
Behavioral Treatment of Stereotypic Behavior in Children with Autism

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Introduction

Stereotypy – or stereotypic behavior – is one of the core diagnostic criteria for pervasive developmental disorders, including autism, Asperger’s syndrome, childhood disintegrative disorder, and pervasive developmental disorder not otherwise specified (PDD-NOS) (World Health Organization [ICD-10] 1993). It is defined as engagement in repetitive, restricted, persistent behaviors with no apparent function (e.g., Epstein et al. 1985). Although many accounts infer a self-stimulatory, perceptual reinforcement function (e.g., Berkson and Davenport 1962), more recent conceptualizations challenge this notion (Roantree and Kennedy 2006). Other terms such as *compulsive*, *ritualistic*, and *perseverative behavior* have also been used to describe stereotypy (e.g., Bodfish et al. 2000).

Stereotypy may be classified into one of two categories, depending on whether other disorders are also present. Primary stereotypies serve some physiological function (e.g., sensory self-stimulation under conditions of relative deprivation of external stimulation) and occur independent of other diagnoses or disorders (Singer 2009). Secondary stereotypies are displayed by individuals with an accompanying disorder, such as an autism spectrum disorder or an intellectual disability, and are thought to be behavioral markers of these disorders (Singer 2009). With respect to the latter category, research has shown that the intensity and duration of stereotypic behavior is positively correlated with the severity of the accompanying disorder, with more lower-functioning children showing a higher

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prevalence and variety of stereotypes than those with a higher-functioning disability (e.g., Goldman et al. 2008). Topographies of stereotyped behavior vary widely but have been broadly categorized into three groups including body or hand movements, object manipulation, and vocalization (DiGennaro Reed et al. 2012; MacDonald et al. 2007). In the first category, stereotypy may involve repetitive movements of body parts or hands inappropriate to the context and seem to serve no apparent adaptive function (e.g., rocking of the entire body, tensing of muscles, and waving or flapping of hands). Stereotypy might also take the form of inappropriate or non-contextual manipulation of objects such as placing objects in a line, spinning or banging objects together, or licking or mouthing nonedible items. Finally, vocal stereotypy includes repetitive or non-contextual vocalizations such as non-contextual laughing or giggling, nonsense sounds or words, or repetition of words or phrases heard previously (i.e., echolalia).

Although stereotypy occurs in all age groups (LeMonda et al. 2012), individuals with autism engage in more forms of stereotypy than individuals with other developmental disabilities (Bodfish et al. 2000) or typically developing peers (MacDonald et al. 2007). Kim and Lord (2010) assessed children with autism ages 8–56 months using the Autism Diagnostic Observation Schedule (Lord et al. 2000) and reported that participants were 13 times more likely to display repetitive behavior, including motor stereotypy, than individuals diagnosed with other disorders. Esbensen et al. (2009) examined age-related differences and the prevalence of repetitive behavior (e.g., motor stereotypy and self-injurious behavior) and found that older individuals diagnosed with autism engaged in less repetitive behavior than younger individuals diagnosed with autism. This difference in the prevalence of stereotypy related to age was less prominent in more impaired individuals. That is, the prevalence of stereotypy is more similar in adults and children with autism with lower functioning levels than the prevalence of stereotypy in higher-functioning adults and children with autism.

Individuals who engage in stereotypy are at risk for a number of negative outcomes including stigmatization (Loftin et al. 2008; Singer 2009; Watson and Skinner 2004), reduced opportunities for peer interaction (Durand and Carr 1987) and socialization (Lovaas et al. 1973; Koegel et al. 1974), decreased benefits of instruction (Koegel and Covert 1972), lower performance accuracy on academic tasks (Morrison and Rosales-Ruiz 1997), and a negative impact on inclusion and community involvement (Cunningham and Schreibman 2008). The importance of effective stereotypy treatment cannot be overestimated given the potential for these adverse, counter-therapeutic effects.

