

A FURTHER ANALYSIS OF THE VALUE OF CHOICE: CONTROLLING FOR ILLUSORY DISCRIMINATIVE STIMULI AND EVALUATING THE EFFECTS OF LESS PREFERRED ITEMS

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We sought to address limitations of prior research that has isolated choice as an independent variable. Children's preferences for the opportunity to choose were evaluated in a concurrent-chains arrangement in which identical consequences were available in choice and no-choice conditions. Results demonstrated that preference for choice, in and of itself, was (a) evident in children, (b) not controlled by illusory discriminative stimuli such as the amount from which to choose, and (c) generally unaffected by less preferred and potentially unimportant consequences.

DESCRIPTORS: choice, concurrent-chains arrangement, preference assessment, preschool children

The integration of choice-making opportunities into reinforcement programs and academic planning has been shown to be important for individuals with intellectual disabilities (Dyer, Dunlap, & Winterling, 1990), typically developing children (Brigham & Sherman, 1973; Tiger, Hanley, & Hernandez, 2006), and those who exhibit problem behavior (Dunlap et al., 1994; Romaniuk et al., 2002). Researchers have attempted to isolate the value of choice, in and of itself, by equating the quality and magnitude of the consequences in choice and no-choice conditions. However, providing the same type and amount of items across both conditions (called *yoking*; Dunlap et al.; Fisher, Thompson, Piazza, Crosland, & Gotjen, 1997) may be

limited because the momentary value of yoked items may differ at specific moments in time. Thus, an apparent preference for the choice condition might be a function of the choice condition being correlated with momentarily more highly valued reinforcers. An improved tactic for isolating choice as an independent variable was described by Thompson, Fisher, and Contrucci (1998), who delivered the same type of item (i.e., cola) in choice and no-choice conditions. Although the cola reinforcer was equivalent in both conditions, the participant dictated the manner in which it was delivered in the choice condition (e.g., with or without a straw); due to this, there appeared to be more interaction between the therapist and the child in the choice condition than in the no-choice condition. These results suggest that the preference for choice may be attributed to the differential consequences associated with the act of choosing.

Tiger et al. (2006) used identical reinforcers and presentation tactics in their evaluation of

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children's preferences for choice. When a child selected the choice condition, he or she was allowed to choose one edible item from an array of five identical items. In the no-choice condition, the experimenter delivered one of the same edible items presented alone. Results indicated that 5 of 6 children preferred the opportunity to choose, and this preference persisted for 3 children under these conditions. However, the authors noted that the larger number of edible items in the choice condition array may have acted as an illusory discriminative stimulus signaling that a greater magnitude of reinforcement was available in that condition (i.e., individual children may have had histories in which a greater magnitude of reinforcement was received when a larger number of reinforcers were present). Response allocation to the choice condition may have been a function of the illusory discriminative stimulus rather than a preference for the opportunity to choose.

Therefore, one purpose of the current research was to systematically replicate Tiger *et al.* (2006) under conditions in which an equal number of preferred items were presented in the choice, no-choice, and control arrays. Prior evaluations of the reinforcing value of choice have frequently used highly preferred stimuli in the choice contexts (e.g., Fisher *et al.*, 1997; Lerman *et al.*, 1997; Thompson *et al.*, 1998; Tiger *et al.*). Therefore, to extend our understanding of the conditions under which the opportunity to choose is reinforcing, we also evaluated children's preferences for the opportunity to choose from less preferred items.

METHOD

Participants and Setting

Eight typically developing children (2 boys and 6 girls) enrolled in an inclusive preschool participated. Children were selected for participation based on mutual availability of child and experimenter and obtained informed consent. Daily assent was obtained from each child prior to each session, and children were

allowed to refuse participation at any time. Six children (Karin, Cami, Zelda, Addi, Lena, and Alton), all 5 years old, participated in the evaluation using highly preferred edible items. Children who preferred the opportunity to choose in the initial assessment also participated in a second assessment in which less preferred items were used. We also recruited Jude (4 years old) and Aja (5 years old) to participate in the second assessment. Sessions were conducted in a room near the children's classroom that contained a child-sized table and chairs. Each child experienced one session daily, 5 days per week.

Experimental Design, Response Measurement, and Interobserver Agreement

A concurrent-chains arrangement (Hanley, Piazza, Fisher, Contrucci, & Maglieri, 1997) was used to detect children's preferences for the opportunity to choose. Worksheet selection served as our preference measure. Observers recorded the procedural integrity of the experimenter's delivery of consequences in the terminal link on 100% of trials; mean procedural integrity was 99% (range, 95% to 100%) across all children. A second observer independently collected data during at least 44% of sessions with each child, and observers' records were compared on a trial-by-trial basis. The number of agreements for each session was divided by the number of agreements and disagreements and multiplied by 100%. Agreement across all participants on selections and procedural integrity was 100%.

