

*ANALYSIS OF ACTIVITY PREFERENCES AS A FUNCTION OF
DIFFERENTIAL CONSEQUENCES*

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Individuals who do not possess the verbal skills to express meaningful choice in the absence of its consequences may have difficulty indicating their preference for protracted activities that are unavailable until some time in the future (e.g., taking a walk, riding a bike). When we examined the preferences of 4 individuals with developmental disabilities by showing them pictorial representations of various activities, their initial choices showed no clear preferences. In a subsequent condition, selecting a photograph resulted in brief access to the depicted activity. When selections produced differential consequences (i.e., access to the activity), clear preferences emerged. In addition, 3 individuals' preferences were later shifted to an initially less preferred but more socially desirable option by superimposing additional reinforcement contingencies for engaging in the less preferred activity. Results are discussed in terms of the conditions under which choice functions as an indicator of preference and how those conditions may be altered to improve the quality of choice making without limiting access to preferred options.

DESCRIPTORS: choice, client rights, preference, reinforcer assessment

A prominent feature of person-centered planning for individuals with developmental disabilities is an emphasis on client preference as a key determinant of recreational, vocational, and residential options (Holburn, 1997; Whitney-Thomas, Shaw, Honey, & Butterworth, 1998). The accommodation of choice in decision making involves a two-step process: assessing preference and then using it as the basis for service delivery.

A common method for assessing choice involves simply asking a person which of several available options is preferred. However, many individuals with developmental disabilities have communication deficits that render this method ineffective as a means of identifying preference. As an alternative, pictorial representations of activities have been used as a basis for making selections. Faw, Davis, and Peck (1996) illustrated this approach in a study on the identification of

preferred living arrangements. The authors first presented pictures of residential characteristics (e.g., a smoking vs. a no-smoking home) and asked each participant to point to the picture that was preferred. Subsequently, pictures of preferred characteristics were shuffled and were presented in pairs to identify relative preferences for various combinations of residential options. Finally, participants were taught to evaluate different homes based on their previously identified preferences. The participants in this study were adults who could read and express their preferences through verbal elaboration; these skills are characteristic of participants in most studies in which preference was assessed via pictorial stimuli. Thus, it is unclear whether the procedures described by Faw et al. and others (e.g., Dunlap et al., 1994; Northup, George, Jones, Broussard, & Vollmer, 1996) could be used with individuals who have more limited communication skills.

Reid and Hurlbut (1977) described a two-stage procedure in which individuals with severe disabilities were taught to iden-

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tify photographs of leisure areas in a residential center. In the first stage (coordination training), participants were taught to point to one of several blank boxes on a picture board following a cue from the trainer. In the second stage (identification training), participants were taught to point to pictures of leisure areas, which was again cued by the trainer. For example, the trainer said, "Show me where you would point if you wanted to go to the library" and delivered praise if the participant pointed to the picture of the library. Results showed that participants learned to match the pictorial stimuli (e.g., the picture of the library) to the trainer's verbal cues (e.g., the trainer saying "library"). However, because participants' preference for the leisure areas was not assessed, it is unclear whether they could indicate which of the areas shown on the picture board was a preferred location. Another feature of the procedures used by Reid and Hurlbut and by Faw *et al.* (1996) that may limit their utility in assessing preference was that "correct" selections always produced the same consequence (praise). Under such conditions, the controlling variable for differential selection, praise delivered by the trainer versus actual preference, remains unknown.

One component of many procedures that have been developed specifically to assess preferences of individuals with severe disabilities is the delivery of differential consequences that correspond to the selections made. For example, in assessing preference for foods and leisure items, Pace, Ivancic, Edwards, Iwata, and Page (1985) either delivered food or provided brief access to a leisure item if a participant emitted an "approach" response to the actual stimulus. The validity of this measure as an index of preference was then demonstrated by showing that "preferred" but not "nonpreferred" stimuli functioned as reinforcers for other responses. This basic arrangement has been replicated and extended many times to in-

clude procedural variations in which stimuli are presented in pairs (e.g., Fisher *et al.*, 1992) or in grouped arrays (e.g., DeLeon & Iwata, 1996). Typically, however, stimuli included in such assessments have been limited to those that could be delivered immediately. Yet in many situations, particularly those involving engagement in activities of a more protracted nature, the activity may be difficult to deliver immediately (e.g., taking a walk) or it may be unavailable until some time in the future (e.g., going to a movie).

Hanley, Piazza, Fisher, Contrucci, and Maglieri (1997) described a procedure in which differential consequences were incorporated into an assessment of preference for events typically experienced on a conditional basis at a future time (treatments for problem behavior). The procedure involved pairing different colored switches (red, white, or blue) with three different behavioral interventions. Pressing one of the switches outside of a treatment room resulted in the participant going into the treatment room where the contingencies associated with that particular switch were implemented for 2 min. Thus, participants were exposed briefly but repeatedly to a treatment option immediately following its selection (pressing a switch). Given this history of differential consequences, preference for a specific treatment option was observed as differential response allocation on one of the switches. The procedures used by Hanley *et al.* to select interventions for problem behavior thus seem promising as a means of identifying preference for events of a more general nature (e.g., leisure activities, household chores).

Assuming that a valid indicator of preference can be identified, a second component of person-centered planning is the selection of activity or service options that are consistent with an individual's preferences. Occasions may arise, however, when an individual's choices are not in his or her best

long-term interest (i.e., the individual may make impulsive choices). For example, one might choose lying in bed listening to music rather than attending a work program. Although accepting such preferences at face value may be consistent with general notions of self-determination (see Bannerman, Sheldon, Sherman, & Harchik, 1990, for a discussion), it may result in the individual gaining access to immediate but short-term reinforcers (listening to the radio while alone) at the expense of forgoing delayed but more enriching reinforcers (e.g., mastery of a work skill, engagement in social interaction with coworkers, and earning a salary that can be spent on a wide range of materials and activities). When assisting individuals to make more socially appropriate choices, therapists who are responsible for developing service plans may either (a) deny impulsive choices or (b) attempt to persuade the individual that an alternative choice will result in a more satisfactory long-term outcome. As an alternative to both strategies, it may be possible to modify choice by making less preferred (but more socially desirable) options more attractive. For example, if listening to music in the bedroom is preferred to going to work, allowing access to music while at work may be an effective way to shift preference toward the work option.