Range of Existing Treatments

Several treatment approaches to stereotypy have been examined in the literature. Pharmacotherapy has shown promise, but the evidence for the effectiveness of medications is mixed (Muthugovindan and Singer 2009). A few studies have provided evidence for the efficacy of risperidone and sertraline in reducing motor

stereotypy (e.g., McDougle et al. 2005; McDougle et al. 1998). However, evidence has also been presented to the contrary (e.g., Miguel et al. 2009). Vigorous exercise has also been shown to reduce the occurrence of stereotypy. Treatment typically involves exposing individuals to periods of increased physical activity such as jogging, biking, or weight training prior to activities during which stereotypy typically occurs. Although several studies have suggested that exercise is effective in reducing the occurrence of stereotypy, a recent review of the literature suggests that the evidence is still limited (see Lang et al. 2010a, b). It is possible that the effect is simply the result of fatigue following exercise, but several studies have shown an increase in appropriate responding following exercise, which does not support this hypothesis (e.g., Rosenthal-Malek and Mitchell 1997).

The most substantial segment of the stereotypy treatment literature is devoted to behavioral treatments, which typically adopt a functional definition of stereotypy. This approach emphasizes the role of environmental variables on stereotypy occurrence, rather than attributing causes internal to the individual. The environmental variables that influence and maintain stereotypy are identified through a functional behavior assessment (FBA). The goal of FBA is to inform intervention procedures by identifying the conditions under which problem behavior occurs (antecedents) as well as the reinforcer (consequences) obtained for emitting the behavior; that is, the goal is to determine the function or purpose of behavior. Studies have documented that the effectiveness of behavioral treatment improves substantially when it is based on the results of FBA (Carr et al. 1999; Ellingson et al. 2000). As a result, the remainder of the chapter will briefly describe FBA and summarize the behavioral treatment literature addressing stereotypy.

Functional Behavior Assessment

Not only can stereotypy take many forms and look different across individuals, its purpose varies from individual to individual. Therefore, clinicians should not assume that similar forms of stereotypy serve identical functions or achieve the same consequences (Cunningham and Schreibman 2008). Use of slang to refer to stereotypy (e.g., “self-stimulatory behavior,” “stimming”) infers that behavior is maintained by automatic reinforcement (Wilke et al. 2012), which may not be an accurate assumption. Stereotypy should not be considered self-stimulatory in nature unless the behavior and the reinforcer are the same (Cunningham and Schreibman 2008); that is, the stimulation produced by the behavior is the consequence that maintains the stereotypy. Similar forms of stereotypy can serve very different purposes within and across individuals.

Before designing treatment, best practices dictate that efforts be directed toward identifying the reinforcer maintaining stereotypy (i.e., its purpose or function) through FBA. FBA is a multistep process that involves a continuum of assessment techniques (Knoster 2000) including indirect assessments (e.g., rating scales or informant reports; e.g., Durand and Crimmins 1988), direct assessment (i.e., observing children and recording the environmental events

taking place before and after behavior occurs; e.g., Bijou et al. 1968; English and Anderson 2006), and functional analysis (i.e., arranging a “mini experiment” to expose children to the reinforcer believed to be operating in the natural environment; Iwata et al. 1982/1994; Martens et al. 1999). Although some FBA procedures are superior to others – for example, functional analysis is considered the “hallmark of behavioral assessment” (Hanley et al. 2003) – all are designed to assess the conditions under which children engage in problem behavior and the consequences obtained for doing so. Once these conditions and consequences are identified, behavioral treatments can be designed to eliminate, reverse, or weaken the contingencies that maintain problem behavior (Martens et al. 1999). For example, Taylor and colleagues (2005) assessed the function of vocal stereotypy of a young girl with autism during a functional analysis containing five conditions: (a) escape, (b) attention, (c) tangible, (d) alone, and (d) control. During the escape condition, task demands were presented to the participant and removed upon occurrence of vocal stereotypy in order to assess whether escape from work demands functioned as a reinforcer for stereotypy. The attention condition assessed whether stereotypy was emitted in order to gain access to teacher attention; thus, teacher attention consisting of a request to play quietly was provided when stereotypy occurred. Demands were not provided during the attention condition and the participant had free access to preferred toys. During the tangible condition, access to toys was made available; however, highly preferred toys were only presented contingent on the occurrence of vocal stereotypy. The alone condition assessed whether vocal stereotypy occurred in the absence of any social contingencies, which suggests that automatic reinforcement maintains stereotypy occurrence. In this condition, the participant was in a classroom setting without an adult present or access to preferred toys (monitoring took place through a one-way observational mirror). The control condition consisted of access to toys and attention and demands were not presented. The purpose of the control condition was to eliminate the socially mediated motivation to engage in stereotypy (i.e., teacher attention, access to preferred activities, presentation of demands) and assess whether stereotypy would persist. Stereotypy that takes place during the control condition suggests an automatic reinforcement function. Taylor et al. (2005) showed that vocal stereotypy occurred across all conditions, including the control condition, regardless of the particular consequences provided. These findings indicated that vocal stereotypy was maintained by automatic reinforcement, which was used to develop an effective treatment procedure that addressed the sensory consequences of stereotypy. In another study, Piazza et al. (2000) conducted a functional analysis with an 8-year-old boy who engaged in stereotypic saliva play, a potentially stigmatizing behavior. The result of the functional analysis is depicted in Fig. 1. The authors assessed the occurrence of saliva play under several conditions including access to attention, escape from a demand, access to a desired tangible item, during toy play, and when alone. Their findings suggest that saliva play was not maintained by social consequences, but was maintained by automatic reinforcement (sensory consequences). These assessment data were used to

