Comparison of high and low preferred topographies of contingent attention during discrete trial training

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ABSTRACT

We used the paired-stimulus (PS) and multiple-stimulus without replacement (MSWO) preference assessment procedures to identify high and low preferred topographies of attention for two children with autism spectrum disorders (ASD). Both preference assessment formats identified the same high and low preferred forms of attention. A reinforcer assessment implemented during discrete trial training demonstrated increased correct responding and reduced challenging behavior when the high preferred form of attention was the contingent reinforcer for both participants. These results replicate previous research demonstrating that children with ASD may have preferences for specific forms of social interaction and that highly preferred forms of attention may function as more potent reinforcers than less preferred forms. This study extends previous research by demonstrating correspondence between the MSWO and PS formats when applied to attention. Implications for practitioners and directions for future research are discussed.

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1. Introduction

Effective interventions for people with autism spectrum disorder (ASD) often rely on carefully selected reinforcers (e.g., Peters-Scheffer, Didden, Korzilius, & Sturmey, 2011; Vismara & Rogers, 2010). A variety of systematic preference assessments have been developed to identify potentially reinforcing tangibles for use within educational programs for children with ASD (Lohrmann-O'Rourke & Browder, 1998). The paired-stimulus (PS) and multiple-stimulus without replacement (MSWO) arrangements appear to have the best predictive validity (i.e., ability to predict what tangibles will

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function as reinforcers) and are among the most commonly used approaches in research (Kang et al., 2013). The PS and MSWO are more accurate than caregiver-completed rating scales (e.g., Verschuur et al., 2011) and allow a rank ordering from most preferred to least preferred stimuli (Kang et al., 2013). In addition to the body of research demonstrating predictive validity and clinical utility, choice-based preference assessments, such as the PS and MSWO, are often conceptualized as a way to empower people with ASD to make decisions regarding their own treatment and use of leisure time (e.g., Cannella, O'Reilly, & Lancioni, 2005; Tullis et al., 2011).

Social skills deficits, although a defining feature of ASD, do not preclude attention from functioning as a reinforcer for people with ASD (Lang, Regester, Rispoli, & Camargo, 2010; Thompson & Iwata, 2001). Reinforcement contingencies involving contingent attention as a consequence for responding are common in educational settings (e.g., McKerchar & Thompson, 2004). Attention can be delivered in a variety forms (e.g., hugs, praise, and high fives). It is possible that these different topographies of attention might have varying effects on behavior ranging from punishing to reinforcing (Kodak, Northup, & Kelly, 2007; Kozlowski, Wood, Gilligan, & Luiselli, 2009; Vollmer & Hackenberg, 2001). In the same way that not all tangibles are equally reinforcing, it is possible that not all topographies of attention are reinforcing and thus there could be value in using systematic preference assessment procedures to rank order a person's preference for different types or topographies of attention.

The majority of studies involving PS and MSWO preference assessments have focused on identifying preferred tangibles, such as specific foods and toys (Kang et al., 2013). However, there exists an emerging body of research investigating modifications to these preference assessments to enable the identification and rank ordering of preferred topographies of attention. Because topographies of attention cannot be placed in an array in front of the child, pictures representing different forms of attention have been used. For example, Nuernberger, Smith, Czapar, and Klatt (2012) took pictures of three child-therapist dyads engaged in multiple social interactions (e.g., tickles, swinging in arms, chase) and then used those pictures to offer children choices within a MSWO arrangement. The resulting high and low preferred forms of attention were then evaluated for their reinforcing effects in an assessment in which attention was given as a consequence for engaging in previously mastered tasks (e.g., sorting items). Results of that reinforcement assessment confirmed the accuracy of the proceeding preference assessment by demonstrating increased correct responding under the high preferred contingency.

Similarly, Kelly, Roscoe, Hanley, and Schlichenmeyer (2014) photographed five therapist-child dyads engaging in seven forms of attention and then used those pictures to compare the results of a PS and single-stimulus preference assessment for each dyad. A reinforcer assessment that involved mand training was then used to evaluate the reinforcing effects of the high and low preferred forms of attention. Results indicated that the PS arrangement produced the most consistent results, and the high preferred form of attention was a more effective reinforcer than the low preferred form for all five children.

The overall findings from previous studies suggest that some children with ASD might have preferences for specific topographies of attention and that high preferred topographies of attention are more effective reinforcers than low preferred. However, the studies to date are few and have involved a small number of participants. Thus there would seem to be some value in systematic replication. Additionally, the clinical importance of using high preferred forms of attention over low preferred forms of attention has only been evaluated in the context of mand training and with previously mastered tasks, suggesting the need to investigate this procedure in the context of other behavioral interventions. Moreover, the relative influence of high and low preferred contingencies on correct responding and challenging behavior, to the best of our knowledge, has not been compared within the same study. Finally, the results of a MSWO and PS involving topographies of attention have not yet been compared. Although the PS is often associated with higher certainty, the MSWO appears to be more efficient and, if results correspond across formats, the MSWO may be preferred in clinical situations when time is limited.

This study aims to replicate and extend previous research in a number of ways. Specifically, in this study we (a) compare the results of PS with MSWO preference assessment in terms of the identified high and low preferred attention topographies; (b) compare rates of attention maintained challenging behavior and correct responses during discrete trial training (DTT) sessions in which the high preferred or low preferred topography of attention is contingent on correct responses; and (c) investigate the potential utility of using text-based representations of attention topographies which are more easily created (relative to pictorial representations) for one participant with the requisite reading ability.

2. Method

2.1. Participants and setting

Two children with autism participated. Nolan, a 5-year old boy, scored a 30.5 on the Childhood Autism Rating Scale (CARS; Schopler, Reichler, DeVellis, & Daly, 1980) indicating mild-moderate autistic symptoms. Nolan communicated in two to three word utterances and, school records reported a moderate intellectual disability. Nolan's challenging behaviors included loud screaming and diurnal bruxism (i.e., audible teeth grinding). A functional analysis of bruxism was conducted prior to this study and identified attention as the maintaining consequence (see Lang et al., 2013 for functional analysis results). As part of this current study, the Questions About Behavioral Function rating scale (QABF; Matson & Vollmer, 1995) was administered to his teacher and results indicated an attention function for screaming. Nolan regularly received DTT from a university-based autism clinic. Sessions were conducted in the context of that ongoing DTT program.