One purpose of the present study was to extend previous research on preference assessment by examining preference for activities that typically are not delivered as immediate consequences of choice due to their protracted nature. We measured individuals' preference for various activities based on selections of pictorial stimuli. After determining that selections appeared to be either random or idiosyncratic, we provided brief and repeated access to activities shown in the pictures as a differential consequence for picture selection. A second purpose of the study was to determine if established preferences could be modified by superimposing additional re-

inforcement for engaging in less preferred (but more socially desirable) activities.

METHOD

Participants and Setting

Four individuals who lived in a state residential facility for persons with developmental disabilities participated. All of the participants engaged in problem behavior consisting of either self-injurious behavior (SIB) or aggression, but these behaviors did not interfere with their performance in the study, and details related to their treatment are not presented here. Three of the participants (all but Tim) spent 3 to 6 hr per weekday at a workshop where they engaged in tasks such as placing stickers on items, packing hardware materials, sorting items, filling soap containers, and so forth; otherwise, they spent most of their time lounging in their homes. Jack was a 33-year-old man who had been diagnosed with profound mental retardation. He was ambulatory, communicated with gestures and a few manual signs, and followed two-step instructions. He reportedly did not initiate or engage in many activities besides doing piecework at the shop or lying in bed. Eliza was a 25-year-old woman who had been diagnosed with moderate mental retardation and autism. She could communicate vocally but, due to articulation problems, she usually communicated with gestures and a few manual signs. Eliza was ambulatory and followed multistep instructions. Ron was a 41-year-old man who had been diagnosed with profound mental retardation and epilepsy. He communicated using gestures (which he did rarely). Ron was ambulatory and followed one-step instructions. Tim was a 40-year-old man who had been diagnosed with profound mental retardation, cerebral palsy, and epilepsy. He communicated with gestures and a few vocal utterances (e.g., "more"). Tim could not ambulate independently and

therefore remained in a wheelchair throughout the day. He rarely participated in any vocational programs and spent most of his time at home.

All sessions were conducted either within or just outside each participant's home. Sessions were conducted one to five times per day, typically 4 to 5 days per week, based on individual schedules.

Activity Comparisons

Residential staff who regularly worked with each participant were asked to identify leisure activities and employment or chore routines that were typically available to each participant. Activities then were selected for each participant based on this report and observations that the particular activities were available at each participant's home. Photographs were taken of each participant engaged in the selected activities and were grouped in pairs based on locations in which the activities generally occurred. For example, outdoor activities were arranged for one preference assessment, whereas indoor activities were arranged for another. Three distinct preference assessments were conducted with each participant.

Jack's first comparison consisted of a choice among riding his three-wheeled bicycle outside (bike/outdoors), playing basketball with staff (basketball/outdoors), and looking at pictures hung in the hallway of his home without any social interaction (art/hallway [control activity]). The second comparison consisted of a choice among socializing with staff and peers in the recreation room that contained a television and tabletop games (social/rec room), lying alone in bed while listening to music (music/bedroom), and the control activity. The third comparison consisted of a choice among lounging in the living area with little stimulation other than sporadic interaction with staff (lounging/living room), washing dishes in the kitchen where on-task behavior was

praised by staff (dishes/kitchen), and the control activity.

Eliza's first comparison also consisted of a choice among riding her three-wheeled bicycle (bike/outdoors), playing basketball with staff (basketball/outdoors), and the control activity. The second comparison consisted of a choice among playing cards with staff in the dining room where praise was delivered for appropriate interaction (cards/dining room), dancing to music with peers and staff in the living area (dancing/living room), and the control activity. The third comparison consisted of a choice among lounging in the living area with little social stimulation (lounging/living room), washing dishes in the kitchen where on-task behavior was praised by staff (dishes/kitchen), and the control activity.

Ron's first comparison consisted of a choice among riding his three-wheeled bicycle (bike/outdoors), socializing with staff while sitting on an outdoor swing (swing/outdoors), and the control activity. The second comparison consisted of a choice among playing cards with staff in the recreation room where praise was delivered for appropriate interaction (cards/rec room), watching television alone in his bedroom (TV/bedroom), and the control activity. The third comparison consisted of a choice among sitting in a glider chair and listening to a radio in the living area with staff and peers (music/living room), completing chores (making his bed, placing clothes in dresser drawers, putting shoes in closet, and straightening area rugs) in his bedroom where on-task behavior was praised by staff (chores/bedroom), and the control activity.

Tim's first comparison consisted of a choice among socializing with staff and peers in the recreation area that contained a television (social/rec room), sorting different colored paper in a work room (which was similar to his recycling task at the worksite) where on-task behavior was praised (sorting/

work room), and the control activity. The second comparison consisted of a choice among sitting on the patio facing towards the street and watching passing motor vehicles with staff (watching vehicles/patio), sitting on the patio and operating a remote controlled car with staff (remote car/patio), and sitting alone on the patio facing his home (alone/patio [control activity]). The control activity was changed from an indoor activity (art) to an outdoor activity (alone) so that there would be similar delays between choosing and gaining access to the respective activities included in Tim's second and third comparisons, which consisted of outdoor test activities. The third comparison was designed to identify Tim's preference for a mode of transportation between activities. In this comparison, Tim was given a choice among moving between two points in front of his home either by being pushed in his wheelchair (wheelchair/outside) or by ambulating in an ARGO walker (walker/outside) with minimal staff assistance, and sitting alone on the patio facing his home (alone/patio [control activity]). Both transition modes involved social interaction and a drink of water midway through and at the termination of each transition.

