

ASSESSING OBJECT-TO-PICTURE AND PICTURE-TO-OBJECT
MATCHING AS PREREQUISITE SKILLS FOR
PICTORIAL PREFERENCE ASSESSMENTS

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Tangible and pictorial paired-stimulus (PPS) preference assessments were compared for 6 individuals with developmental disabilities. During tangible and PPS assessments, two edible items or photographs were presented on each trial, respectively, and approach responses were recorded. Both assessments yielded similar preference hierarchies for 3 participants who could match pictures and objects but different hierarchies for 3 participants who could not. Reinforcer assessments verified that items identified as high preference on PPS assessments functioned as reinforcers only for participants with matching skills.

DESCRIPTORS: pictorial preference assessment, preference assessment, reinforcer assessment

Identifying the necessary prerequisite skills for pictorial paired-stimulus (PPS) preference assessments would help clinicians to determine if these procedures would be effective for the individuals with whom they work. In one recent study, prior to administering tangible, verbal, and PPS assessments, a discrimination skills assessment was conducted (Conyers et al., 2002); performance on the discrimination tests predicted preference outcomes with each assessment type. More recently, Graff and Gibson (2003) compared hierarchies of preferred stimuli generated by tangible (Fisher et al., 1992) and PPS assessments with 4 participants who could match pictures of the items to be

evaluated in the preference assessments with the actual objects with 100% accuracy. Preference assessment procedures were identical across tangible and PPS assessments with the exception of the stimulus type (tangible items vs. pictures). The ability to match pictures to objects was predictive of correspondence between tangible and PPS assessments; however, individuals who could not match pictures to objects were not included in this evaluation. Therefore, the purpose of this study was to determine the level of correspondence between tangible and PPS assessments with individuals who could and could not match pictures and objects.

Portions of this paper were presented at the 29th annual convention of the Association for Behavior Analysis, San Francisco. Appreciation is extended to Mike McSweeney and Rick Shaw for their assistance with data collection. We are also grateful to Richard Foxx and several reviewers for their helpful comments on an earlier version of this manuscript.

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doi: 10.1901/jaba.2005.161-04

METHOD

Participants and Setting

All participants attended a residential school. Tommy (age 12, Fragile X syndrome and developmental delay), Matt (age 13, autism), and Jeffrey (age 9, pervasive developmental disorder) communicated using pictures, limited

sign language, and limited vocal speech. Sam (age 13), Mark (age 13), and Katie (age 16) had been diagnosed with autism and communicated with limited sign language. Stimulus preference assessments (10 min long) and reinforcer assessments (5 min long) were conducted at the school or residence, two to five times per day, 1 to 5 days per week.

Picture-to-object (P-O) and object-to-picture (O-P) matching tests were conducted prior to and following the study, using the same objects and pictures used in the preference assessments. Pre- and posttests consisted of eight trials of P-O matching and eight trials of O-P matching, using a discrete-trial format with a three-stimulus comparison array; samples and comparisons varied across trials. Mean accuracy on both tests was 94% for the matching group (Tommy, Matt, and Jeffrey) and 29% for the nonmatching group (Sam, Katie, and Mark).

Response Measurement and Interobserver Agreement

For tangible and PPS assessments, approach responses (picking up an edible item or touching a photograph) were recorded with paper and pencil. Preference hierarchies were then developed based on the mean percentage of trials in which each stimulus was approached across sessions. Two observers independently recorded data in 50% of sessions for all participants across both assessments. An agreement was defined as observers recording the same stimulus approached on a trial. Interobserver agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100%; mean agreement was 98% (range, 93% to 100%). Following each reinforcer assessment, the number of completed products was counted. A second observer recorded permanent-product data during a mean of 94% of sessions across participants (range, 80% to 100%). Interobserver agreement was calculated by dividing the smaller number by

the larger number and multiplying by 100%; agreement was 100%.

Preference Assessments

Four sessions including both tangible and PPS assessments were conducted with eight items per child. To allow for possible shifts in preference to affect each assessment similarly, each session consisted of a block of 14 tangible trials and a block of 14 PPS trials; the order of trials varied across sessions. Across all sessions, each stimulus was paired with every other stimulus twice (a total of 56 trials for each assessment).

