



Comparing Effective Treatments for Attention-Maintained and Escape-Maintained Behaviors in Children with Behavior Disorders: Brief Review and Analysis

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Abstract – *This literature review compares treatment for attention-maintained versus escape maintained aberrant behavior in children with behavior disorders. Specifically, studies utilizing time out procedures, differential reinforcement procedures, noncontingent reinforcement, and functional communication training are discussed. It was found that these are effective treatments for attention-maintained behaviors; while escape extinction, positive and negative reinforcement, functional communication training, breaks, and altering the non-preferred stimulus are discussed as effective treatments for escape-maintained behaviors. Similarities between treatment and implications for practitioners are discussed.*

Key Words – *attention-maintained behavior disorders, escape-maintained, functional analysis, treatments*

1 Introduction

An effective way to treat the aberrant behaviors of children with behavior disorders is to first determine the function of their aberrant behavior through a functional analysis (Cooper, Heron, & Heward, 2007). Because treatments for different functions vary so widely, it is difficult to ensure that the most effective and comprehensive treatment option is being implemented without knowing why a child is engaging in a specific behavior (Sigafoos & Tucker, 2000). For example, a time out procedure might be effective for an attention maintained behavior while it would exacerbate an escape maintained behavior (Fisher, Piazza, Cataldo, Harrell, Jefferson, & Conner, 1993). A study by Rodriguez, Thompson, and Baynham (2010) stated that the two most frequent functions of aberrant behavior as determined by functional analyses were attention and escape. In response to the frequency of attention-maintained and escape-maintained aberrant behaviors, the purpose of this paper is to examine the treatment of attention-maintained behaviors compared to the treatment of escape-maintained behaviors in children with behavior disorders

2 Functional Analysis Procedure

The methodology of functional analyses was originally developed to aid in assessment of self-injurious behaviors; however, it has been adapted to be useful in the assessment and treatment of other behaviors as well. Some of those behaviors include aggression (Fisher et. al., 1993; Piazza, Fisher, Hanley, Remick, Contrucci, & Aitken, 1977a), tantrums (Carr & Newsome, 1985), pica (Piazza, Hanley, & Fisher, 1996), and elopement (Piazza, Hanley, Bowman, Ruyter, Lindauer, & Saiontz, 1997b). In a functional analysis the antecedent and consequence surrounding a behavior are manipulated to fit the specific condition. There are four main types of conditions: free play conditions in which the child has access to tangible items and attention, and no demands are placed on them; tangible conditions in which the toy is removed and only represented contingent upon aberrant behavior; attention conditions in which the child is ignored and attention is only provided contingent on aberrant behavior; and escape conditions in which a demand is place on the child and is removed contingent upon problem behavior. Each time behavior occurs in the tangible, attention, and escape conditions, tangible items are represented, attention is provided, and demands are removed respectively, and then the establishing operation is represented 15-30 seconds later. These procedures are typically evaluated in an alternating treatments design (Kazdin, 2011).

When evaluating the results of a functional analysis, it is important to realize that a percentage between 20% and 40% shows a functional relationship between the behavior and that specific function, and that the child may not be discriminating between antecedents and consequences if the behavior occurs at a higher frequency. Behaviors are either maintained by positive reinforcement in the form of access to something which increases the frequency of the behavior, or in the form of negative reinforcement in which the removal of something increases the frequency of the behavior. If behavior occurs during tangible or attention conditions, the child's behavior is maintained by positive reinforcement either in the form of access to toys or access to attention. If the child's behavior is escape-maintained, their behavior is maintained by negative reinforcement in the form of removal of a demand. If large amounts of behavior occur during free play, the child might be automatically maintained by sensory input.

If a child's behaviors range across the board throughout sessions, one way to help clarify the results is by separating the occurrences of behavior by separate topographies. Since different topographies might serve different functions, separating by topographies can help show if one behavior is attention-maintained while another is escape-maintained. For example, the results of a functional analysis in Gonzaga's Behavioral Assessment lab showed that one child's aggression was tangible and attention-maintained, while his property destruction was automatically maintained, resulting in the need for two different treatments Worcester, 2013). In addition, funtional behavioral assessment can be employed to assess and monitor such behaviors as alertness, seizures, accuracy of performance, etc (e.g. Cooper et al., 2007; Jordan, McLaughlin, Weber, Derby, Barretto, Williams, & Luiten, 2003; Oikawa, Derby, McLaughlin, & Fisher, 2011). It can also be employed in typical special education classroom settings (Cooper et al., 2007; Solis, McLaughlin, & Derby, 2003; Worcester, Barretto, McLaughlin, & Blecher, 2013).