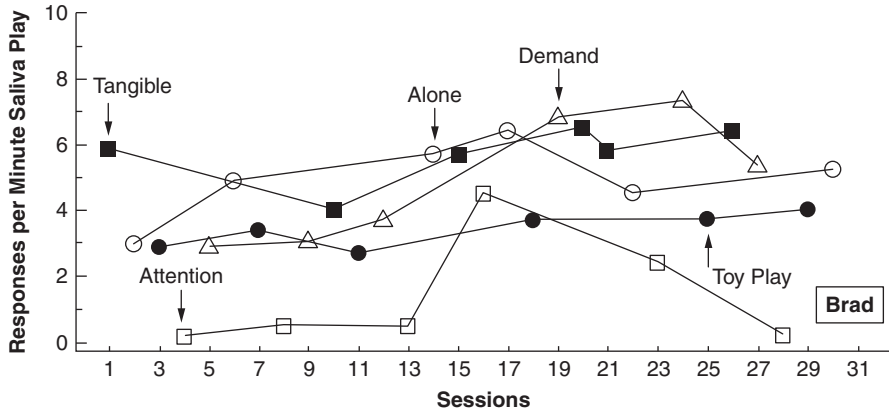


Fig. 1 Functional analysis data for stereotypic saliva play. Results of Brad's functional analysis indicate that stereotypic saliva play occurred across all functional analysis conditions (access to attention, escape from a demand, access to a desired tangible item, during toy play, and when alone). These findings suggest that saliva play was not maintained by social consequences, but was maintained by automatic reinforcement (sensory consequences) (Data are from Piazza et al. (2000), with permission from the corresponding author and the publisher)

develop a function-based treatment consisting of access to items that provide similar consequences as stereotypy (e.g., matched stimuli), which are depicted in Fig. 2.

FBA is an assessment process that reveals the reasons for problem behavior and can be an incredibly useful tool to develop effective treatments. Table 1 provides a brief description of FBA procedures and sample resources for readers. Perhaps because of the widely held assumption that stereotypy serves no function (LaGrow and Repp 1984; Matson et al. 1997; Smith and Van Houten 1996), much of the published behavioral treatment literature addressing stereotypy does not rely on functional assessment to inform intervention procedures (DiGennaro Reed et al. 2012). However, in those studies that do use FBA, functional analysis is the most common technique. Despite the current state of the treatment literature, we recommend that clinicians incorporate FBA into their intervention planning since it is viewed as a valuable component of evidence-based practice (LaRue 2010).

Behavioral Treatments

The function of stereotypy and the conditions under which it is displayed (i.e., results of the FBA) can be used to inform treatment planning. The treatment components should correspond directly to the contingencies maintaining stereotypy (Haley et al. 2010). For example, if FBA results determine that the function of a student's hand flapping is to receive access to teacher attention, a conceptually relevant intervention might include procedures that eliminate