Preference Assessment

Preferences for the above activities were assessed within a concurrent-schedules arrangement. During each session, preference for one set of activities was evaluated. Photographs (10 cm by 15 cm each) of three activities were arranged horizontally on a board (76 cm by 30 cm) approximately 10 cm apart. Two photographs depicted activities for which preference was being evaluated (e.g., playing basketball and riding a bike), whereas the third photograph depicted a control activity (e.g., photograph of the participant standing in a hallway looking at a picture). The control activities were selected because they were presumed to have little or

no reinforcing value (i.e., they provided no access to social interaction, preferred materials, or comfortable furniture). The control photograph was included to differentiate between a lack of preference between the two target activities (which would be reflected as equal choices between the two targets, both of which would be selected more often than the control) versus a lack of discrimination (which would be reflected as equal choices among the two targets and the control).

Prior to assessing each set of activities, the therapist physically prompted the participant to touch each of the three pictures, then brought him or her to the corresponding activity area, and prompted the participant to engage in the activity. Prior to each subsequent session, the therapist verbally described the activity depicted in each photograph while prompting the participant to touch the photograph. Each session consisted of 10 trials. On each trial, the therapist held the board containing the three photographs approximately 30 cm in front of the participant and asked him or her to touch the picture of the activity that he or she liked best. Touching any of the three photographs resulted in praise for choosing. Simultaneous touching of two photographs was blocked. If the participant did not respond to the initial instruction, the therapist delivered a verbal prompt to touch a picture every 20 s until a response occurred. Before the next trial, the photographs were repositioned so that each picture appeared in the right, left, and center positions at least three times per session.

Response Measurement and Reliability

The measure of preference consisted of selecting a picture, which was defined as any part of a participant's finger contacting a photograph. During each session, data on a participant's selections were collected by one or two trained graduate or undergraduate students and were summarized as the num-

ber of times a photograph was selected during each 10-trial session. Reliability was assessed during 47% of sessions and was calculated on a trial-by-trial basis by dividing the number of agreements by the total number of trials and multiplying by 100%. Mean reliability was 99.7% (range, 80% to 100%); there were only three disagreements across all comparisons for all participants.

Experimental Conditions

Activity assessments for all participants were compared under two conditions, no access and access, which were arranged in a nonconcurrent multiple baseline design across activities. That is, the no-access phase for the second activity assessment was begun following completion of the first assessment, and the no-access phase for the third activity assessment was begun following completion of the second assessment. Three individuals participated in an additional condition designed to modify preference, which was conducted using a reversal design.

No access. During this condition, touching a photograph resulted in no differential consequences. After a participant touched any picture, praise was delivered for making a choice, the board was removed from view, the pictures were rearranged, and a new trial was begun. Session duration ranged from 3 to 10 min across participants ($M = 5$ min).

Access. When performance under the no-access condition appeared to be relatively stable, differential consequences were arranged for participants' selections. When a participant touched a particular photograph, the therapist provided brief access (approximately 2 min) to the activity depicted by that photograph. The participant was then returned to a neutral area equidistant from the three activities being evaluated, the pictures were rearranged, and a new trial was begun. Session duration ranged from 23 to 40 min ($M = 25$ min).

Modification of Preference

This condition was included to determine if selections of less preferred but more socially desirable activities could be increased. The effects of superimposing additional reinforcement contingencies on engagement in less preferred activities were evaluated for Jack, Eliza, and Ron. Reinforcers used during this condition were selected based on either formal (Fisher *et al.*, 1992) or informal assessment and included Reese's peanut butter cups (Jack); beets and music (Eliza); and Hershey's chocolate, M&Ms, and music (Ron). The superimposed reinforcement contingency was signaled to the participant by including a representation of the reinforcer within the photograph's clear plastic jacket (e.g., a Reese's wrapper was inserted into the social/rec room photograph for Jack).

The reinforcers were not delivered for initially selecting the less preferred activity. Instead, the therapist delivered a reinforcer to a participant for engaging in some desirable behavior during the activity itself (or in the case of music for Eliza, the reinforcer was available noncontingently during the activity). The details of these procedures were individualized and are described below for each participant.

RESULTS

Jack

Figure 1 shows the results of Jack's preference assessments. During the no-access condition in the first comparison, Jack selected the basketball and biking activities at similar frequencies and never selected the control activity (art). These results suggested equal preference for the two outdoor activities. However, when selecting a picture produced brief access to the selected activity, Jack eventually showed almost exclusive preference for the biking activity.