Tangible assessment. Tangible assessments were based on the paired-stimulus procedure described by Fisher et al. (1992). Eight previously consumed edible items were used with each participant. On each trial, two stimuli were placed approximately 0.5 m apart and 0.3 m in front of the individual. The positions of the stimuli were counterbalanced across trials. Following each approach response, participants were allowed to consume the selected item.

Pictorial assessment. PPS assessments used photographs of the same items used in the tangible assessment. The procedure for the PPS assessments was similar to the procedure for tangible assessments, except that two photographs were presented to the participant on each trial (tangible items were not visible). Following a touch to a photograph, the experimenter presented the corresponding tangible item.

Reinforcer Assessments

Reinforcer assessment tasks included silverware sorting (Tommy and Matt), index card stamping (Jeffrey), placing toys in a container (Sam and Katie), and stringing beads (Mark). Two sets of tasks were used in each session, identical except for their colors. Tasks were placed on a table 1 m apart, and task position varied across sessions. Baseline and reinforcement (Sr+) conditions were presented using an ABAB design for 5 of 6 participants. Matt demonstrated some color preferences during the

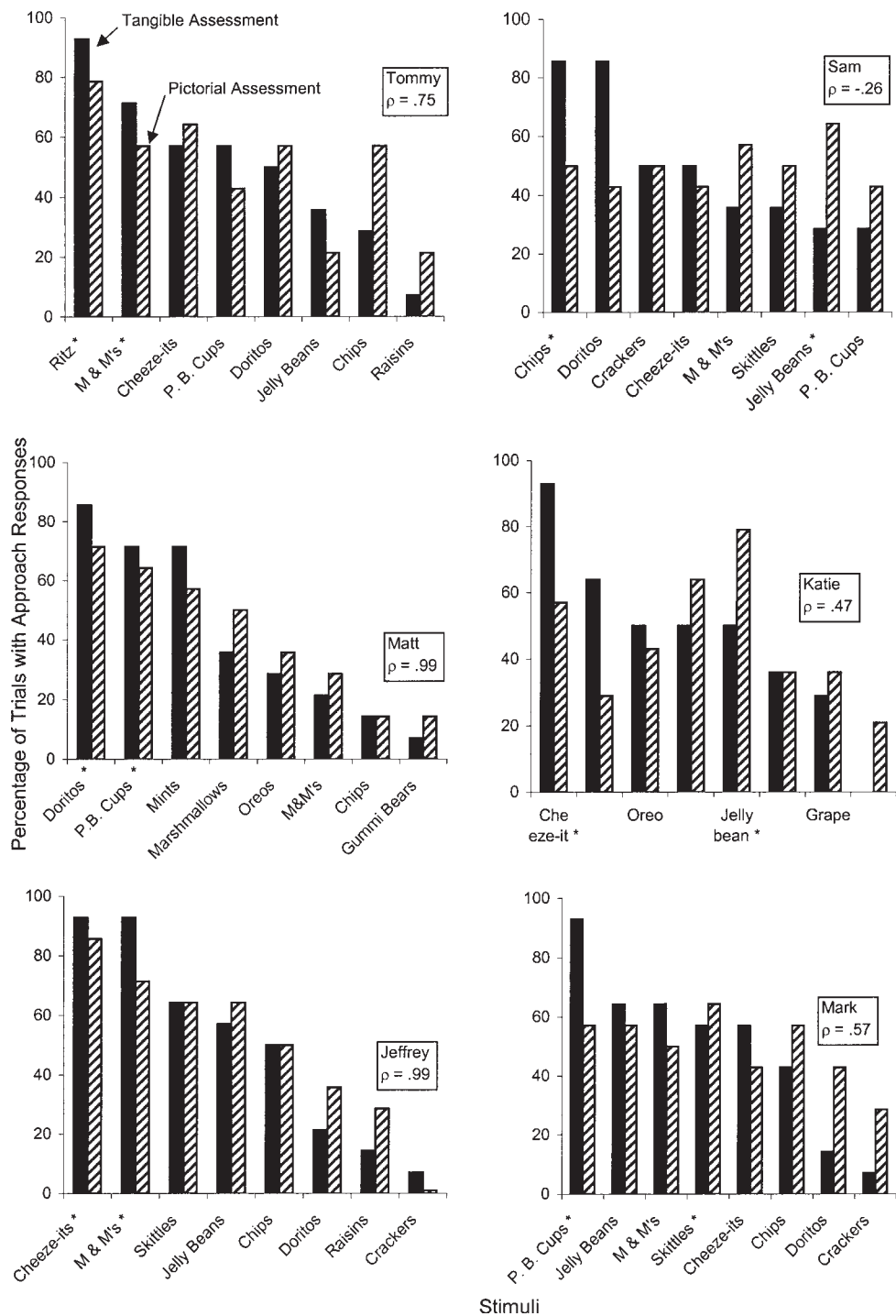


Figure 1. Stimulus-preference hierarchies for both tangible and pictorial preference assessments for participants with object-picture and picture-object matching skills (Tommy, Matt, and Jeffrey, left panels) and without object-picture and picture-object matching skills (Sam, Katie, and, Mark, right panels). Solid bars depict the results of the tangible assessment; striped bars depict the results of the pictorial assessment. Spearman rank order correlation coefficients are noted. Stimuli denoted with an asterisk were used in reinforcer assessments.

