Journal of Applied Behavior Analysis

JOURNAL OF APPLIED BEHAVIOR ANALYSIS 2016, **49,** 460–471 NUMBER 3 (FALL)

AN EVALUATION OF TOY QUALITY FOR INCREASING SELF-CONTROL IN TYPICALLY DEVELOPING PRESCHOOL CHILDREN

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Children often make impulsive choices, and previous research has shown that access to activities during the delay may enhance self-control (e.g., Newquist, Dozier, & Neidert, 2012). The purpose of the current study was to extend the results of Newquist et al. (2012) by comparing the effects of access to low-preference, moderate-preference, and high-preference toys during delays. Results showed that (a) all toys increased self-control for 2 participants when toys were available for all choice options and (b) high-preference toys (and sometimes moderate-preference toys) increased self-control for 3 participants when the toys were available only for large delayed choices.

Key words: children, delay, reinforcement, self-control, toy quality

Research on delayed reinforcement has shown that some individuals (e.g., children, individuals with attention deficit hyperactivity disorder) have difficulty tolerating delays to reinforcers. Thus, impulsivity (i.e., choosing a small immediate reinforcer over a large delayed reinforcer) rather than self-control (i.e., choosing a large delayed reinforcer over a small immediate reinforcer) is sometimes observed. For example, a child might choose to receive one small edible item immediately rather than wait for a short time for four small edible items.

Providing an alternate activity during the delay has been used to increase self-control (e.g., Anderson, 1978; Grosch & Neuringer, 1981; Ito & Oyama, 1996; Mischel, Ebbesen, & Raskoff Zeiss, 1972; Newquist, Dozier, & Neidert, 2012). For example, Mischel et al. (1972) compared mean waiting times of two groups of children. One group did not have access to an alternative activity, whereas the other group had access to an alternative activity (i.e., a Slinky) during the delay. The mean waiting time for children in the alternative-activity group was eight times that of the children in the no-alternative group.

This research is based on the thesis submitted by the first author, under the supervision of the second author, in partial fulfillment of the master's degree for the Department of Applied Behavioral Science at the University of Kansas. We thank Pamela Neidert and David Jarmolowicz for their comments on a previous version of this manuscript.

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doi: 10.1002/jaba.320

In a recent study, Newquist et al. (2012) compared the effects of different interventions commonly used to increase self-control in the absence of delay fading (i.e., a countdown timer during the delay, a child or experimenter rule before the delay, and access to high-preference toys during the delay). The experimenters measured self-control by comparing the number of selections of large delayed reinforcers to the number of selections of small immediate reinforcers made by typically developing children. The different conditions consisted of a combination of experimenter rule, a timer, child rule, and toy play. During the experimenter-rule condition, if the participant chose the large reinforcer, the experimenter said, "When you wait, you get four pieces." During the timer condition, if the participant chose the large reinforcer, the experimenter issued the rule and started a countdown timer that was placed in front of the participant. During the child-rule condition, if the participant chose the large reinforcer, he or she said, "When I wait, I get four pieces." During the toy-play condition, if the participant chose the large reinforcer, he or she said, "When I wait, I get four pieces," and the experimenter delivered preferred toys during the delay. The only intervention that successfully promoted selection of the large delayed reinforcer was providing access to high-preference toys during the delay.

Although the results of Newquist et al. (2012) suggest that high-preference items or activities could be presented during delays to increase self-control in young children, there were several limitations of this study. First, there were methodological limitations that preclude determination of the mechanism by which access to high-preference toys during the delay resulted in increases in self-control responding. That is, the procedures involved delivery of high-preference items only if the child chose the large delayed reinforcer. Thus, self-control responding may have occurred because (a) the high-preference toys were more preferred than the edible items or (b) a combination of both edible items and high-preference toys resulted in a larger magnitude of reinforcement. Newquist et al. attempted to answer the question of whether the high-preference toys were more preferred than edible items by conducting a preference assessment that directly compared the toys and the four edible items. For two of the three participants, the high-preference toys were more preferred than edible items in some of the assessment sessions, whereas for the third participant, the edible items were more preferred than the toys. Therefore, for the two participants for whom toys were sometimes more preferred, self-control responding may have occurred to access the preferred toys rather than the larger number of edible items. However, these data do not rule out the possibility that, for all three children, self-control responding occurred to access a combination of toys and edible items. Thus, the overall larger magnitude of reinforcement may have resulted in responding to the large delayed choice option. One way to address this limitation is to provide toys following both the small immediate and large delayed reinforcer choices. Another limitation of Newquist et al. (2012) was that the toys that were provided during the delays were all high-preference toys. Thus, whether any item or activity could be provided during the delay to enhance self-control or whether only high-preference items would be effective is unknown.