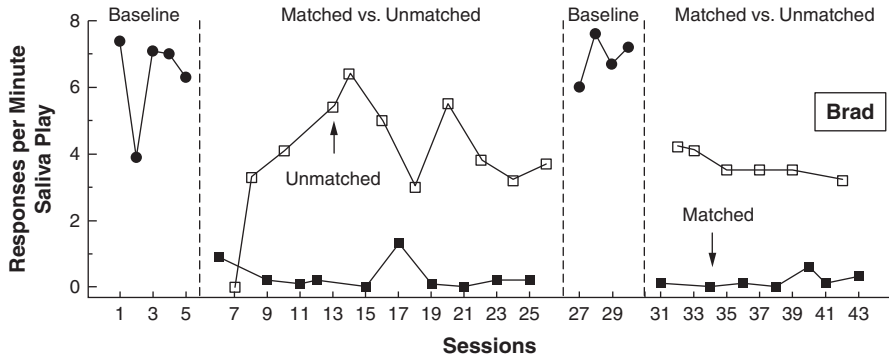


Fig. 2 Treatment analysis data for stereotypic saliva play. The rate of Brad’s saliva play was measured under multiple conditions including baseline, matched stimuli, and unmatched stimuli. These data indicate that saliva play was high during baseline when Brad was left alone in a room but was lower when he was provided with preferred items continuously (shaving cream, shampoo, and bubble soap during matched stimuli sessions; plastic toys, toy car, and plastic ball during unmatched stimuli sessions). Stereotypy was much lower and near zero levels during matched stimuli sessions compared to levels during unmatched stimuli sessions. These data suggest that providing Brad with items that match the sensory consequences of stereotypy can effectively reduce stereotypy (Data are from Piazza et al. (2000), with permission from the corresponding author and the publisher)

Table 1 Functional behavior assessment procedures

	Indirect assessment	Direct assessment	Functional analysis
Description	Use of standardized assessment (e.g., interviews, questionnaires, rating scales) to aid in hypothesizing the function of problem behavior	Observing and recording the environmental events that take place before (antecedents) and after (consequences) problem behavior	Arranging test conditions during which the putative reinforcer operating in the environment is systematically provided as a consequence for problem behavior
Resources	Behavior Problems Inventory (BPI-01; Rojahn et al. 2001) Pervasive Developmental Disorder Behavior Inventory (PDDBI; Cohen et al. 2003)	Functional Assessment Observation Form (O’Neill et al. 1997) ABC Checklist (Rojahn et al. 2008)	Iwata et al. (1982/1994)

This table provides a brief description of FBA procedures and one or more supplemental resources within each category

attention for stereotypy (i.e., extinction) and provide attention for more appropriate forms of behavior (i.e., differential reinforcement). Although most conceptualizations of stereotypy infer a self-stimulatory or automatically maintained function,

stereotypy may be mediated by social reinforcement in the form of attention, escape from demands, or access to desired items (Cunningham and Schreibman 2008). Because so few researchers use FBA procedures for stereotypy, unfortunately there is little empirical evidence demonstrating these varied functions. This section briefly describes research-supported treatment procedures to address stereotypy maintained by automatic reinforcement, access to attention, and access to desired items. Note, however, that a majority of behavioral treatments in the published literature contain multiple components and involve modification of antecedent conditions and consequences (use of reinforcement, punishment, and extinction) (DiGennaro Reed et al. 2012).

Automatically maintained stereotypy. Behavioral treatment studies incorporating FBA most commonly report a sensory or automatic reinforcement function (DiGennaro Reed et al. 2012). That is, reinforcement is obtained from the stimulation produced by engaging in stereotypy. A variety of treatments have been studied experimentally and shown to effectively reduce automatically maintained stereotypy of numerous topographies. Noncontingent or unlimited access to items, such as toys, that match the hypothesized sensory consequences of stereotypy can be an effective intervention because the stimulation produced by the items competes with similar reinforcement provided by stereotypy. Researchers have documented reductions in both vocal (e.g., Rapp 2007) and motor stereotypy (e.g., Ahearn et al. 2005; Higbee et al. 2005; Piazza et al. 2000; Sidener et al. 2005) using access to matched stimuli. Piazza et al. (2000) effectively reduced stereotypic saliva play using continuous and noncontingent access to stimuli that matched the sensory consequences of stereotypy (see Fig. 2). Although greater reductions were found when matched stimuli were provided compared to *unmatched* stimuli – consequences obtained from stimulation are dissimilar to sensory consequences produced by stereotypy – in some instances, the latter intervention is effective (e.g., Ahearn et al. 2005; Britton et al. 2002) though these findings are inconsistent (Higbee et al. 2005). Researchers have also shown positive benefits using a response cost involving unmatched stimuli (e.g., Falcomata et al. 2004; Rapp et al. 2009). After documenting an automatic reinforcement function of stereotypy through a functional analysis (see Fig. 3), Falcomata et al. (2004) compared the effects of noncontingent access to a highly preferred radio with and without response cost – 5-s removal of the radio contingent on stereotypy occurrence – and showed greater reductions in stereotypy when response cost was a component of the treatment package (see Fig. 4). Differential reinforcement of other behavior (DRO) procedures incorporating matched (Taylor et al. 2005) and unmatched (Ringdahl et al. 2002) stimuli is also effective. DRO involves contingent access to a preferred item after some period of time elapses without stereotypy. Taylor et al. (2005) reduced vocal stereotypy to near-zero levels using a 1-min DRO procedure to reduce inappropriate vocalizations of a 4-year-old girl with autism and systematically increased the interval to 5 min while stereotypy remained low. These findings were obtained only when the reinforcers involved auditory toys (i.e., matched stimuli); levels of stereotypy remained high when nonauditory toys (i.e., unmatched stimuli) were used as putative reinforcers.