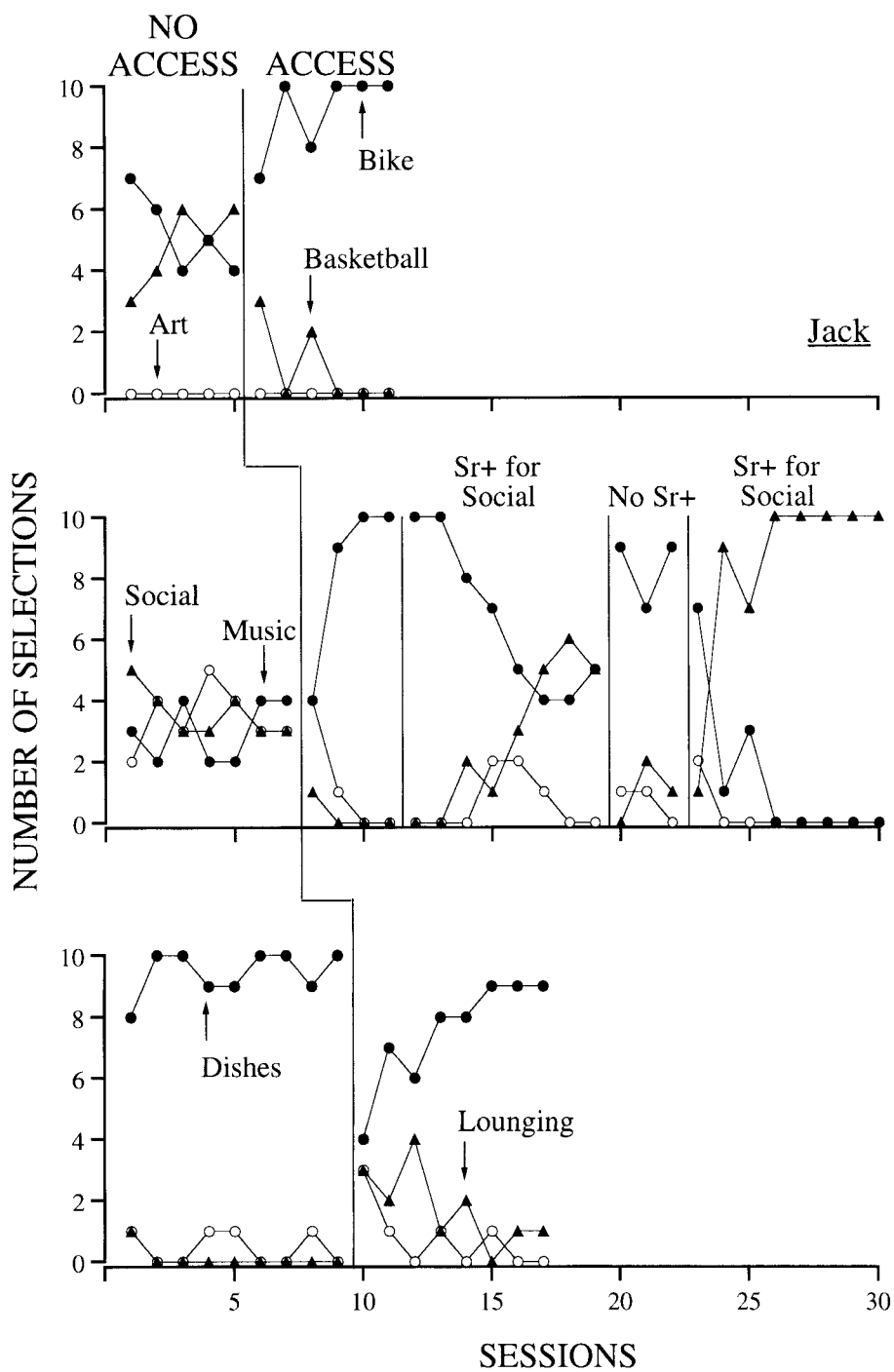


Figure 1. Jack's selections from among concurrently available activities during his first (top panel), second (middle panel), and third (bottom panel) preference assessments.

Jack engaged in indiscriminate selections during the no-access condition for the second comparison. During the access phase, Jack showed exclusive preference for the music activity during the last two sessions. Jack was given ample opportunity to spend time alone in his bedroom listening to music; however, engaging in that activity to the exclusion of other in-home activities (which were available throughout the evening and on weekends) seemed to be incompatible with strengthening and maintaining his pre-existing social skills. Therefore, we attempted to shift Jack's preference by increasing the value of the competing activity (social/rec room). During the additional reinforcement for social/rec room condition, small pieces of Reese's peanut butter cups were delivered contingent on appropriate social behaviors (putting pieces in a puzzle, connecting dominos, or initiating social interaction) in the recreation room. This procedure resulted in an increase in Jack's social/rec room selections and a decrease in his music/bedroom selections. His selections of the social/rec room decreased when the edible contingency was withdrawn, and increased again to the point of exclusive preference when the contingency was reinstated.

During the no-access condition for the third comparison, Jack showed almost exclusive preference for the dishes option. When brief access to selected activities was later made available, there was a temporary disruption in Jack's previously stable preference for doing dishes, which was restored during the last few sessions of the condition.

In summary, results of Jack's assessment showed that he preferred riding a bike, listening to music in his bedroom, and washing dishes. It was also shown that Jack's preference for lying in bed listening to music could be changed to socializing in the recreation room with peers and staff if his appropriate social behaviors were reinforced by staff. Based on these results, Jack's staff (a)

allocated some of his personal funds toward the purchase of a new bike and stereo system for his bedroom, (b) began to assign him household chores more consistently (e.g., kitchen and laundry), (c) developed a socialization goal that included reinforcement of social behaviors, and (d) began to implement the activity choice procedures several times throughout the day and evening when Jack had no scheduled activities, with longer periods of access (15 to 20 min) delivered for each selection.

Eliza

Figure 2 shows the results of Eliza's preference assessments. During the no-access condition for the first comparison, Eliza selected the two target (bike, basketball) and control (art) activities at similar frequencies. During the access condition, a clear preference for biking emerged. During the no-access condition for the second comparison, Eliza again showed no clear preference initially, although she selected the dancing/living room activity at slightly higher frequencies during five of the last six sessions. Eliza's preference for dancing increased (or was clear) when picture selections produced differential access to activities.