The purpose of the current study was to replicate and extend the results of Newquist et al. (2012). We attempted to replicate the effects of providing access to toys during delays to enhance self-control responding while we addressed two of the limitations of Newquist et al. That is, we compared the effects of providing access to low-preference, moderate-preference, and high-preference toys during delays, and we attempted to control for magnitude of reinforcement and access to toys by providing access to toys during all choice options.

METHOD

Participants and Setting

Five typically developing preschool children, 3.5 to 5 years old and enrolled in a university-based preschool program, participated in this study. Our inclusion criteria included (a) behavioral sensitivity to magnitude of reinforcement assessed via a reinforcer-magnitude assessment (see below) in which the participant consistently chose the large reinforcer over the small reinforcer when both were available immediately and (b) impulsivity (choosing a small immediate reinforcer over a large delayed reinforcer) in the absence of intervention during the delay assessment (see below) when a 3-min delay was implemented for the large delayed reinforcer. Of the available pool of 13 children, only five met the two inclusion criteria and participated in the current study.

A trained therapist conducted experimental sessions in a session room once or twice per day, 3 to 5 days per week. Sessions lasted 5 to 20 min. The session room contained a table, chairs, and relevant session materials.

Preference Assessments

We conducted two separate paired-stimulus preference assessments (Fisher et al., 1992) with each participant before the study. We conducted the first preference assessment with nine edible items (e.g., M&Ms, Mike and Ike, Skittles, Cheetos) and created a preference hierarchy based on the percentage of trials in which each edible item was chosen. We used the edible item ranked highest for each participant for the remainder of the study. We conducted the second preference assessment with 16 toys (e.g., cars, books, iPad, puppet) and created a preference hierarchy based on the percentage of trials in which each toy was chosen. We selected six toys from this preference assessment that were assigned to the different toy conditions (see below).

If a substantial (i.e., more than 1 week) break in sessions occurred, we conducted a preference assessment with the six original toys to create a new hierarchy that reflected any change in preference. If necessary, we reallocated the toys to different conditions after this assessment. We conducted this additional assessment with three participants (Emery, Luke, and Matthew).

Response Measurement and Interobserver Agreement

The primary dependent variables were the number of large-, small-, and no-reinforcer choices. *Large-reinforcer choice* was defined as the participant touching the plate that contained four pieces of a preferred edible item. *Small-reinforcer choice* was defined as the participant choosing the plate with one preferred edible item. *No-reinforcer choice* was defined as the participant choosing the plate that did not contain any items. We scored these responses on a trial-by-trial basis.

We also collected data on participant toy interaction and experimenter behavior (prompt, edible delivery, and toy delivery) during each trial. *Toy interaction* was defined as the participant's engagement with the toys by having at least one hand in contact with the item so that the item moved, or in the case of movies or books, having his or her eyes oriented toward the item. We scored toy interaction using partial-interval recording with 10-s intervals. Trained graduate and undergraduate observers collected data using a handheld device.

In addition, a second independent observer collected data for a minimum of 30% of the sessions across all conditions and participants. For participant choice, edible delivery, toy delivery, and experimenter behavior (prompt, edible delivery, and toy delivery), we calculated interobserver agreement on a trial-by-trial basis by comparing the two independent observers' scores on each trial. We summed the number

of trials with agreement, divided by the total number of trials, and converted the result to a percentage. We calculated interobserver agreement for toy interaction by summing the number of intervals with agreement, dividing by the total number of intervals, and converting the result to a percentage. Mean agreement across participants was 98% (range, 97% to 99%).