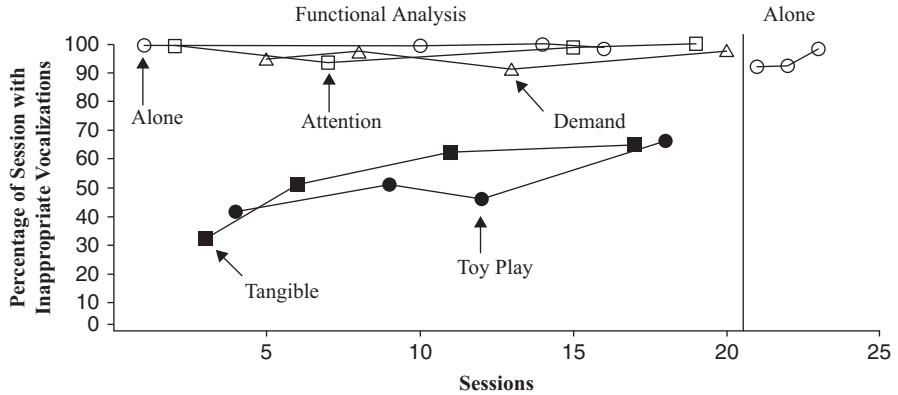


Fig. 3 Functional analysis data for inappropriate vocalizations. Results of the functional analysis indicate that inappropriate vocalizations occurred across all functional analysis conditions (access to attention, escape from a demand, access to a desired tangible item, during toy play, and when alone). These findings suggest that inappropriate vocalizations were not maintained by social consequences, but were maintained by automatic reinforcement (sensory consequences) (Data are from Falcomata et al. (2004), with permission from the corresponding author and the publisher)