During Eliza's third comparison, no clear preference was initially observed among the three choices during the no-access condition; however, she selected the lounging/living room option somewhat more often during five of the last six sessions. Similar to her second comparison, Eliza showed a strong preference for one activity (lounging) during the access condition. Because it was desirable for Eliza to perform household chores at least intermittently, we added edible reinforcement (a slice of beet contingent on task completion) and noncontingent access to music to the dishes option, and observed an increase in Eliza's selection of the dishes option. She never selected dishes when reinforcement was withdrawn,

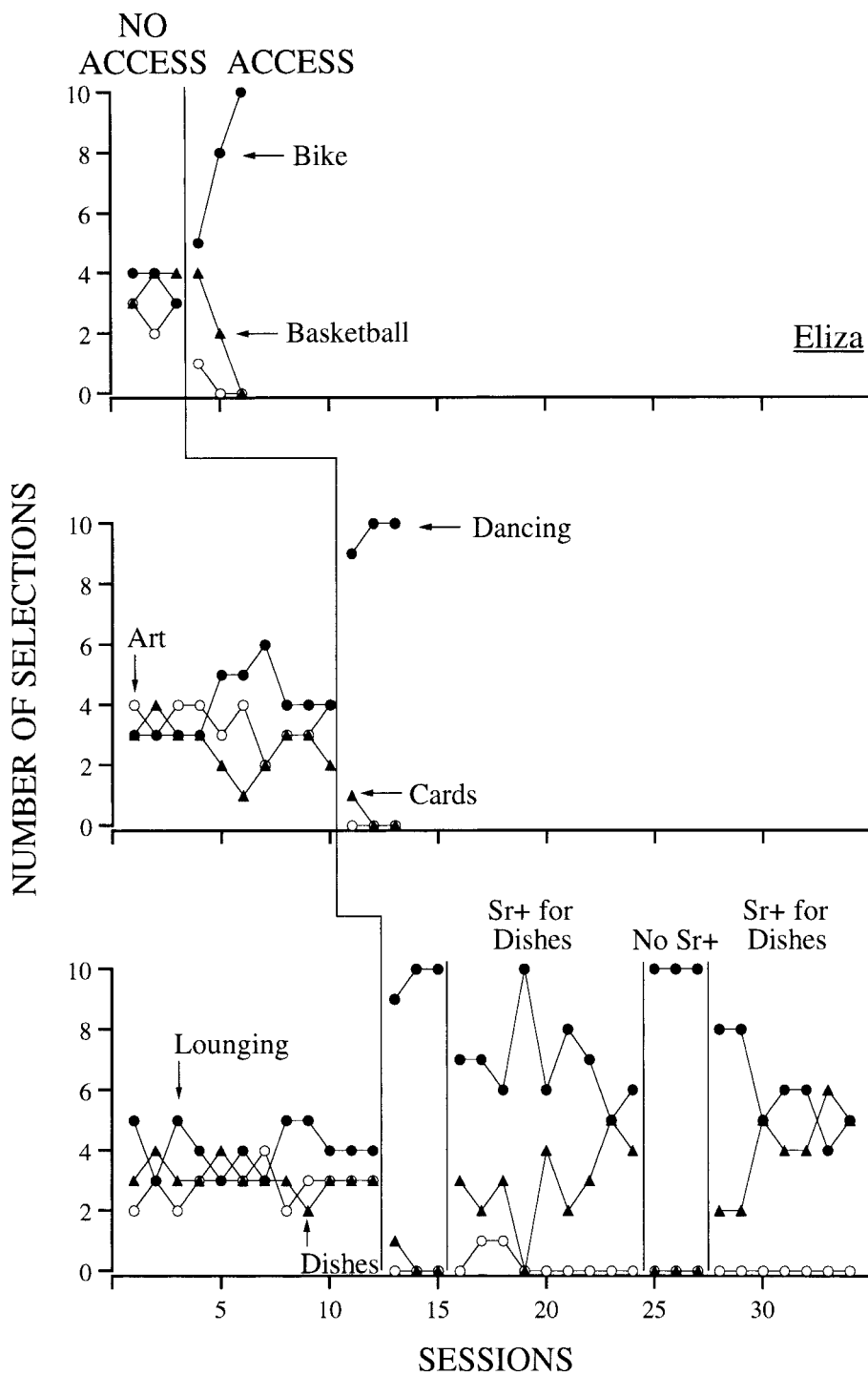


Figure 2. Eliza's selections from among concurrently available activities during her first (top panel), second (middle panel), and third (bottom panel) preference assessments.

but when reinforcement for doing dishes was again available, she selected this option at about the same frequency as she selected lounging.

During Eliza's assessments, preference was shown for riding a bike, dancing with staff and peers to music in the living room, and lounging in the living room. In addition, Eliza's strong preference for lounging was altered such that she would engage in kitchen chores if music were available and if task completion were reinforced with beets. Eliza's staff used these results in two ways: They altered her daily schedule so that she had more frequent access to preferred activities, and they modified less preferred activities in an attempt to make them more attractive (e.g., by allowing her to listen to music while doing kitchen chores).

Ron

Figure 3 shows the results of Ron's preference assessments. During the no-access condition for the first comparison, Ron selected the three photographs at about equal frequencies. When selections produced differential consequences (access condition), Ron selected the swing activity much more often than he did the bike activity. In the no-access condition for the second comparison, Ron eventually (last six sessions) selected the cards activity most often, but he continued to select the other target option (TV) as well as the control (art) on some trials. During the access condition, Ron eventually showed almost exclusive preference for the cards activity.

Ron's selections during the no-access condition for the third comparison were highly variable; he often selected the control activity (art) more frequently than either target activity (listening to music in the living room, doing chores in the bedroom). When selections produced differential consequences (access condition), a clear preference for listening to music emerged. In an attempt to

increase his selections of the chore activity, we initially provided reinforcement (a small piece of chocolate) for chore completion (e.g., putting shoes in closet, making bed), which resulted in a small but noticeable increase in selection of chores. When reinforcement was removed, Ron selected the music activity almost exclusively. During the last reinforcement condition, noncontingent music was added to differential reinforcement for chore completion, and Ron's selection of the chore option once again increased to moderate rates.

Ron showed preferences for socializing outdoors with staff on a swing, playing cards with staff in the recreation room, and listening to music in the living room. It was also shown that Ron's preference for listening to music in the living room could be shifted slightly so that he would complete his bedroom chores if on-task behavior were differentially reinforced and if music were available noncontingently in the bedroom. At the conclusion of the study, Ron's staff continued to use the activity choice procedures to identify additional preferences, which were then made available at various times throughout the day and evening when Ron had no other scheduled activities.