Procedure

We conducted all sessions using a concurrent-operants arrangement and used a combination of multielement and reversal designs for experimental control. First, we conducted a reinforcer-magnitude assessment to assess whether a participant's behavior was sensitive to the magnitude of reinforcement (i.e., the participant selected the large reinforcer when both the large reinforcer and small reinforcer were available immediately). Second, we conducted a delay assessment to determine whether a participant displayed impulsive behavior (i.e., the participant selected the small immediate reinforcer rather than the large delayed reinforcer given a 3-min delay for the large reinforcer). Third, we introduced toys of different quality levels (high, moderate, and low) to all choice options in an attempt to increase selection of the large delayed reinforcer. Fourth, if toys (available regardless of choice) did not increase selection of the large delayed reinforcer, we conducted a second condition during which toys of different quality levels were available solely for choice of the large delayed reinforcer to attempt to increase selection of the large delayed reinforcer (similar to Newquist et al., 2012).

During all sessions (five trials in each), the experimenter sat across the table from the participant. The experimenter presented three plates on the table in front of the participant at the beginning of each trial. The experimenter alternated the position of the plates (i.e., right, center, or left) during each trial so that no plate was in the same position for more than two trials in each session. One plate contained four preferred edible items (large reinforcer), a second plate contained one preferred edible item (small reinforcer), and a third plate was empty (no reinforcer [control]). Before the start of all sessions, the experimenter explained the rules for that specific session to the participant based on a script that varied depending on the specific condition (see below).

During all sessions, across all phases, we included an intertrial interval (ITI) to ensure that all trials had a consistent duration and that a participant would not complete a session earlier by choosing the small-reinforcer plate or the no-reinforcer plate (Dixon, Lik, Green, & Myerson, 2013). The ITI across all sessions was the delay plus 1 min for that session. The delay for choosing the large reinforcer was 3 min; therefore, when a participant chose the small- or no-reinforcer options, the ITI was 3 min (delay) plus 1 min before the start of a new trial. If the participant chose the large reinforcer, the delay was followed by an additional minute before the next trial began to allow time for the participant to consume the edible items. In addition, the experimenter engaged in conversation with the participant throughout the ITI and delays across all conditions and phases.

Reinforcer-magnitude assessment. During these sessions, the experimenter presented the three plates to the participant on each of the five trials. Before the first trial, the experimenter told the participant, "If you pick the plate with one piece, you will get the [food item] right away; if you pick the plate with four pieces, you will get the [food item] right away; if you pick the empty plate, you will not get any [food item]." There was no delay in place for any of the choice options (i.e., immediate access to all choice options). After the participant consumed the food, the experimenter presented the plates again. We conducted reinforcer-magnitude probes during the toys

(all choices) and toys (large delayed choices) phases when participants did not select the large delayed reinforcer on at least four trials across six consecutive sessions.

Delay assessment. During these sessions, the experimenter presented the three plates to the participant on each of the five trials. Before the first trial, the experimenter told the participant, "If you pick the plate with one piece, you will get the [food item] right away; if you pick the plate with four pieces, you will get the [food item] after you wait; if you pick the empty plate, you will not get any [food item]." If the participant chose the small-reinforcer plate or the no-reinforcer plate, the experimenter delivered immediate access to the corresponding plate and began the 4-min ITI. If the participant chose the plate with the large reinforcer, the experimenter implemented the 3-min delay. After the 3-min delay, the experimenter delivered the plate and began the 1-min ITI for consumption of the edible items.

Toys (all choices). During these sessions, the experimenter presented the three plates to the participant on each of the five trials. Behind each plate was an identical picture of the available toys (based on the condition; see below). The actual toys were placed next to the experimenter. Before the first trial, the experimenter told the participant, "If you pick the plate with one piece, you will get the [food item] right away and the toys; if you pick the plate with four pieces, you will get the toys right away, and you will get the [food item] after you wait; if you pick the empty plate, you will not get any [food item], but you will get the toys right away." If the participant chose the large-reinforcer plate, the experimenter delivered the toys (based on the condition) immediately, and after 3 min, the experimenter removed the toys and delivered the plate with the four edible items, followed by the 1-min ITI to allow their consumption. If the participant chose the small-reinforcer plate, the experimenter immediately delivered the plate with one item. After 1 min, the experimenter delivered the toys (based on the condition) and began the 3-min ITI during which the participant had access to the toys. If the participant chose the no-reinforcer plate, the experimenter immediately delivered the empty plate. After 1 min, the experimenter delivered the toys (based on the condition) and implemented the 3-min ITI.