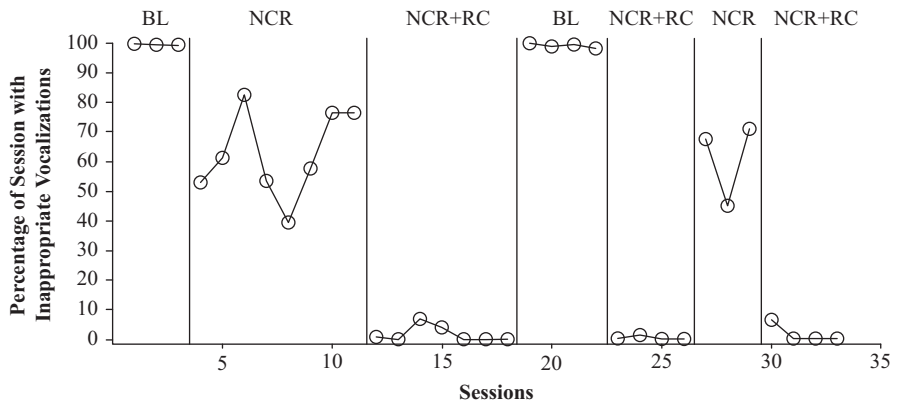


Fig. 4 Treatment analysis data for inappropriate vocalizations. The percentage of the session during which the participant emitted inappropriate vocalizations was measured under multiple conditions including baseline (BL), noncontingent reinforcement (NCR), and noncontingent reinforcement plus response cost (NCR + RC). These data indicate that vocalizations were high during BL when the participant was left alone in a room but were lower when he was continuously provided with a preferred item (a Walkman® radio) during NCR. Stereotypy was much lower and at or near zero levels when response cost was added to the NCR procedure. This procedure involved the removal of access to the radio for 5 s when the participant emitted inappropriate vocalizations. These data suggest that providing the participant with preferred items that were removed upon stereotypy occurrence can effectively reduce stereotypy (Data are from Falcomata et al. (2004), with permission from the corresponding author and the publisher)

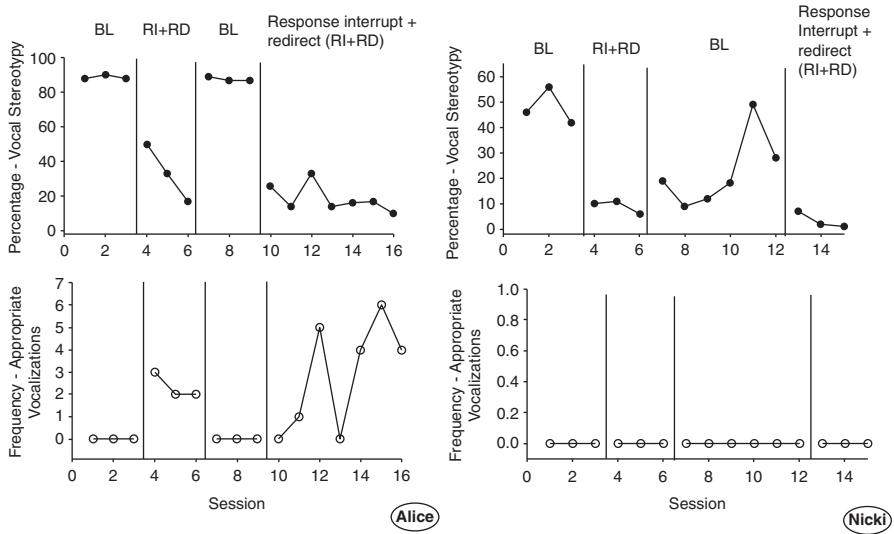


Fig. 5 Treatment analysis data for vocal stereotypy. These data depict vocal stereotypy percentages and frequency of appropriate vocalizations for Alice and Nicki under multiple conditions including baseline (BL) and response interruption and redirection (RI + RD). These data indicate that vocal stereotypy was high during baseline but much lower when RI + RD was administered. The data also show that appropriate vocalizations increased during RI + RD. These data suggest that interrupting vocal stereotypy and redirecting it to other vocalizations can effectively reduce stereotypy and increase appropriate vocalizations (Data are from Ahearn et al. (2007), with permission from the corresponding author and the publisher)

Response interruption and redirection (RIRD) has been used to successfully reduce vocal stereotypy in several studies (e.g., Ahearn et al. 2007; Cassella et al. 2011; Miguel et al. 2009). RIRD incorporates response blocking (i.e., immediate interruption of stereotypy) and redirection to a socially appropriate response. The latter activity is accomplished by establishing, attending, and initiating eye contact (e.g., state child’s name) and presenting instructions that require a vocal response (e.g., social questions, vocal imitation) until three consecutive correct responses without stereotypy are observed. Interestingly, Cassella et al. (2011) documented the effectiveness of RIRD when instructions were presented that did not require a vocal response (e.g., one-step directions such as “touch head”). Ahearn et al. (2007) showed reductions in vocal stereotypy to near-zero percentages as well as increases in the frequency of appropriate vocalizations during RIRD (see Fig. 5).

Two studies conducted by Lang and colleagues (e.g., Lang et al. 2009, 2010a, b) investigated the effects of pre-session access to stereotypy on levels of stereotypy during a subsequent play intervention. Results showed that stereotypy was lower when participants were provided with pre-session access to stereotypy. These findings demonstrate an abolishing effect of access to stereotypy as a treatment; that is, allowing an individual to engage in stereotypy for some period of time abolishes the motivation to further display stereotypy and, therefore, reduces future occurrences.