Tim

Figure 4 shows the results of Tim's preference assessments. During the no-access conditions for all three comparisons, Tim selected the control activity (art) at about the same rate as he selected the two target activities. A slight exception to this pattern was observed during the first several sessions of the third comparison when he selected art less frequently. During the access conditions, Tim showed a clear preference for one of the target activities and, in each case, he preferred the more socially desirable option (working over lounging, watching cars in the company of staff over operating one by himself, and using the walker over the wheel-

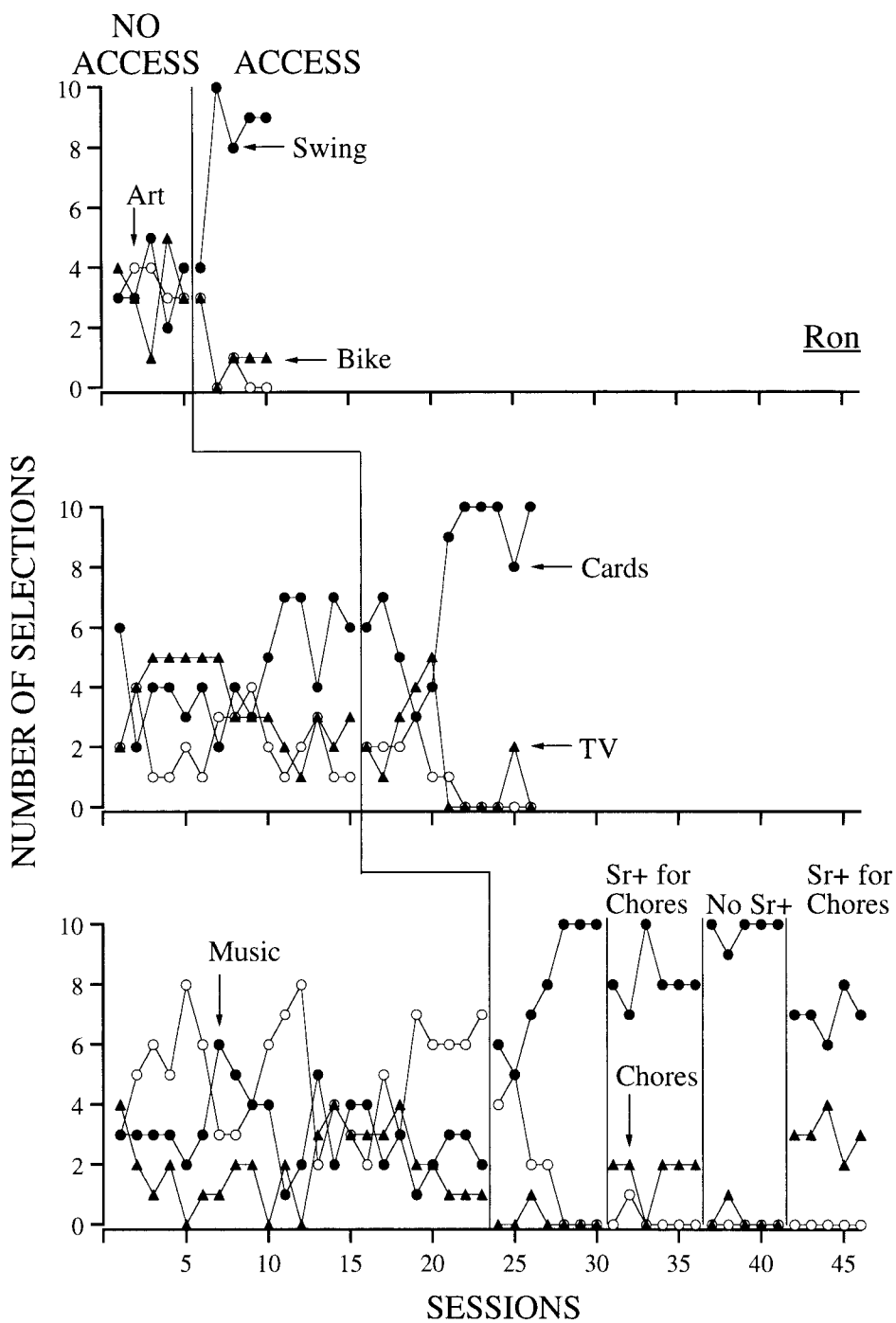


Figure 3. Ron's selections from among concurrently available activities during his first (top panel), second (middle panel), and third (bottom panel) preference assessments.