High-preference toys. During this condition, the experimenter delivered the same two high-preference toys (i.e., items ranked first and second), based on the outcome of the preference assessment conducted before the study, when the participant selected the large-, small-, or no-reinforcer options.

Moderate-preference toys. During this condition, procedures were identical to the high-preference toys condition; however, the experimenter provided two moderate-preference toys (i.e., items ranked eighth and ninth) when the participant selected the large-, small-, or no-reinforcer options.

Low-preference toys. During this condition, procedures were identical to the high-preference and moderate-preference toys conditions; however, the experimenter provided two low-preference toys (i.e., items ranked 15th and 16th, or the two lowest ranked toys that were chosen at least once), when the participant selected the large-, small-, or no-reinforcer options.

Toys (large delayed choices). We conducted this evaluation if the delivery of toys (regardless of quality) did not increase self-control during the toys (all choices) condition. These sessions were identical to the toys (all choices) condition described above, with the exception that toys were only available contingent on selection of the large-reinforcer choice (similar to Newquist et al., 2012). If the participant chose the small-reinforcer or the no-reinforcer options, he or she did not receive access to the toys. We conducted this evaluation with three participants (Erin, Luke, and Matthew).

RESULTS

Figures 1 and 2 depict large-reinforcer choices (primary *y* axis) and toy interaction (secondary *y* axis) for large-reinforcer choices for all five participants. Only large-reinforcer choices are depicted in this and subsequent figures because the participants seldom selected the no-reinforcer choice. Therefore, when the participants did not choose the large-reinforcer option, they almost exclusively selected the small-reinforcer option. During the reinforcer-magnitude assessment, all participants displayed high levels of large-reinforcer choices. In addition, all participants displayed low levels of large-reinforcer choices during the initial delay assessment.

During the initial toys (all choices) phase, Clay and Emery (Figure 1) selected the large delayed option during the majority of trials across all sessions, regardless of toy quality. Throughout this phase, Clay interacted with the moderate-preference and high-preference toys at moderate to high levels; however, he interacted with the low-preference toys at lower levels. Emery interacted with all toys, regardless of quality, at relatively high and similar levels. After reversal to the delay assessment phase, both Clay and Emery displayed decreasing and