Preference Assessments

Paired-item preference assessments (Fisher *et al.*, 1992) were conducted to identify preferred edible items for use in the initial choice evaluation. Common candies and snack foods that were unavailable in the preschool were selected for the assessments. Items that were not manufactured such that each one looked and tasted the same (e.g., gummy worms) were matched, cut, and measured to insure that pieces were indistinguishable from one another.

Prior to each session, the child chose one of their three highest ranked edible items to be used exclusively as the consequence for accurate responding in that session.

Plain, circular office stickers that we assumed had low functional relevance to the children were selected in each child's least preferred color and paired against the child's top three ranked edible items in a paired-item assessment. Results showed that edible items were always ranked higher than stickers.

Procedure

A variety of worksheets that consisted of four stimuli (e.g., numbers or sight words) were created from each child's individualized curriculum for use as stimulus sets to which the children responded in the terminal links of the concurrent-chains procedure. Identical worksheets were developed in three colors shown to be neither highly nor least preferred based on the results of paired-color preference assessments (Heal & Hanley, 2007), and one of the three colors was randomly assigned to the choice, no-choice, and control conditions.

Worksheets were presented equidistant from each other on the table, and behind each was a plate with five identical items (e.g., five red candies). As an additional discriminative stimulus, a picture of a pointing hand (10 cm by 5 cm) made in the colors corresponding to the choice and no-choice conditions was placed above the worksheets. The hand pointed toward the child in the choice condition and pointed toward the experimenter in the no-choice condition; no hand was present in the control condition. At the beginning of each session, the experimenter described the contingencies associated with all conditions and prompted the child to select the worksheet associated with each condition twice in a random order. Fifteen free-choice trials immediately followed the six exposure trials. In the initial link, the experimenter instructed the child to touch the worksheet on which he or she wanted to work and, following a selection, all other worksheets

and plates were removed from the table. In the terminal link, the child was instructed to touch a specific academic stimulus on the worksheet, and a three-step prompting procedure was used to insure that he or she touched the correct stimulus. Children always responded correctly following either the initial vocal instruction (91%) or the model prompt (9%). A praise statement was delivered following the child's accurate response, regardless of the level of prompt given. Because Lena and Alton showed persistent indiscriminate responding in the first nine and six sessions, respectively, praise was not delivered following accurate responses in the terminal links to increase the saliency of the differences across conditions.

Following the delivery of praise in the choice condition, the experimenter presented the plate of items and told the child to choose one item. Plates were then replaced, and new worksheets were presented and rotated systematically across the table. All procedures were identical in the no-choice and control conditions, except that the experimenter chose one item from the plate of five identical items and delivered it to the child in the no-choice condition, and praise alone was delivered following correct responses in the control condition.

When office stickers were used as consequences for accurate responding in our second choice assessment, a small numbered grid was placed on the table. Following the selection of a sticker by the child (choice condition) or experimenter (no-choice condition), the child placed the sticker in sequence on the grid. No back-up reinforcers were provided for earning stickers (nor was there any history of back-up reinforcers associated with these stickers), and the grid was discreetly discarded at the end of the session.

RESULTS AND DISCUSSION

The results of the choice assessment with highly preferred edible items are depicted in Figure 1 (left). Alton, Karin, Cami, and Addi