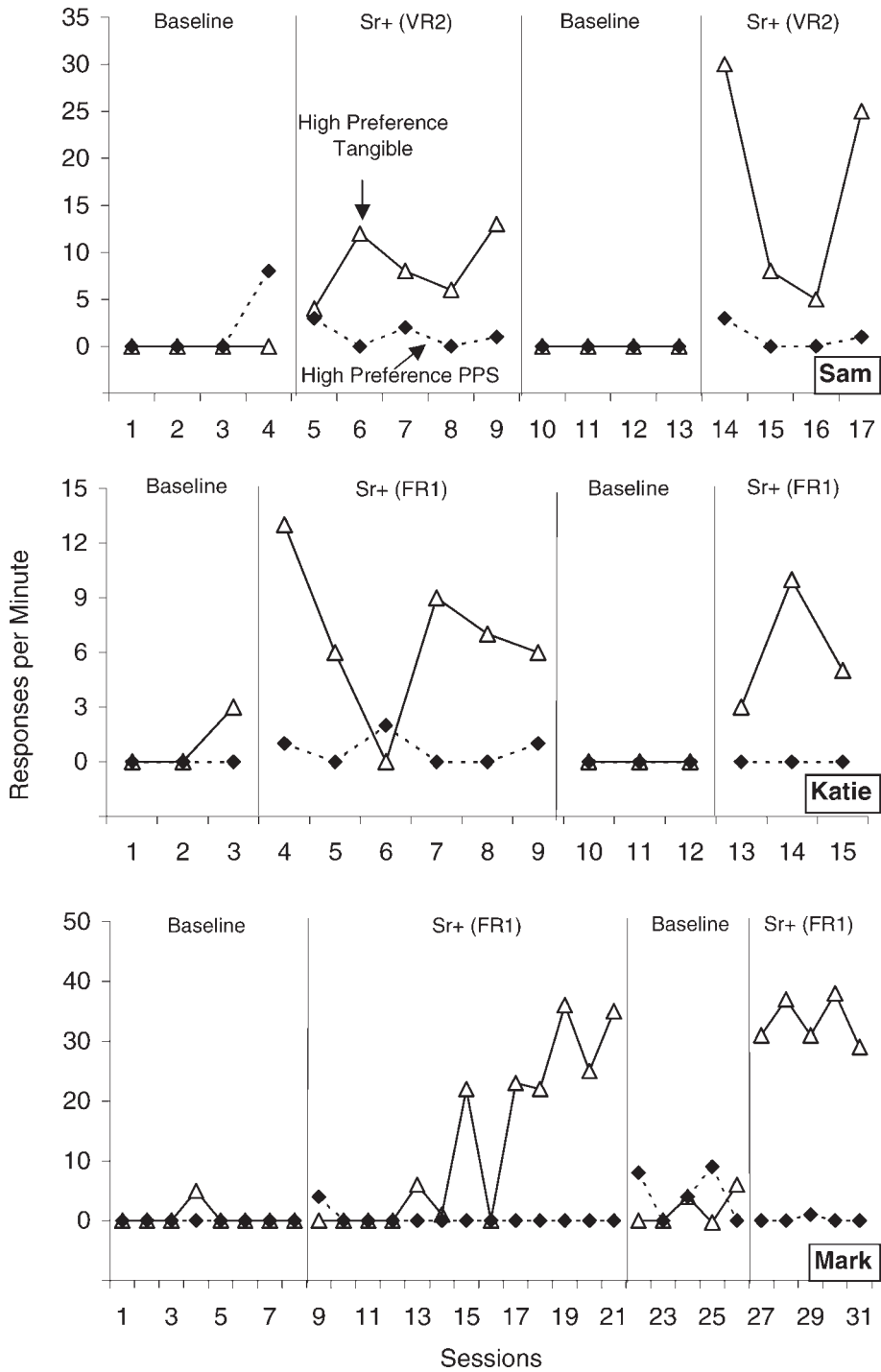


Figure 2. Response rates across sessions for participants without object-picture and picture-object matching skills (Sam, Katie, and Mark).

first Sr+ phase, so an alternating treatments phase was substituted for the second Sr+ phase. Prior to each session, the experimenter physically prompted participants to engage in each task and immediately delivered the edible item associated with that task (no food was delivered prior to baseline sessions). Then, the experimenter told the participant once to complete the task and stated which edible item was available for responding (items were placed near each task). In the first session, 3 of 6 participants responded consistently on a fixed-ratio (FR) 1 schedule, so the reinforcement schedules for these participants were gradually thinned within that session. The schedules in place at the end of the first session were used in subsequent sessions (range, FR 1 to variable-ratio 5).

A Phase: Baseline. During baseline, tasks were placed in front of the participant. The experimenter stated at the start of the session that it was time to complete the task and that no edible items were available for completing the task. No stimuli were presented for responding.

B Phase: Reinforcement (Sr+). During the first Sr+ phase, the highest ranked item on each assessment was randomly assigned to a colored task. When both assessments yielded the same top-ranked item, the first and second ranked items were included. In the second Sr+ phase, the edible items associated with each task were reversed.

RESULTS AND DISCUSSION