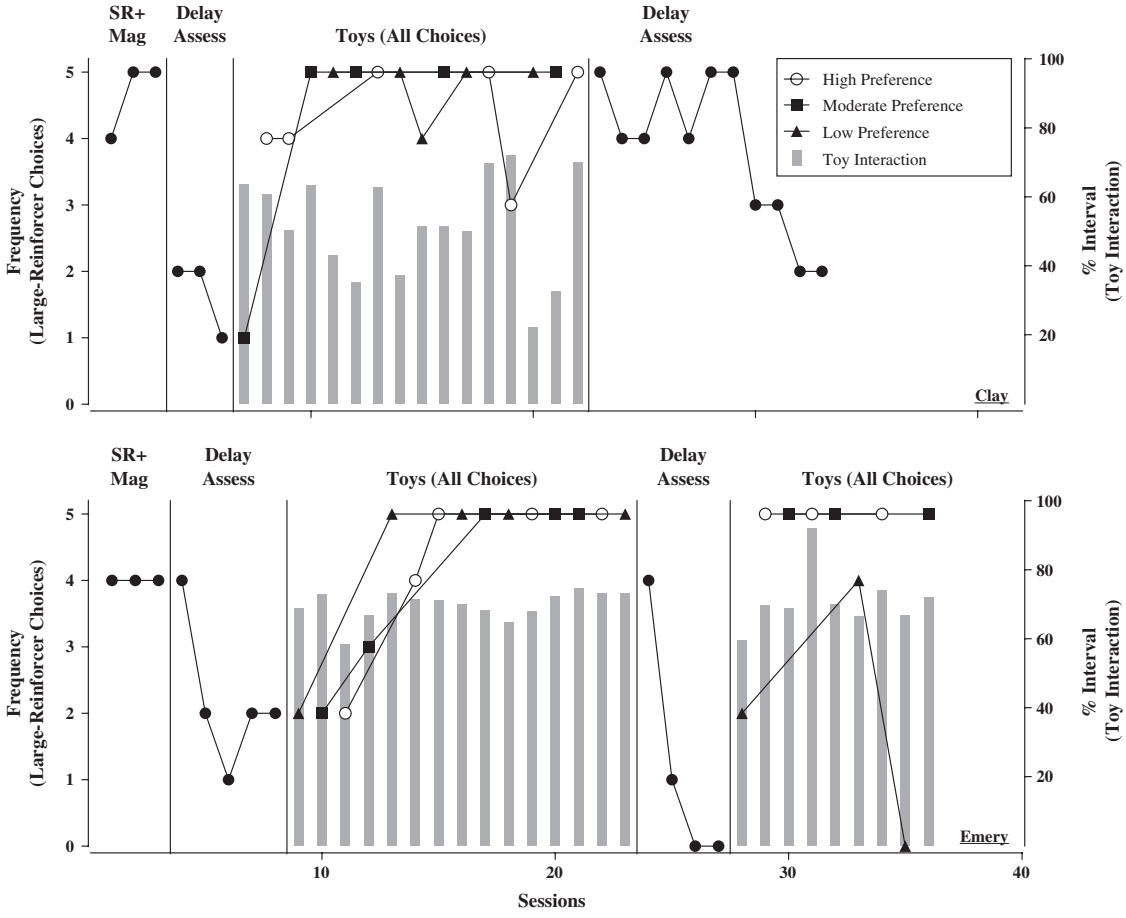

Figure 1. Clay's large-reinforcer choices (top) and Emery's large-reinforcer choices (bottom) across the reinforcer-magnitude assessment (SR+ Mag), delay assessment, and toys (all choices) procedures.