3 Treatments Based on Function

3.1 Attention-Maintained Behaviors

As pointed out by Iwata, Zarcone, Smith, and Mazaleski (1993) aberrant behaviors, especially self-injurious behaviors and aggression, tend to be extremely susceptible to positive reinforcement in that they frequently require attention either through a reprimand or through comfort. Because certain aberrant behaviors result in immediate attention, some behaviors persist overtime in order to gain that

attention, and turn in to attention-maintained behaviors. When brainstorming treatments for attention-maintained behaviors, it is important to remember the maintaining variables for their behavior in order to ensure that the child is being taught a replacement behavior to serve the same function. Several different treatments have been implemented to treat attention-maintained aberrant behavior. Some of the most common and effective treatments include time out, differential reinforcement procedures, noncontingent reinforcement, and functional communication training.

Utilizing a time out from attention has shown to be effective at decreasing attention-maintained aberrant behaviors. In one study by Rortvedt and Miltenberger (1994) a time out procedure was used to treat the noncompliance of two four-year-old girls. In the study, noncompliance resulted in a one-minute time out and ten-second delay, in which the child had to be quiet for the last ten seconds. The results of the study showed that both of the participant's noncompliance decreased when time out was implemented. Specifically, the study showed that time out was more effective than a high-probability/low-probability sequence in decreasing the noncompliance behaviors of the two participants.

In a article by Piazza et al. (1997b) a differential reinforcement of other behavior (DRO) procedure was used to decrease the elopement behaviors of an 11-year-old boy with severe mental retardation, autism, bipolar disorder, and ADHD. During the treatment procedure, the participant was given either attention or a preferred food items every 50 seconds contingent on the nonoccurrence of elopement behaviors. The DRO procedure resulted in near-zero levels of elopement behaviors. In the same study, a differential reinforcement of appropriate behavior (DRA) procedure, along with a blocking procedure, was used to decrease the elopement behaviors of a 4-year-old boy. During this procedure, the participant was given instructions to complete a task and, contingent on 5 seconds of appropriate behavior, was reinforced with either attention or access to running. During treatment sessions, the participant engaged in near-zero levels of elopement. The results of this study support the use of various differential reinforcement techniques to decrease attention-maintained aberrant behaviors in young children with behavior disorders.

Since attention-maintained children have learned that they will receive attention contingent on aberrant behavior, another effective way to reduce the frequency of aberrant behaviors is by providing noncontingent positive attention on a fixed or variable interval regardless of the child's behavior. In a study by Vollmer, Iwata, Zarcone, Smith, and Mazaleski (1993), a fixed interval noncontingent reinforcement schedule was compared to a differential reinforcement of other behavior procedure for three adult-females with developmental disabilities. The results of the study showed that both NCR and DRO were effective procedures to reduce aberrant behaviors, as well as showed that NCR can be used as a treatment procedure rather than as a control session, which is how it has been used in the past. One of the benefits of NCR over DRO is that rapid reductions in behavior can be observed without extinction bursts occurring. After recognizing this benefit, a study by Sigafos and Tucker (2000) utilized NCR procedure to decrease the challenging behaviors of a 19-year-old male while also teaching the participant a socially acceptable behavior to gain attention. The results of the treatment showed continued evidence for the use of noncontingent reinforcement to decrease aberrant behavior.

Teaching a replacement mand to request for attention, including both verbal mands and nonverbal mands such as raising an arm (Sigafos & Meikle, 1996), has also been a widely implemented and effective way to treat attention-maintained behaviors. A common highly effective method used to treat attention-maintained aberrant behaviors is functional communication training (Carr & Durand, 1985; Day, Horner, & O'Neill, 1994; Hagopian, Fisher, Sullivan, Acquistio, & LeBlanc, 1998; Lalli, Casey, & Kates, 1995). In a study evaluating the results of 30 functional analyses for self-injurious behavior, functional communication training was used for 17 out of the 24 participants, with an average reduction of 94.8% (Kurtz, Chin, Huete, Tarbox, O'Connor, Paclawskyj, & Rush, 2003).

3.2 Escape-Maintained Behaviors

Most children with behavior disorders are escape maintained (Cooper et al., 2007; Morgan & Jenson, 1988) in that they engage in behaviors in order to escape a demand. Once a child observes that engaging in a certain behavior is effective at escaping the task, the frequency of that behavior increases leading to an escape-maintained problem behavior. Two important considerations in treating escape-maintained behaviors include ensuring that the child is not allowed to escape demands by engaging in the aberrant behavior and ensuring that an appropriate replacement behavior is being taught. Some of the most effective treatments for escape maintained behaviors include escape extinction, negative reinforcement, functional communication training, breaks, as well as alternating higher and lower preference tasks (Horner, Day, Sprague, O'Brien, & Heathfield, 1991; Mace & Belfiore, 1990),

Durand and Carr (1991) showed that an average of 130 minutes of functional communication training was not only incredibly effective at decreasing challenging escape-maintained behavior, but that the use of functional communication training also resulted in great generalization with decreases in behavior across various environments, people, and tasks. According to another study by Fisher, Piazza, Cataldo, Harrell, Gretchen, & Conner (1993), functional communication training has produced clinically significant reductions in disruptive behavior in every published study. In the study by Fisher et. al. (1993), FCT alone only resulted in one of the four participant's destructive behavior having a 70% reduction. When comparing FCT alone with FCT plus extinction and FCT plus punishment, the results showed that FCT plus punishment was the only treatment package that produced clinically significant reductions in destruction behavior and displayed generalization effects. The results of this study give continued support for the use of functional communication training procedures to treat escape-maintained aberrant behavior.

