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# Research in Autism Spectrum Disorders

Journal homepage: <http://ees.elsevier.com/RASD/default.asp>

## The effects of item preference and token reinforcement on sharing behavior exhibited by children with autism spectrum disorder<sup>☆</sup>

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### ARTICLE INFO

#### Article history:

Received 2 July 2014

Received in revised form 7 July 2014

Accepted 11 July 2014

#### Keywords:

Social skills

Autism spectrum disorder

Children

Token economy

Item preference

Sharing

### ABSTRACT

The current studies evaluated variables affecting sharing exhibited by children with autism spectrum disorder. Study 1 evaluated the effects of manipulating item preference on the level of assistance needed to exhibit sharing behavior for 4 children with autism. Item preference clearly affected 2 participants' percentage of independent sharing. Preference did not have as clear of an effect for a third participant. However, sharing a high-preference item generally required a higher level of prompting (e.g., vocal prompts) to share. The fourth participant's percentage of independent sharing was not influenced by preference, and his independent sharing behavior was similar across item preference. Study 2 assessed the effectiveness of a token reinforcement procedure as an intervention designed to increase independent sharing of high-preference items for the two participants who did not independently share those items during Study 1. Independent sharing increased for both participants when the token procedure was in place and decreased when it was removed.

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Children diagnosed with autism spectrum disorder (ASD) experience qualitative impairments in communication and social interaction ([American Psychiatric Association, 2013](#)). These persistent deficits make everyday interactions between individuals with ASD and their peers and care givers challenging. One essential skill for young children to learn to develop relationships with peers and to participate in appropriate social interactions is sharing. Sharing, or responding to requests to share, is a social skill that children with ASD struggle to master ([Baron-Cohen, Leslie, & Frith, 1985](#); [Eisenberg & Fabes, 1998](#); [Marzullo-Kerth, Reeve, Reeve, & Townsend, 2011](#); [Rheingold & Hay, 1980](#); [Rutter, 1978](#); [Volkmar, Carter, Sparrow, & Cicchetti, 1993](#); [Wing, 1988](#)). However, according to [Bryant and Budd \(1984\)](#), successful mastery of this social skill might result in more chances for positive social interactions with peers. In fact, some consider sharing to be a fundamental part of interactive play between peers ([Bryant & Budd, 1984](#); [DeQuinzio, Townsend, & Poulson, 2008](#)).

Several studies have focused on increasing sharing repertoires in typically developing children and children with ASD. For example, [Barton and Ascione \(1979\)](#) increased the sharing behavior exhibited by typically developing preschool children by implementing a treatment package that included instructions, modeling, behavior rehearsal, prompting, and social reinforcement. [Bryant and Budd \(1984\)](#) extended the findings of [Barton and Ascione \(1979\)](#) by using the same training package to increase sharing behaviors and decrease nonsharing behaviors exhibited by participants described as preschool

<sup>☆</sup> This research was conducted in partial fulfillment of the first author's Master's degree in Behavior Analysis and Therapy.

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children with behavioral handicaps. The introduction of the training package resulted in an increase in sharing behaviors and suggested decreases in nonsharing behaviors for five out of six children.

Sawyer, Luiselli, Ricciardi, & Gower (2005) implemented an intervention package that included a priming procedure before play sessions, prompting, and contingent social reinforcement to increase sharing exhibited by a child with ASD. The package consisted of the instructor explaining the importance of sharing to the participant, the instructor and a peer of the participant modeling appropriate sharing behaviors, the participant rehearsing sharing behaviors with the instructor and the peer, and the participant receiving feedback from the instructor with prompting and contingent praise throughout the rehearsals. The participant's sharing behaviors increased from baseline levels when the entire treatment package was implemented. When the priming procedure was removed during a second treatment phase, the participant's sharing decreased, suggesting that the priming procedure was necessary to increase sharing exhibited by the participant.

DeQuinzio et al. (2008) demonstrated the utility of a forward chaining procedure to increase sharing behavior exhibited by four children with ASD. The sharing behavior chain consisted of a sequence of show–give–play responses. This sharing response chain was taught across multiple toys using auditory prompting from voice-recorders, manual guidance, and contingent access to toy play and teacher interaction during intervention sessions. Sharing behavior increased in the presence of peers and generalized to novel toys in a new setting.

Marzullo-Kerth et al. (2011) extended the findings of DeQuinzio et al. (2008) by training offers to share exhibited by four children with ASD across several multiple-exemplar classes (e.g., art materials, toys, gym materials, and snack foods). The intervention included an error-correction procedure that consisted of a video model, auditory and physical prompts, and contingent token reinforcement for correct offers to share. All four children increased their offers to share during intervention, and offers to share generalized to novel stimuli, a new setting, and the presence of new peers and adults. One participant showed generalization of sharing across categories, and all participants displayed generalization of sharing within categories.

While treatment packages have been identified that can successfully increase sharing behavior, less research has been conducted related to the conditions under which independent sharing occurs, particularly for children with ASD. Some children may not have sharing behavior in their behavioral repertoire at all. Other children may exhibit sharing behavior, albeit in an inconsistent manner. For this first group of children, teaching sharing behavior using the aforementioned treatment packages may be effective. For this second group of children, intervention may be able to be more streamlined and consist simply of reinforcement for exhibiting the desired behavior under conditions not typically associated with sharing. One likely variable that may affect sharing behavior is the preference of the stimulus to be shared. Removal of preferred stimuli has been demonstrated to be evocative of problem behavior exhibited by some individuals with developmental disabilities (Kang et al., 2010, 2011). Thus, it makes some intuitive sense that independently giving up access to high-preference stimuli (i.e., sharing) may be difficult.

Thus, the purpose of Study 1 in the current investigation was to evaluate the effect of stimulus preference on the level of assistance or prompting (independent, gestural, verbal, or physical) needed to respond to a peer's request and share items. The hypothesis of Study 1 was that the participants would require a higher level of prompting or assistance to respond to a peer's request to share a high-preference item compared to the level of prompting or assistance needed to respond to a request to share a low-preferred item. Study 2 was designed to evaluate the effectiveness of a token economy-based intervention to increase independent sharing if assistance or prompting was needed to successfully share during Study 1.

## 1. Methods: study 1

### 1.1. Participants

Four children with ASD participated in Study 1. Each participant attended a local autism service provider where they attended biweekly therapy sessions. A clinic therapist referred each participant for possible inclusion in the study because each inconsistently exhibited sharing behavior during peer interactions that occurred in the course of their therapy sessions. Each participant communicated using vocal statements (ranging from one word to full sentences) and each participant had prior experience with token reinforcement programs.

Jack was 4 years old at the time of the study. He typically communicated using full sentences, (e.g., "Finn is playing with a balloon"). His sentences were mostly descriptive and referred to the people and activities in his present surroundings. His requesting behavior also consisted of full sentences such as, "I want (name of item), please." Finn was 5 years old at the time of the study. Finn's communication, including requesting behavior, could include full sentences (e.g., "Jack, can I have the (name of item), please?"). Susie was 3 years old at the time of the study. She communicated using one or two-word utterances (e.g., "hi," "want ball") and pointing. Roger was 6 years old at the time of the study. His communication and requesting behavior included full sentences (e.g., "(Peer's name), can I have the markers, please?").

### 1.2. Setting and materials

#### 1.2.1. Preference assessment

Paired choice preference assessments (Fisher et al., 1992) were conducted in a small therapy room (2 m × 3 m) meant for individual sessions. There was one child-size table and three child-size chairs the therapy room. Other materials present

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