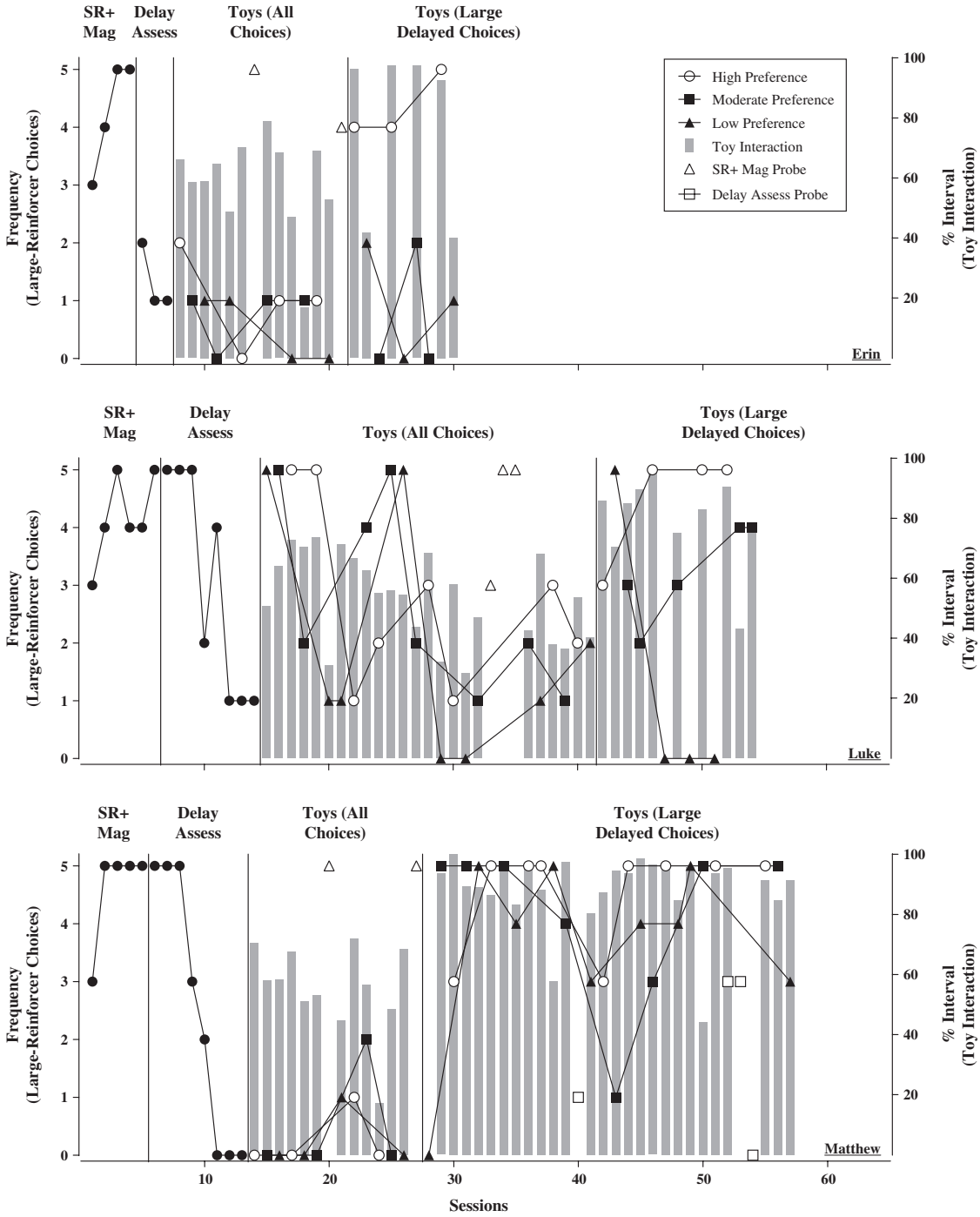

Figure 2. Erin's large-reinforcer choices (top), Luke's large-reinforcer choices (middle), and Matthew's large-reinforcer choices (bottom) across the reinforcer-magnitude assessment (SR+ Mag), delay assessment, toys (all choices) procedures, and toys (large delayed choices) procedures.

lower levels of large-reinforcer choices. During the second toys (all choices) phase, Emery selected the large delayed option on more trials during the sessions in which the moderate-preference and high-preference toys were available compared to sessions in which low-preference toys were available. Emery interacted with all toys, regardless of quality, at relatively high levels.

During the toys (all choices) phase, Erin, Luke, and Matthew (Figure 2) continued to display lower levels of large-reinforcer choices across all sessions, regardless of toy quality. During the reinforcer-magnitude probes, all participants selected the larger reinforcer on the majority of trials. Erin and Matthew interacted with all toys, regardless of toy quality, at moderate to high levels across the majority of sessions. Luke interacted with the moderate-preference and high-preference toys at moderate to high levels and the low-preference toys at low to moderate levels for the majority of trials. During the toys (large delayed choices) condition, Erin and Luke selected the large delayed option consistently more often during the sessions in which high-preference toys were available compared to sessions in which the low- and moderate-preference toys were available. During the toys (large delayed choices) condition, Matthew selected the large delayed option on the majority of trials across all sessions regardless of toy quality; however, access to high-preference toys increased self-control more consistently. During delay assessment probes, Matthew displayed low levels of large-reinforcer choices. During the toys (large delayed choices) phases, Erin interacted with the moderate- and high-preference toys at higher levels compared to the low-preference toys when she selected the large-reinforcer option. Luke interacted with the high-preference toys at consistently higher levels compared to the low- and moderate-preference toys when the large-reinforcer option was selected, whereas Matthew interacted with all the toys at relatively high levels, regardless of quality, when the large-reinforcer option was selected.

DISCUSSION

The purposes of the current study were (a) to compare the effects of toy quality on self-control responding when toys were provided during a delay and (b) to attempt to control for reinforcement-magnitude differences by providing access to toys during all choice options. When the experimenter provided toys across all three choice options, self-control increased for two of the five participants (Clay and Emery). For Clay, access to toys, regardless of quality, increased self-control. For Emery, access to all toys, regardless of quality, increased self-control during the initial phase; however, during the second phase, which followed a break and inclusion of different toys, only access to the high-preference and moderate-preference toys increased self-control. For three of five participants (Erin, Matthew, and Luke), self-control responses did not increase when toys were available for all choices. However, when toy delivery was restricted to the large delayed choice option (as in Newquist et al., 2012), self-control increased for two participants when either high-preference or moderate-preference toys were used (Luke) or only when high-preference toys were used (Erin). For Matthew, access to any toy regardless of quality increased self-control when arranged for the large delayed choice option.