Attention-maintained stereotypy. Many instances of stereotyped behavior, through functional analyses, are determined to be maintained by sensory stimulation, but for some, attention from others may serve to maintain the behavior (e.g., Goh et al. 1995). Other studies have shown that attention can influence the occurrence of stereotypy thought to be automatically maintained (Athens et al. 2008).

Although the literature lacks a strong body of evidence for the treatment of attention-maintained stereotypy, examples of treatments for similar problem behavior have considerable relevance for the treatment of stereotypy. Self-injurious behavior have more often been identified as being maintained by social reinforcement (e.g., Hanley et al. 2003). Self-injurious behavior is a similar repetitive pattern of behavior resulting in damage to the individual emitting the behavior (Favell et al. 1982). In cases where attention is determined to be a maintaining variable, differential reinforcement procedures altering the availability of attention as a consequence for inappropriate, problem behavior and appropriate alternative behavior have been successful (Favell et al. 1982).

Other treatments manipulate the value of attention as a maintaining consequence. The value of consequences is altered by motivating operations (e.g., Catania 2007). Most commonly, motivating operations are described as the deprivation of a consequence or satiation. That is, as time passes since the last time a consequence was obtained, its value tends to increase (establishing effect). On the contrary, if a consequence is achieved often, its value may decrease (abolishing effect). Leveraging these principles, stereotypy maintained by attention has been treated by providing frequent and high-quality attention for some period of time in order to remove the motivation to obtain more of it (e.g., O'Reilly et al. 2007). Similarly, attention might be delivered noncontingently (i.e., continuously) in order to reduce the motivation to engage in behaviors that have "earned" attention previously (e.g., Athens et al. 2008). The support for the use of pre-session attention is mixed. There is some evidence that noncontingent attention may actually increase the value of social attention and result in an increased sensitivity to attention as a reinforcer for problem behavior (e.g., Roantree and Kennedy 2006).

Stereotypy maintained by access to desired items. Presently, the published literature does not appear to contain studies documenting stereotypy maintained by access to desired items (or tangibles). This may be a result of so few studies with formal FBA of stereotypy. An alternative explanation is that the occurrence of stereotypy to gain access to items is rare. The Premack Principle states that highly preferred activities (e.g., playing video games) may function as reinforcers for less-preferred activities (e.g., cleaning a bedroom) (Cooper et al. 2007). Although the literature does not contain examples of highly preferred activities reinforcing stereotypy, a recent study showed that stereotypy can reinforce behaviors that lead to this problem behavior. Falcomata and colleagues (2010) showed that elopement (i.e., moving a certain distance from staff) was reinforced by stereotypic door play which was automatically maintained. Teaching an alternative communicative response (i.e., touching a card) to request door play was effective in reducing

rates of elopement. These results maintained over time even after delays to allowing access to the door following the card touch were introduced.

Conclusion

The purpose of this chapter is to describe research-based behavioral treatments for stereotypic behavior in children with autism. Best practices dictate that FBA is completed before beginning treatment to identify the purpose or function of behavior. The results of this assessment directly inform the components of treatment designed to reduce stereotypy. A range of treatment options are available; however, a majority of function-based behavioral treatments focus on addressing automatically reinforced stereotypy. Unfortunately, a lack of FBA for stereotypy in the published literature limits the evidence for treatments addressing other functions of stereotypy (e.g., attention, access to desired items, escape from task demands).

Key Terms

Automatic reinforcement (aka sensory reinforcement, self-stimulatory). Stimulation resulting from engaging in a behavior functions as a reinforcer that strengthens or maintains the occurrence of that behavior.

Contingency. An arrangement of consequences such that a consequence is delivered when, and only when, a behavior occurs.

Differential reinforcement. A behavioral treatment procedure in which reinforcement is provided contingent upon the occurrence of a behavior or class of behaviors, while reinforcement is withheld following the occurrence of an undesired or aberrant behavior. The result is an increase in the occurrence of desired behavior and a decrease in the occurrence of undesired behavior.

Differential reinforcement of other behavior (DRO). A behavioral treatment procedure in which reinforcement is delivered contingent upon the nonoccurrence of a problem or aberrant behavior during a prespecified time interval.

Extinction. Consequences functioning as reinforcers are withheld following a previously reinforced behavior, resulting in predictable patterns of behavior over time, including an initial burst of responding followed by the termination of the behavior.

