



## Play skills taught via behavioral intervention generalize, maintain, and persist in the absence of socially mediated reinforcement in children with autism



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### ABSTRACT

We measured generalization, maintenance and parent reports of child happiness in the context of a behavioral intervention to teach toy-play skills to three young children with autism. Lag schedules of reinforcement were implemented for two participants whose play did not initially generalize. The play skills intervention was conducted within the participants' early childhood classroom and the utility of teaching play as a means to reduce stereotypy within this setting was also evaluated. A multiple baseline design across participants demonstrated that play taught via behavioral intervention may be maintained after programmed reinforcement is discontinued, generalize across settings and toys (i.e., response and stimulus generalization), and occasion a decrease in stereotypy. Further, the occurrence of play in the absence of socially mediated reinforcement suggested that play taught via behavioral interventions may come to be automatically reinforced. Finally, parent responses on rating scales suggested that two of the participants were happier, in a better mood, and were more interested in appropriate toy-play following behavioral intervention.

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## 1. Introduction

Play is widely acknowledged to be an important mechanism for children's intellectual, social, physical, and emotional development (e.g., Lifter, Foster-Sanda, Arzmariski, Briesch, & McClure, 2011; Piaget, 1962). Unfortunately, children with autism often do not develop play in the same way as typically developing children (Lifter, Ellis, Cannon, & Anderson, 2005). For example, in the early stages of play development, most children begin to manipulate various objects in multiple ways; however, children with autism often manipulate only a few objects in a limited number of ways (van Berckelaer-Onnes, 2003; Bruckner & Yoder, 2007; Tilton & Ottinger, 1964). Children with autism engage in significantly fewer appropriate play

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behaviors and more stereotypic behaviors than other children of equivalent chronological and/or mental age (American Psychiatric Association, 2013; Lang, Regester, Rispoli, Pimentel, & Camargo, 2010; Wing Gould, Yeates, & Brierley, 1977). In the absence of intervention, play deficits often persist and, it is not uncommon for adults with autism to lack the skills required to engage in recreational and leisure activities (Billstedt, Gillberg, & Gillberg, 2011; Palmen, Didden, & Korzilius, 2011). Meaningful leisure activities offer relief from boredom and provide a context for social engagement. More importantly, such activities may contribute to a person's ability to successfully cope with and recover from stressful life events (Kleiber, Hutchinson, & Williams, 2002).

Hine and Wolery (2006) offer several additional reasons why teaching play to young children with autism is a valuable treatment goal. First, children that do not learn to play may miss opportunities for social interactions and that loss may negatively influence the development of social skills (Barton & Wolery, 2008; Licciardello, Harchik, & Luiselli, 2008; Pierce-Jordan & Lifter, 2005). Second, increasing the quality and frequency of appropriate play has been shown to decrease stereotypy and other problem behaviors in some children with autism and may be an effective approach to the prevention or treatment of these behaviors (e.g., Koegel, Firestone, Kramme, & Dunlap, 1974; Lang, O'Reilly, et al., 2010). Third, teaching play reduces the observable differences between children with autism and typically developing children. A reduction in the apparent differences may increase the likelihood that the children with autism will be considered for inclusion in activities with typically developing children (Hine & Wolery, 2006). Finally, adults and other children may be more likely to comment on or join in the play of the child with autism if the child is engaged in behaviors that are recognized as play. For example, peers and teachers may be hesitant to comment or interact with a child that is mouthing a toy cow, but may interact if the child is moving the cow around a toy barn. This type of increased exposure to language has been shown to be associated with the acquisition of speech (e.g., McDuffie & Yoder, 2010; Venker, McDuffie, Ellis Weismer, & Abbeduto, 2012; Yoder, McCathren, Warren, & Watson, 2001). Ultimately, play provides a context for addressing many of the core deficits associated with autism and, play skills instruction can be implemented proactively during early childhood (Lifter, Foster-Sanda, et al., 2011; Lifter, Mason, & Barton, 2011; Ninci et al., 2013).

There are two distinct perspectives regarding the nature and development of play that can be generally characterized as the behavioral perspective and the constructivist perspective (Lifter, Foster-Sanda, et al., 2011a). Although these perspectives are not necessarily mutually exclusive, researchers operating from these different paradigms have traditionally focused their research agendas in different directions (Lifter, Foster-Sanda, et al., 2011). Specifically, the majority of research conducted from the constructivist perspective involves the cognitive and neurodevelopmental underpinnings of play (Lifter, Foster-Sanda, et al., 2011; Rutherford & Rogers, 2003). By contrast, behavioral play research is more likely to focus on interventions designed to make play skills appear more similar to that of typically developing children (Barton & Wolery, 2008; Lang, Machalicek, et al., 2009; Lang et al., 2011; Lifter, Foster-Sanda, et al., 2011).

Previous play research from the behavioral paradigm has demonstrated that improving the frequency, quality, and/or diversity of play may reduce stereotypic behavior (Koegel et al., 1974; Lang, O'Reilly, et al., 2009; Lang, O'Reilly, et al., 2010; Lang, Regester, et al., 2010), improve language (Kasari, Paparella, Freeman, & Jahromi, 2008), and facilitate the acquisition of social skills and competence (Manning & Wainwright, 2010) in children with autism. Despite the reported success of previous behavioral play intervention research, Applied Behavior Analysis-based (ABA) play interventions are often considered lacking for several reasons. Specifically, it has been hypothesized that behavioral interventions do not teach children to engage in genuine play, but instead to engage in behaviors that merely resemble play. Jobling (1988) examined the characteristics of play within the context of early intervention programs and argued that the inherent fun and enjoyment of authentic play is being overlooked within such programs. Similarly, Luckett, Bundy, and Roberts (2007) assert that play skills acquired via ABA interventions fail to meet commonly accepted definitions of genuine play. Specifically, play should be intrinsically motivated (i.e., automatically reinforced), flexible in form, generalize across contexts, and bring joy to the individual playing. However, behavioral interventions designed to improve play are often said to rely on extrinsic (i.e., socially mediated) reinforcers, lack generalization and maintenance measures, and depend on highly structured and contrived contexts and intervention components. Further, the happiness of the child engaging in play is not often measured and should not be assumed (Jobling, 1988; Luckett et al., 2007).

This study is designed to address the above criticisms of behavioral play intervention in several ways. First, generalization of play behaviors taught via behavioral intervention was assessed across toys and settings (i.e., response and stimulus generalization). Second, play behavior was assessed in the absence of discriminative stimuli associated with the delivery of socially mediated reinforcement. Third, happiness, mood, and interest in playing were assessed by the participating children's mothers before and after intervention. Finally, the maintenance of play behavior was assessed after the systematic play intervention had been withdrawn for up to four months. In addition to addressing concerns regarding behavioral play interventions, this study sought to replicate and extend previous research by demonstrating a reduction in stereotypy following the acquisition of play skills (e.g., Koegel et al., 1974; Lang, O'Reilly, et al., 2010) in an early childhood educational setting.

## 2. Method

### 2.1. Participants

Three children with autism attending a school for young children with developmental disabilities participated in this study. These participants were selected according to the following predetermined criteria: (a) a chronological age between 2

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