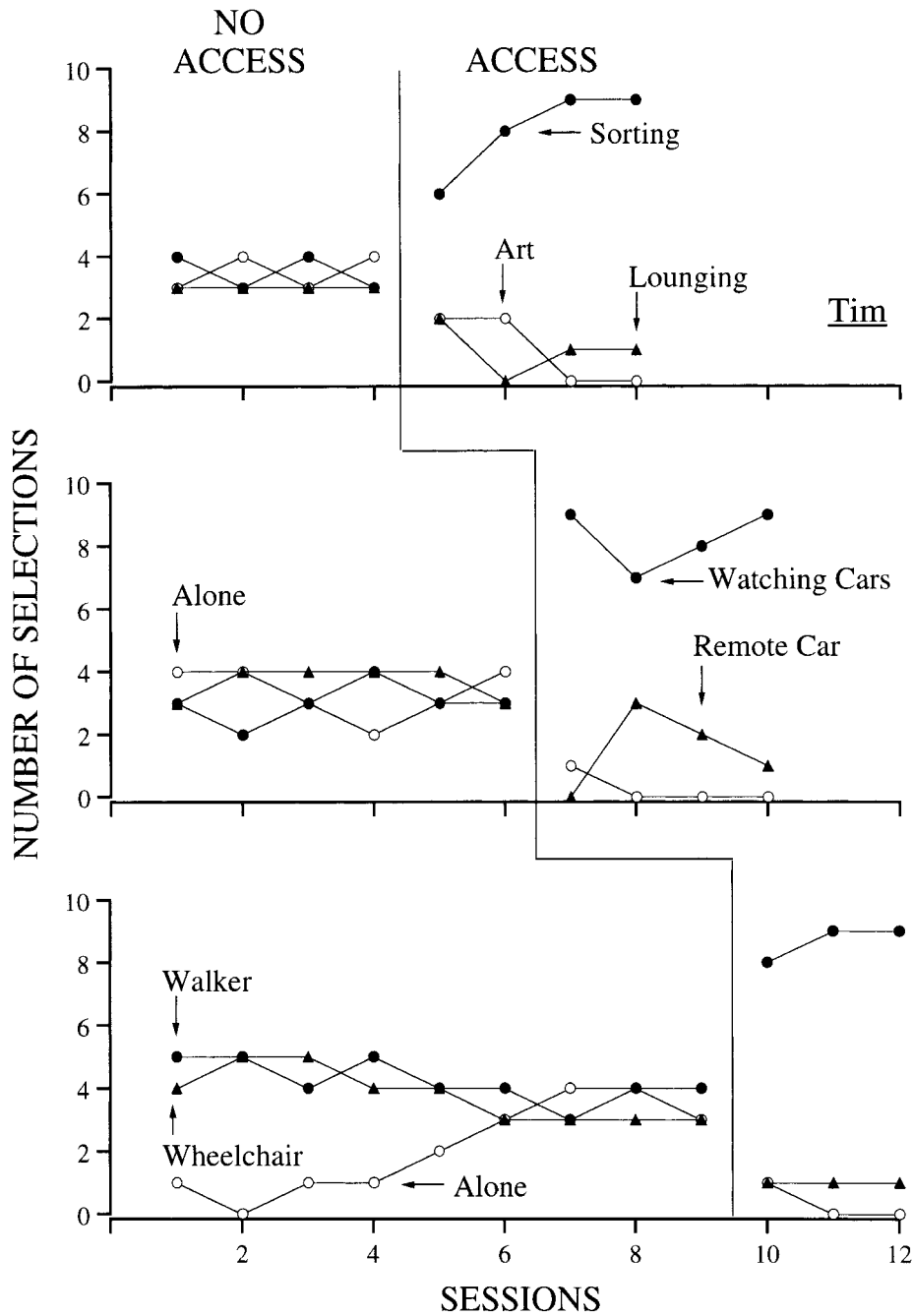


Figure 4. Tim's selections from among concurrently available activities during his first (top panel), second (middle panel), and third (bottom panel) preference assessments.

chair). Therefore, we did not make any attempt to alter his preferences. In light of these results, Tim's staff initiated several changes: (a) He was scheduled to participate

more consistently at the work site, (b) the walker was made available for transitions to the work site and the campus canteen, and (c) the activity choice procedures were im-

plemented using the already described and additional activities.

DISCUSSION

When attempting to identify preferences among activities in the absence of access to those activities by asking individuals to make selections based on pictorial representations, we observed idiosyncratic and undifferentiated responding in 11 of the 12 activity comparisons for 4 participants. Differential consequences in the form of access to an activity contingent upon selecting its corresponding photograph were necessary to produce response differentiation as an indication of preference. These results indicate that unique reinforcement for a given choice, rather than reinforcement for choosing *per se*, affects the outcome of preference assessments and should be included whenever there is reason to believe that an individual's preferences are not already well established and highly discriminated.

In most previous research on the assessment of preference among activities of a protracted nature, choices have not produced differential consequences (see Newton, Ard, & Horner, 1993, for a notable exception). Instead, investigators have relied on the fact that participants already showed evidence of choice-making skills, such as verbal elaborations, or have assumed that trainer-cued picture identification might later be taken as an indicator of preference. Thus, making a selection when asked to do so typically resulted in reinforcement for choice *per se*. That is, reinforcement was delivered for making *any* selection. Such conditions are likely to result in the emergence of selection as a tact, which is a verbal response occasioned by a discriminative stimulus (instruction or similar cue) and maintained by a nonspecific, generalized reinforcer (Skinner, 1957). A child pointing to a picture of a cookie in response to the instruction "Select

the cookie," and receiving an arbitrary reinforcer (e.g., praise or a token) for doing so, is an example of a tact. By contrast, a mand is a verbal response occasioned by specific establishing operations (deprivation or aversive stimulation) and maintained by specific consequences (Skinner, 1957). Pointing to a picture of a cookie when one has not had one for a while (the relevant establishing operation), and receiving a cookie to eat as a consequence, is an example of a mand.

Although it seems reasonable to assume that teaching an individual to tact an object or activity may be useful in eventually developing mands for the same events, Lamarre and Holland (1985) showed independence between the two response functions by demonstrating that acquisition of a tact repertoire did not generalize to the acquisition of a mand repertoire even though the response forms were identical. Thus, the tact and the mand may share many topographical features (e.g., pointing to a cookie), but the antecedent and consequent events that determine their occurrence are quite different. In the identification of preferences, the mand (and not the tact) is the verbal response of interest, and it appears that assessment conditions are more likely to generate manding when responses produce unique, differential consequences (access to the item manded).

The functional independence between tacts and mands may not be fully recognized in the context of assessing preference but is illustrated in a recent study by Higbee, Carr, and Harrison (1999), who compared preference assessments in which actual stimuli or photographs of the same stimuli were used as the basis for selection. Clear preferences among seven stimuli were identified when the actual stimuli were used and when access to these stimuli was provided following a choice. By contrast, undifferentiated responding was observed (i.e., preferences were not identified) when photographs of

the same seven stimuli were used and when access to the actual stimuli was not provided contingent on selecting a photograph. Here, actual preference was not identified during the assessment in which choices were made among pictorial stimuli because “choosing” was acquired as a tact. Conceptualizing preference testing as an evaluation of manding emphasizes the importance of differential consequences as the bases for differential expressions of preference.