There are several possible explanations as to why the toys (all choices) procedure increased self-control in two of the participants (Clay and Emery). First, providing toys during the delay may decrease the aversiveness of the delay. For example, previous researchers have noted that different behaviors have emerged during delays to reinforcement such as singing, talking, and playing with hands (e.g., Mischel & Ebbesen, 1970; Schweitzer & Sulzer-Azaroff, 1988). Other researchers have demonstrated that

programmed alternative activities and work requirements have also facilitated self-control (e.g., Dixon & Holcomb, 2000; Grosch & Neuringer, 1981). Thus, the toys provided in our study may have decreased the aversiveness of the delay by providing something for the children to do during the delay. Second, all toys (regardless of quality) may have increased self-control responding because they functioned as reinforcers. Previous research has demonstrated that low-preference, moderate-preference, and high-preference items can function as reinforcers when there is no alternative (e.g., Lee, Yu, Martin, & Martin, 2010; Roscoe, Iwata, & Kahng, 1999; Taravella, Lerman, Contrucci, & Roane, 2000), which is perhaps why access to the low- and moderate-preference toys increased self-control for both Clay and Emery (first set). In fact, the toy-interaction data suggest that both Clay and Emery interacted with the toys across all toy qualities at moderate to high levels when they were provided across the majority of sessions. Third, although attention, toys, and edible items were delivered across large and small choice options, increased self-control could have resulted as a preference for the combination of specific reinforcers. More edible items compounded with attention and toys may have resulted in a greater magnitude or quality of reinforcement for large-reinforcer choices (Newquist et al., 2012). Fourth, the participants may have responded to gain immediate access to the toys rather than immediate access to one edible item. In our toys (all choices) arrangement, large-reinforcer choices resulted in immediate access to the toys compared to small-reinforcer choices that resulted in immediate access to edible items followed by the toys a minute later, thus participants may have preferred immediate toy access rather than immediate access to one edible item. In other words, we may not have observed self-control responding during the toys (all choices) arrangement; the child may have simply preferred toys to edible items. This primary limitation of our procedure should be addressed in future research by establishing the relative value of edible items and toys before including the toys in delay intervals; this will be discussed further below.

As mentioned above, three participants did not increase self-control responses during the toys (all choices) procedure; however, when we restricted the toys to only the large delayed reinforcer choice, Matthew increased self-control responses across all toys, and two participants (Erin and Luke) increased self-control responses when the experimenter provided access to high-preference toys. First, these data suggest that to increase self-control responding in young children, adults may need to restrict access to toys in order to increase the efficacy of this intervention. Restriction of the toys could serve as an establishing operation that alters the value of the toys (e.g., Vollmer & Iwata, 1991) and moves responding toward the delay with the toys. Access to high-preference toys may have increased self-control during this study because these were the toys that were the most restricted throughout the day in the children's typical preschool classroom environment (e.g., iPad, toy ponies, Barbie, walkie talkies) and were rarely available outside the research sessions. The participants may have had more exposure to the moderate-preference and low-preference toys throughout the day because these items were more frequently available in the classroom (i.e., books, paper, and crayons), thus having an abative effect during research sessions. Second, the participants may have been responding to access the toys rather than the large reinforcer; however, if this were the case, they should have selected the large reinforcer more often in the toys (all choices) condition in order to gain access to the toys immediately. Third, the large-reinforcer option (toys, four edible items, and attention) may have resulted in a compound reinforcer that resulted in a greater magnitude of reinforcement when the large delayed reinforcer was

selected compared to the small immediate reinforcer (Newquist et al., 2012). Fourth, Matthew's pattern of responding across toys (all choices) and toys (large delayed choices) phases may suggest that the toys functioned as (a) discriminative stimuli that signaled the subsequent delivery of the large delayed reinforcer (e.g., Ferster, 1953; Fisher, Thompson, Hagopian, Bowman, & Krug, 2000; Lattal, 1984; Schaal & Branch, 1988; Vollmer, Borrero, Lalli, & Daniel, 1999) or (b) as conditioned reinforcers due to their pairing with the four edible items, becoming predictive of the delivery of the primary reinforcer and strengthening the large-reinforcer response (e.g., Mazur, 2006).