Function. The consequence a behavior achieves. Common functions of behavior include gaining access to tangible items, socially mediated reinforcers, escape or termination of aversive or unpleasant events, and self-stimulation.

Functional analysis (FA). An experimental assessment designed to identify the function of a behavior, usually an undesirable behavior, by arranging several analogue conditions representing hypothesized reinforcement contingencies that may be maintaining the behavior.

Functional behavior assessment (FBA). A multistep process aimed at identifying the function of a behavior using a continuum of assessment techniques including indirect assessment, direct observation, and/or functional analysis.

Matched stimuli. Stimuli or items that produce stimulation similar to that produced by engaging in stereotypy.

Motivating operation. An event or condition that serves to alter (increase or decrease) the strength or value of consequences. Establishing operations serve to increase the value of outcomes as reinforcers, while abolishing operations reduce or eliminate the value of reinforcers.

Noncontingent. Consequences are delivered continuously or at regular or random intervals without regard to whether a specific behavior has occurred.

Response cost. Access to preferred items or privileges is removed contingent upon the occurrence of a behavior, resulting in a reduction of behavior.

Response interruption and redirection (RIRD). A behavioral treatment procedure; when stereotypy occurs, it is blocked physically or verbally by issuing a command. The individual is then required to engage in a socially appropriate response until three responses are emitted without the occurrence of stereotypy.

Stereotypy. Repetitive, restricted, persistent behavior with no apparent function.

Unmatched stimuli. Stimuli or items that produce stimulation dissimilar to that produced by engaging in stereotypy.

Key Facts of Stereotypy

- Stereotypy is one of the core diagnostic criteria for autism and other pervasive developmental disorders.
- Children with autism engage in more forms of stereotypy more often than children with and without other disabilities.
- Although stereotypy appears to serve no purpose, children engage in stereotypy because of what happens to them when they do so (e.g., sensory consequences, access to preferred items, attention).
- Various negative outcomes are associated with stereotypy occurrence.
- Behavioral treatment reduces stereotypy and possibly ameliorates the negative outcomes of this behavior.

Key Facts of Functional Behavior Assessment of Stereotypy

- Best practices dictate that functional behavior assessment is completed before beginning behavioral treatment in order to identify the purpose of behavior. This information directly informs what procedures will be adopted for treatment.
- Incorporating functional behavior assessment into the assessment process increases the probability that effective behavioral treatment procedures are identified.

- Functional behavior assessment includes three types of assessment: (1) indirect assessment, (2) direct assessment, and (3) functional analysis. Functional analysis is the most rigorous approach to functional behavior assessment and is the most common assessment procedure adopted in stereotypy behavioral treatment research.
- The most common function identified for stereotypy is automatic or sensory reinforcement, which refers to the stimulation obtained by engaging in stereotypy.

Key Facts of Behavioral Treatment of Stereotypic Behavior

- Behavioral treatment of stereotypy most often addresses the sensory consequences since automatic reinforcement is the most frequently reported function.
- Response interruption and redirection and pre-session and in-session access to matched or unmatched stimuli have been shown to effectively reduce stereotypy and often increase other appropriate behaviors.
- These treatments may be effectively combined with other behavioral treatments, such as differential reinforcement or response cost, as part of a treatment package.
- There does not appear to be empirically supported stereotypy treatment that addresses other functions of behavior including access to attention, access to desired items, or escape and avoidance of undesired activities.

Summary Points

- This chapter focuses on behavioral treatment of stereotypy displayed by children with autism.
- Stereotypy is repetitive, restrictive, persistent behaviors including hand flapping, body rocking, and others.
- Stereotypy can be stigmatizing and is associated with numerous negative outcomes.
- Behavioral treatment involves considerations of the purpose (or function) of stereotypy.
- The function of a behavior may be identified through a functional behavior assessment, which includes a rigorous approach known as functional analysis.
- A majority of research using functional analysis for stereotypy identifies an automatic reinforcement function suggesting that stereotypy occurs because of the sensory consequences obtained for engaging in this behavior.
- Behavioral treatment that addresses the automatic reinforcement function includes noncontingent access to matched and unmatched stimuli, response interruption and redirection, pre-session access to stereotypy, and differential reinforcement procedures.

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