In the present study, the importance of differential consequences for choice behavior during preference testing was most evident in Tim’s selection of the control activity during his second and third comparisons. In the no-access phase of the second comparison (Figure 4, middle panel), Tim’s selection of the control activity (sitting alone on the patio) equaled his selections of the two target activities. When access to the activities was provided differentially, selection of the control activity dropped to zero during the final three sessions. When the no-access condition of the third comparison was subsequently initiated (Figure 4, bottom panel), Tim’s initial selection of the control activity was markedly lower than were his selections of the target activities. However, continued exposure to the no-access phase resulted in increased selections of the control activity. When access to the activities was provided contingent upon selections, preference for the control activity again decreased to zero. Thus, it appeared that Tim’s lack of preference for the control activity, established in the access phase of the second comparison, initially affected responding in the no-access phase of the third comparison, but these historical effects dissipated in the absence of differential consequences. Lack of preference for the control activity was reestablished during the access phase of the third comparison. These data suggest that contingencies may be important not only in the establishment

of differential choice but also in its maintenance.

Results obtained for Eliza, Ron, and Tim also suggested that training within one or two choice comparisons did not generalize to a third comparison. Jack’s results differed in that he exhibited consistent responding in the absence of consequences during his third comparison, which remained unchanged when consequences were later provided. These data must be interpreted with caution, however, because the present study was not designed to determine the necessary or sufficient conditions for establishing differential preference in the absence of consequences. For example, although two exposures to the training procedures did not produce generalized responding by Eliza, Ron, or Tim, three (or more) exposures may have. Similarly, although apparent generalization was observed during Jack’s third assessment, it is possible that his preference for doing dishes based on picture selection would have been observed with no prior exposure to training. Because activity comparisons were conducted sequentially, Jack’s no-access exposure to doing dishes followed two previous training experiences, and it is unclear whether this preference would have been observed initially. Future research might determine how training can best be conducted to promote generalization to conditions under which the consequences of choices are more difficult to arrange, for example, in assessing preference for events in which the temporal gap is difficult to bridge (e.g., going to a distant place such as the mall or the movies or deciding where to take a vacation). It is possible that the procedures used in this study may be helpful in the assessment of preference for such events if (a) a sufficient history with differential consequences is provided for selecting activities that are easier to deliver, (b) generalization occurs (i.e., persons begin to demonstrate preferences by responding to features of the photographs in

the absence of immediate or differential consequences), or (c) the temporal gap (the delay) between selecting an activity photograph and access to that event is adequately bridged.

One potential limitation of the procedures described in this study is that they are somewhat time consuming. Assessing preference without providing access to the activities required only 5 min per 10-trial block, whereas providing access to activities during the assessment required an average of 25 min per 10-trial block. Nevertheless, results obtained during the no-access and access conditions indicated that the additional time needed to provide differential access based on selections was a necessary condition for the identification of clear preferences. When individuals do not possess the requisite verbal skills to express unambiguous preference based on abstract descriptions or pictorial cues, the additional cost in time seems like a reasonable investment as a means of insuring that valid preferences are identified.

Once participants began to show consistent preferences, we observed that 3 of the 4 participants showed a tendency to select a less socially desirable option. We then altered these participants' preferences by making the more socially desirable (but initially less preferred) option more attractive. That is, access to additional reinforcers was available for engaging in the less preferred activity. It is important to note that additional reinforcement was not contingent on choice per se (e.g., selecting chores over lounging) because this would have strengthened differential selection as a tact. Instead, when the activity itself was made more reinforcing, selection shifted to that option. This demonstration suggests that some socially important behaviors may be strengthened merely by increasing opportunities for these behaviors to occur under preferred conditions. Determining the effects of increased opportunities for acquiring socially appropriate be-

havior as a function of modifying preference for these activities may be a productive area for further research.

Many commentaries have emphasized the importance of providing choices to individuals who have severe developmental disabilities (Bannerman et al., 1990; Guess, Benson, & Siegel-Causey, 1985; Shevin & Klein, 1984), yet few have provided practical suggestions for what to do when an individual makes choices that may not be in his or her best long-term interest (e.g., choosing not to take medication or not to attend work). Procedures such as those used in this study may be particularly attractive because they influence preference in a way that does not limit access to the original choice. For example, when Eliza showed a preference for lounging over doing dishes (Figure 2, bottom panel), we provided additional reinforcement for doing dishes. Thus, the originally preferred option (lounging) remained intact and available; only the nonpreferred option (doing dishes) was altered. This arrangement resulted in a shift in Eliza's preference: She selected doing dishes more often, although she was still allowed to (and frequently did) select the lounging option. As a general strategy, enhancing the reinforcing characteristics (or minimizing the aversive characteristics) of nonpreferred activities might prove ideal in balancing an individual's right to choose with therapists' responsibilities to provide effective habilitation.

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STUDY QUESTIONS

1. What are some difficulties associated with (a) assessing the preferences of individuals with developmental disabilities and (b) incorporating these preferences into service options?
2. Describe the basic arrangement used for assessing preference and for examining the effects of access to chosen activities on preference.
3. Why was the control activity included in the assessment?
4. Summarize the results obtained during the no-access and access conditions of the study.
5. What is meant by a nonconcurrent multiple baseline design, and whose behavior may have been affected by this arrangement?

6. What procedures were used to modify preference when an individual was observed to prefer a less socially appropriate activity?
7. To what do the terms *tact* and *mand* refer? What is the relevance of these concepts to the assessment of preference?
8. The authors described a study (LaMarre & Holland, 1985) in which acquisition of a tact repertoire did not facilitate acquisition of a mand repertoire, even though the responses were identical in form. Describe a situation in which a response acquired as a tact might be exhibited as a mand.

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