A primary limitation of the current study is that the participants may have been responding to immediate consequences (i.e., access to toys or the one edible item) rather than the delayed consequences (i.e., access to edible items) in choosing the large delayed option during the toys (all choices) and toys (large delayed choices) phases. Although we controlled for toys across all choices during toys (all choices) sessions, the toys were not available immediately across all options. All choice options during the toys (all choices) phases and the toys (large delayed choices) phases involved equally immediate access to a different but possibly more reinforcing event; thus, the stimulus that controlled behavior is unknown. There are two ways to control for this in future research. First, after the small immediate choice, the experimenter could deliver the toys and edible item immediately. This would equate the immediate delivery of toys across choice options during phases similar to toys (all choices). Second, if immediate toy access was not equated across choice options, the experimenter could conduct a preference assessment to determine whether the one edible item or toys are more preferred immediately. If toys are found to be more preferred, then responding may occur because it is reinforced by immediate toy access, whereas if the edible item is more preferred, responding may occur because it is reinforced by the immediate single edible item. If the participants select immediate toy play, then quality of the toys would be responsible for the increase in self-control.

A second limitation of the current study is that the experimenter interacted with the participants throughout the delay. Although the interaction was equated throughout each phase (i.e., the experimenter delivered attention continuously throughout all phases and choice options), the role that attention played in the current study is unclear. Experimenter attention could have produced variability in responding because the toys and food were less potent reinforcers. Thus, experimenter attention may have increased self-control responding for children who preferred social reinforcers to food; however, experimenter attention was ineffective for increasing self-control when it was delivered independent of the toys during the delay assessment. The delivery of attention alone may not be effective for bridging the delay to reinforcement; however, when it is combined with the delivery of toys or other activities with which to engage, the combination may be effective. Future researchers should evaluate how experimenter attention may combine with the availability of toys to enhance self-control.

A third limitation of the current study was that preference assessments were conducted with single toys rather than pairs of toys. Throughout the study, the experimenter presented toys in pairs rather than individually; therefore, there is no information on relative preference for the toys in combination with one another. Thus, a toy that was presented during the toys (all choices) phase may have been high- or low-preference based on the toy's pairing during the study. For example, Emery's low-preference toys were string beads and a book. Data collectors noted that Emery created games to play with the string beads and rarely

interacted with the book, which may have increased the quality of the string beads relative to the book; however, this hypothesis cannot be confirmed because toy-interaction data were collected on the pair of toys rather than on individual toys. Relative preference of the toys in pairs rather than individually could be evaluated in future research to determine whether the combination of items increases or decreases the relative preference of an item due to its pairing with another item.

Future researchers should continue to evaluate procedures for increasing self-control responding in children and the mechanisms by which they are effective. First, in the current study, toys, edible items, and attention combined to make a compound stimulus. Future researchers should attempt to determine the element of the compound stimulus that controlled choice behavior by evaluating each variable in isolation or in combination. Future researchers should consider removing food, attention, or toys on certain trials and altering these stimuli along a preference dimension, which would allow better evaluation of the effects of the different stimuli on self-control. For example, toys could be removed while the experimenter delivers attention. The addition and removal of different stimuli would provide insight into the stimuli that are necessary and sufficient for increasing self-control in young children. Second, future researchers could examine whether the toys functioned as conditioned reinforcers. For example, pairing the toys with the four edible items may have strengthened the large-reinforcer response for Matthew. To determine whether toys (large delayed choices) strengthened the large-reinforcer response, future researchers could implement the toys (all choices) procedures to determine whether there is an increase in large-reinforcer responses following a history of pairing during the toys (large delayed choices) phase. If the toys functioned as conditioned reinforcers, the participant should continue to select the large delayed reinforcer when the toys are available for all choices. This manipulation may help identify the mechanism by which large delayed choices increase. This manipulation could also be conducted with neutral toys and stimuli. Finally, the extent to which an understanding of the variables that influence self-control and impulsivity can inform interventions for impulsive behavior observed in socially relevant situations remains unknown and should be explored.

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Received March 6, 2015
Final acceptance December 11, 2015
Action Editor, Gregory Hanley