stimulus. If the participant failed to respond, the instruction was repeated. Instructions never had to be repeated more than twice. After a stimulus was selected, the participant was given 10-s access before it was removed from the array. Attempts to select more than one stimulus at a time were blocked, and the verbal instruction was repeated. After a stimulus was selected, the remaining stimuli were then repositioned in a quasirandomized manner. This process continued until all stimuli were selected and was then implemented two more times. Selection percentages were calculated by dividing the number of times a stimulus was chosen by the number of trials in which it was available. These percentages were then ranked from 1 (highest) to 8 (lowest). A second observer independently collected data during all three sessions for interobserver agreement, which was calculated using the point-by-point method of dividing agreements by agreements plus disagreements and multiplying by 100%. Interobserver agreement was 100% for each participant for the initial MSWO assessments.

#### *Reinforcer Evaluation*

After the initial MSWO assessment was completed, we implemented a brief contingency evaluation of three of the stimuli. The three stimuli were those that were ranked first (high preference), fourth or fifth (medium preference), and eighth (low preference) in the initial MSWO assessment. A low-frequency target behavior was chosen for each participant from his or her ongoing acquisition curriculum, based on recommendations by the clinic's assistant director. Billy's target behavior was to stomp his feet after receiving a verbal instruction from the therapist. Jill's target behavior was to say "ma" after receiving a verbal instruction from the therapist. Todd's target behavior

was to imitate a therapist who placed two toy blocks together in specific ways. During an initial baseline probe, participants were verbally instructed to perform their target behaviors during 15 consecutive trials. Next, each of the aforementioned three stimuli was provided to the participant on a fixed-ratio 1 schedule for correctly performing the target behavior during 15-trial probe sessions. Correct target behaviors were followed by 10-s access to the stimulus for that probe session. Each stimulus was presented for two probe sessions, which were alternated in a quasirandom manner within a multielement design. A second observer independently collected data during the reinforcer evaluations to calculate point-by-point interobserver agreement, which was 100% for each participant.

After the initial experimental session, in which both the MSWO and reinforcer-evaluation procedures were conducted, eight additional MSWO assessments were conducted over a period of 4 weeks for each participant. There were from 2 to 5 days between each assessment. The two purposes of these additional assessments were (a) to evaluate preference changes over time, and (b) to determine the correspondence between the results of the first MSWO session and all three sessions. This was accomplished by calculating the Spearman rank correlation between each item's rank in the first session of the assessment and its overall rank for the entire assessment (all three sessions). A second observer collected data during each of these assessments to calculate interobserver agreement, which was 100% for each participant.

## RESULTS AND DISCUSSION

The results of each participant's initial MSWO assessment are presented in Figure 1 (right column); the order of stimuli listed on the *x* axes is the order in which stimuli were ranked from this initial assessment. Re-

sults of the reinforcer evaluations were similar for all 3 participants (left column of Figure 1). For Jill and Todd, the low-preference stimulus failed to significantly increase responding over baseline-probe levels. For Billy, the medium-preference stimulus produced moderate reinforcement effects; however, this stimulus had no effect for Todd and only a modest effect for Jill. The high-preference stimulus produced responding that was higher than the baseline and the medium- and low-preference stimulus conditions for all participants. These results lend support to the use of the brief three-session MSWO assessment. In addition, both the initial MSWO assessment and the reinforcer evaluation were completed in less than 1 hr for each participant (Billy, 47 min; Jill, 39 min; Todd, 55 min).

The first purpose of the eight ongoing MSWO assessments was to evaluate the stability of preference over time. As seen in Figure 1, both Jill and Todd exhibited relatively stable preferences over time, and Billy's data were much more variable. The second purpose of the ongoing MSWO assessments was to determine the correspondence between the results of the first session and all three sessions (for each of the eight assessments). Overall, agreement was high for all participants. Spearman rank correlations for these comparisons averaged .85 for Billy (range, .63 to .98), .74 for Jill (range, .36 to .92), and .89 for Todd (range, .82 to .96). These results suggest that it might be possible to shorten these brief MSWO assessments even more by using only one session (i.e., one stimulus array presentation). The average length of the eight MSWO assessments was 4 min 49 s for Billy (range, 2 min 35 s to 6 min 30 s), 4 min 37 s for Jill (range, 3 min 10 s to 7 min 11 s), and 5 min 23 s for Todd (range, 3 min 45 s to 7 min 39 s).

The current study contributes to the literature in several ways. First, in addition to the study by Roane *et al.* (1998), we present

an empirical evaluation of a brief (i.e., three-session) stimulus preference assessment that could potentially be implemented frequently over time. In addition, the correlational analysis lends moderate support to the use of a one-session MSWO assessment. A second contribution of the current study is the application of reinforcer identification methods to children with autism in a natural context (i.e., with curriculum-based dependent measures in their everyday setting). Although the physical setting in which the study took place resembled analogue therapy rooms reported in other studies, the difference is that the current settings were those in which the participants spent a substantial amount of their time. In addition, the sessions were conducted during regularly scheduled training times, and thus, were not differentiated from participants' daily activities. Third, the parametric nature of the reinforcer-evaluation results also partially replicates the work of Piazza, Fisher, Hagopian, Bowman, and Toole (1996), albeit with a single-operant rather than a concurrent-operants preparation. Finally, we present data indicating changing preferences (for Billy) during a relatively brief period of time (i.e., 1 month; see also Green *et al.*, 1991).

The current study's positive aspects need to be evaluated in light of several limitations. First, although we found a three-session MSWO assessment adequate for identifying reinforcers, it was never compared to the standard five-session version. Thus, the differential effectiveness and administration times of the two procedures are unknown. In addition, the results of a one-session MSWO assessment were not subject to a reinforcer evaluation; they were only correlated with the outcome of the three-session version. Finally, no data were collected on the participants' aberrant behavior during stimulus engagement. Although aberrant behavior rarely occurred during sessions, Piazza, Fisher, Hanley, Hilker, and Derby (1996)

and Roane et al. (1998) have presented data suggesting the utility of evaluating stimulus preference assessments by evaluating both stimulus selection and corresponding aberrant behavior.

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