Figure 1 depicts the preference hierarchies generated by the tangible and PPS assessments. The hierarchies generated for participants with matching skills were similar for both assessments (see Figure 1 for correlation coefficients). Therefore, it was not surprising that the reinforcer assessments for participants with matching skills indicated that items identified as highly preferred on both tangible and PPS assessments functioned as reinforcers (data available from the authors). By contrast, the outcomes of the two assessments were dissimilar

for participants without matching skills. In addition, there was more responding on the task associated with the most preferred stimulus derived from the tangible assessment compared to responding on the task associated with the most preferred stimulus derived from the PPS assessment (see Figure 2).

One possible explanation for these results is that O-P and P-O matching skills may be prerequisites for using PPS assessments. It is also possible that our results could be related to the history of manding with pictures present in the matching group and absent in the non-matching group. Future research should examine whether teaching matching skills or teaching generalized manding to individuals without matching skills would alter the effectiveness of PPS assessments for these individuals.

Having only 3 participants in each condition limits the generality of this study as well as the internal validity of the group comparison. In addition, this study did not assess the use of pictures representing community-based or social activities; edible items were used for their ease of delivery and to allow us to evaluate more quickly the association between matching repertoires and PPS outcomes. Future research should evaluate the relevance of different prerequisite repertoires with the types of protracted events that require pictorial preference assessments.

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Received November 22, 2004
Final acceptance July 14, 2005
Action Editor, Gregory Hanley