The comparative effects of positive versus negative reinforcement on escape maintained aberrant behavior has been of particular interest to researchers, with most studies demonstrating the superiority of positive reinforcement over negative reinforcement (Lalli, Vollmer, Progar, Wright, Borrero, Daniel, Barthold, Tocco, & May, 1999). One example is a study by DeLeon, Neidert, Anders, and Rodriguez-Catter (2001) which compared the treatment effects of negative reinforcement in the form of a 30-second break to the effects of positive reinforcement in the form of an edible item. The results of the study showed that positive reinforcement was significantly more effective at decreasing the participant's escape-maintained behaviors than was negative reinforcement. Multiple studies have demonstrated these effects (Piazza et al., 1997a; Lalli & Casey, 1996), showing that positive reinforcement is successful in decreasing escape-maintained aberrant behavior in children.

While many would oppose a time out as a consequence for escape-maintained aberrant behaviors, due to the potential negative reinforcement effects of being allowed to escape the task (Shriver & Allen, 1996), some researchers have observed effectiveness of time out procedures when combined with escape extinction. Specifically, a study by Everett, Olmi, Edwards, Tingstrom, Sterling-Turner, and Christ (2007) utilized a time out and escape extinction procedure in which the instructions were represented immediately following the timeout. The results of this study demonstrated that timeout when combined with escape extinction was effective at decreasing escape-maintained noncompliance.

Changing the non-preferred stimulus associated with escape-maintained behaviors, in ways such as altering (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991), fading (Pace, Iwata, Cowdery, Andree, & McIntyre, 1993) or removing (Touchette, MacDonald, & Langer, 1985) the non-preferred stimulus, has been shown to be an effective method to decrease escape-maintained aberrant behaviors. For example, in a study by Moore, Anderson, and Kumar (2005), the off-task behaviors of a 6-year-old boy significantly decreased when the task duration was reduced. Another study by Weeks and Gaylord-Ross (1981) demonstrated a correlation between inappropriate behaviors and task difficulty.

Specifically, Weeks and Gaylord-Ross showed that the increasing task requirement served as an antecedent variable occasioning escape-maintained problem behaviors. The results of these studies showed that when the task demand is higher due to a change in the instructional variables, such as an increase in length or intensity, the task itself can become aversive and lead to the emergence of inappropriate escape-maintained behaviors, therefore altering different instructional variables might decrease certain escape-maintained aberrant behaviors.

4 Conclusions

There is not one particular treatment that is effective for every child with attention-maintained aberrant behaviors, nor is there one effective treatment for all children with escape-maintained aberrant behaviors. Instead, the treatment of specific functions varies for each individual child and practitioners must adjust treatments to each child's specific needs.

While each child required individualized treatment procedures, there are certain key features to effective treatments for different functions of behavior. One of the major key features is that the child must be taught an appropriate manner to satisfy that function. For example, attention-maintained children need to be taught socially acceptable behaviors in order to gain attention, either by requesting (as in functional communication training) or by behaving appropriately (as in differential reinforcement procedures). In a similar fashion, escape-maintained children need to be taught appropriate ways to get through tasks, either by requesting for a break (as in functional communication training) or by persisting in tasks (as in escape extinction). In order for the new replacement behavior to be successful at serving the specific function, it is crucial that the child no longer receives the consequence desired by engaging in aberrant behaviors (Horner, Carr, Stain, Todd, & Reed, 2002). Specifically, a child must be taught that engaging in a specific behavior will no longer result in increased attention or in removal of a demand.

Some effective treatment procedures, for both attention-maintained and escape-maintained aberrant behaviors, that meet those two key features include functional communication training (Carr & Durand, 1985; Day, Horner, & O'Neill, 1994; Hagopian, Fisher, Sullivan, Acquistio, & LeBlanc, 1998; Horner, Day, Sprague, O'Brien, & Heathfield, 1991; Lalli, Casey, & Kates, 1995; Mace & Belfiore, 1990), time out procedures (Everett, Olmi, Edwards, Tingstrom, Sterling-Turner, & Christ, 2007; Rortvedt & Miltenberger, 1994; Shriver & Allen, 1996), positive attention (DeLeon, Neidert, Anders, & Rodriguez-Catter, 2001; Lalli & Casey, 1996; Lalli, Vollmer, Progar, Wright, Borrero, Daniel, Barthold, Tocco, & May, 1999; Piazza et al., 1997a; Sigafos & Tucker, 2000; Vollmer, Iwata, Zarcone, Smith, & Mazaleski, 1993), and altering the instructional variables (Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; Moore, Anderson, & Kumar, 2005; Pace, Iwata, Cowdery, Andree, & McIntyre, 1993; Touchette, MacDonald, & Langer, 1985; Weeks & Gaylord-Ross, 1981).

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