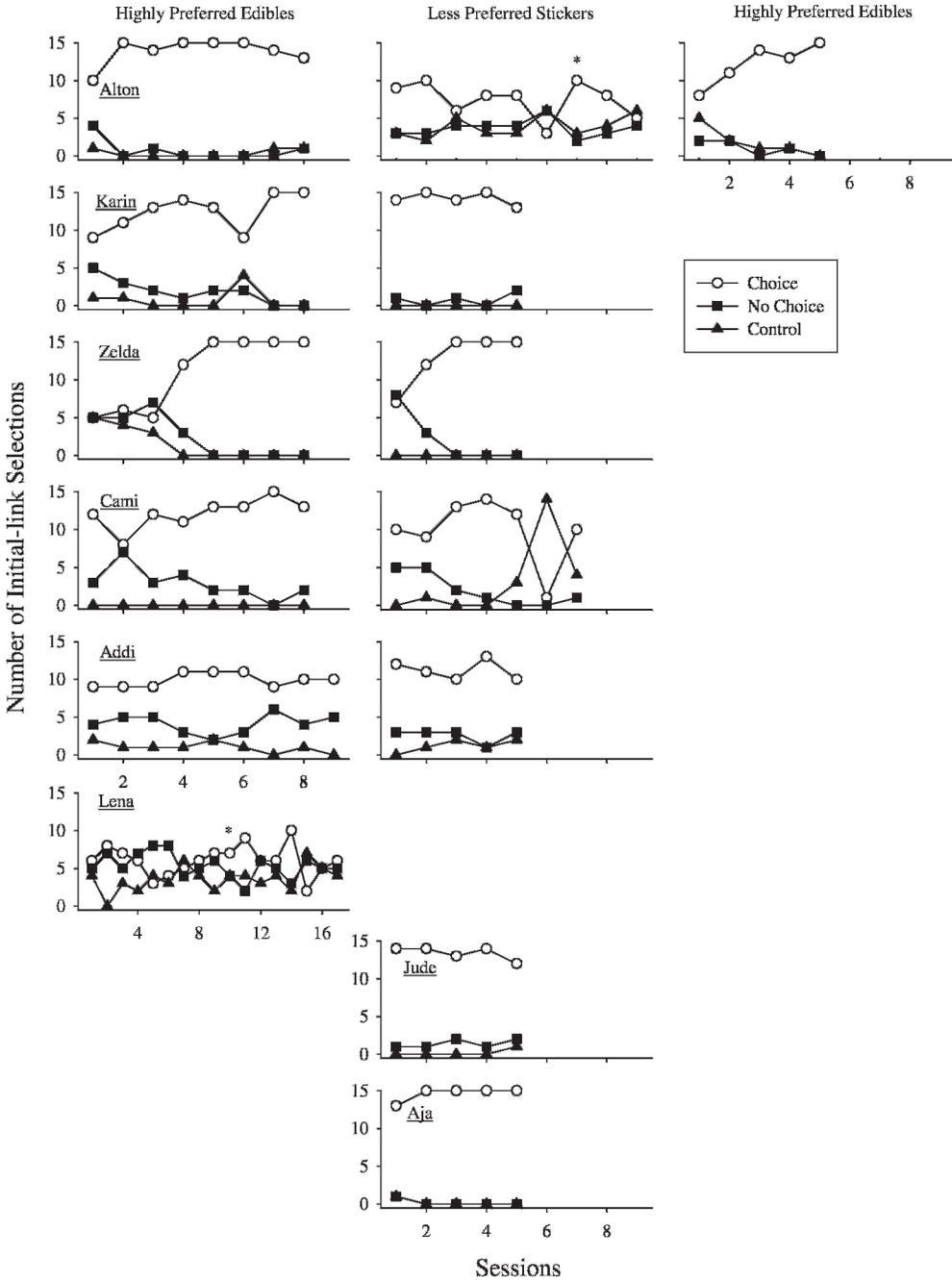


Figure 1. Number of initial-link selections of choice, no-choice, and control conditions for all children. Asterisks indicate the cessation of praise for accurate responses in terminal links (Lena and Alton).

selected the choice condition most frequently. Following initial indiscriminate responding, Zelda allocated all of her selections to the choice condition. Lena allocated her responses

almost equally to each condition throughout the evaluation. Because high levels of selections to only the choice and no-choice conditions would indicate indifference (i.e., the opportu-

nity to choose was of no value to Lena), we interpret her responding as indiscriminate because of her continued selection of the control condition.

In our second assessment of choice using less preferred items (Figure 1, center), Karin, Zelda, Cami, and Addi continued to show a preference for the opportunity to choose. Jude and Aja also selected the choice condition in nearly 100% of trials. Because neither child participated in the initial assessment with edible items, their data suggest that a preference for the opportunity to choose among less preferred stimuli was likely not dependent on experience in choosing from highly preferred items in our first assessment. Alton also showed a preference for choosing from the less preferred items; however, we observed more responses towards the no-choice and control conditions than in his prior assessment. To determine if the variability observed was a function of the change in the items, we returned to the initial procedure with preferred edible items (Figure 1, right). We then observed an increasing trend in the number of selections of the choice condition, which was similar to Alton's response allocation in the first assessment.

Our initial assessment results are consistent with prior research showing that the opportunity to choose is preferred (or reinforcing) when the items to be chosen are also preferred (Brigham & Sherman, 1973; Dunlap et al., 1994; Fisher et al., 1997; Thompson et al., 1998; Tiger et al., 2006). Our results also support the findings of Tiger et al., who found that children prefer to choose even when doing so does not result in a qualitatively or quantitatively different consequence than when someone chooses for them. Further, the current findings suggest that the results of Tiger et al. were due to a preference for choice rather than control by an illusory discriminative stimulus that signaled the availability of a greater magnitude of reinforcement.

Our findings suggest that preference for the opportunity to choose is a valid phenomenon with some generality. The isolation of choice as the influential variable is perhaps our main contribution; however, our results also extend prior choice research by showing that preference for the opportunity to choose is not limited to conditions in which highly preferred items are involved in the choice-making opportunity—children also prefer to choose when less preferred items are exclusively available. An important direction for future research is to evaluate whether allowing children to choose consequences strengthens the reinforcing efficacy of less preferred consequences. In addition, research on the conditions under which choice opportunities do and do not add value to learning contexts should be continued.

A limitation of our study is that the items we selected as less preferred stimuli may not be analogous to the host of less or non-preferred consequences used in classroom or home environments with young children. Although the stickers were less preferred than the food items and did not result in any back-up reinforcers, they may have had reinforcing value if children had prior experiences in which stickers were established as conditioned reinforcers. Therefore, future research should evaluate whether the opportunity to choose is preferred when items that are clearly demonstrated to be functionally irrelevant are used.

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