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ASSESSMENT OF PROBLEM BEHAVIOR EVOKED BY DISRUPTION OF RITUALISTIC TOY ARRANGEMENTS IN A CHILD WITH AUTISM

Yanerys Leon,

Kennedy Krieger Institute

William N. Lazarchick,

Kennedy Krieger Institute

Griffin W. Rooker, and

Kennedy Krieger Institute

Iser G. Deleon

Kennedy Krieger Institute And Johns Hopkins University School of Medicine

Abstract

A functional analysis suggested that the problem behavior of a 9-year-old girl with autism was maintained by gaining the opportunity to restore ritualistic toy arrangements that had been disrupted. Functional communication training and extinction produced clear decreases in problem behavior in 2 contexts: 1 in which we removed a play item, and 1 in which we merely relocated the item and blocked its rearrangement.

Keywords

behavior disorders; functional analysis; idiosyncratic variables; ritualistic behavior

Functional analyses of problem behavior have begun to examine idiosyncratic relations that are involved in evoking and maintaining problem behavior in persons with intellectual and developmental disabilities (Schlichenmeyer, Roscoe, Rooker, Wheeler, & Dube, 2013). One set of variables that has received increasing attention involves interresponse relations between repetitive and problem behavior in persons with autism spectrum disorders (ASD). Some of these relations involve enabling simple stereotypic responses (e.g., destroying toys, thus producing small objects that can be used in stereotypic object manipulation; Fisher, Lindauer, Alterson, & Thompson, 1998). Other reported relations involve more complex sequences of ritualistic behavior that also give rise to problematic interactions with caregivers (e.g., Hausman, Kahng, Farrel, & Mongeon, 2009).

For example, Kuhn, Hardesty, and Sweeney (2009) examined the relation between excessive straightening (e.g., placing items in trash cans) and disruption and aggression exhibited by a

16-year-old boy with ASD. They compared rates of problem behavior and straightening when the opportunity to straighten was not interrupted (control condition) and when the opportunity to straighten was contingent on problem behavior (test condition). Problem behavior occurred almost exclusively in the test condition and decreased substantially after the child was trained to ask, "Is this trash?" to occasion an indication of whether attempts to discard items would be blocked.

Only a few studies have directly examined interresponse relations between complex ritualistic behavior and problem behavior in persons with ASD, although as many as 96% of these individuals exhibit some complex repetitive behavior (McDougle et al., 1992). The present study adds to this literature by examining the relation between ritualistic toy arrangements (i.e., having to be done the same way each time) and more severe forms of problem behavior exhibited by a young girl with autism.

METHOD

Participant and Setting

Laura was a 9-year-old girl who had been diagnosed with autism and had been admitted to an inpatient hospital unit for the assessment and treatment of severe problem behavior. We initially observed a potential relation between problem behavior and ritualistic arrangements during leisure time (these rituals made it difficult to engage her in interactive play).

Typically, when given a game set, Laura arranged the game pieces in a straight line. She first placed all the available pieces on the board, then nudged pieces in one direction or another, moved pieces to a new location, or switched the location of two pieces, all while retaining the linear formation. Periodically, she stopped for a few moments and gazed at the arrangement; this was usually accompanied by body rocking. Although a Monopoly set was used throughout the study, she behaved similarly when given any multipiece set of small toys. Sessions were conducted at a table in a general purpose room in the hospital and included toys and other materials required for each session, as described below. All assessment and treatment sessions lasted 10 min.

Response Measurement and Interobserver Agreement

Trained observers used laptop computers to collect data on the following behaviors. *Self-injurious behavior* (SIB) was defined as body hitting, head hitting, head banging, and self-scratching. *Aggression* was defined as head butting, hair pulling, pushing, scratching, hitting, biting, grabbing, and kicking others. *Disruption* was defined as swiping objects, throwing objects, destroying property, and banging on surfaces with force. *Arranging materials*, measured as duration, was defined as moving, straightening, or otherwise touching the game pieces with immediate onset and a 3-s offset. *Attempts to arrange materials* (during the blocking assessment) were defined as reaching for a game piece that the therapist had repositioned. *Functional communication* (during the treatment evaluation) was defined as independently handing the therapist a card that said "Laura's way." All behaviors, except arranging materials, were measured using frequency recording.

Interobserver agreement was calculated using an interval-by-interval method. Each session was divided into 10-s intervals. Intervals in which both observers scored the same number of responses were assigned a value of 1. If observers scored different numbers, a proportion was calculated by dividing the smaller number by the larger. If only one observer scored an instance of the response, a value of zero was assigned. These measures were summed, divided by the total number of intervals, converted to a percentage, and averaged across sessions. Interobserver agreement was collected for 33% of sessions and averaged 99.9% for SIB, 98% for aggression, 99.8% for disruption, 93% for arranging materials, 100% for attempts to arrange materials, and 99% for functional communication.

Procedure

Blocking assessment—We conducted test and control conditions in a multiple element design to assess the effects of preventing ritualistic arrangements. In both conditions, Laura and the therapist sat at a table. Before each session, Laura was given 2-min access to the game set and was permitted to arrange the game pieces to her liking (we did not attempt to play the game with her). In the control condition, the therapist picked up a piece that Laura had placed on the board and returned it to the board every 60 s. Laura was permitted to rearrange or straighten the piece as she pleased. This condition was designed to control for the therapist touching the item during the test condition and to minimize the establishing operation for the ritualistic arrangement (i.e., Laura was not prevented from restoring the arrangement). In the test condition, the therapist picked up a game piece every 60 s, put it in a different location on the board, and blocked attempts to relocate it. Problem behavior resulted in cessation of blocking for 30 s.

Treatment evaluation—We examined the effects of functional communication training (FCT) plus extinction in two contexts using a multiple baseline design with embedded reversals. In both contexts, the alternative response was handing over a card that read “Laura’s way” and resulted in a 30-s opportunity to rearrange or straighten the items without interruption. Baseline for the disruption of ritualistic arrangements was identical to the previous test condition. The treatment condition was similar to baseline, but the therapist placed all problem behavior on extinction and provided 30-s access to rearranging the items without interruption contingent on each exchange of the “Laura’s way” card. The item removal context was identical to the disruption of ritualistic arrangements, with the exception that the therapist removed an item from the game board and placed it in a box behind her. In baseline, the therapist removed an item every 60 s and blocked attempts to retrieve it. After problem behavior, the therapist redelivered the item and allowed Laura to place it as she pleased. During treatment phases, problem behaviors were ignored and appropriate communication resulted in redelivery of the item. This condition was designed to simulate circumstances similar to (a) what might occur when game play was terminated (e.g., when it was time to put toys away) and (b) the tangible condition of a conventional functional analysis.

RESULTS AND DISCUSSION

Figure 1 (top) depicts the results of the blocking assessment. Laura displayed consistently higher rates of problem behavior in the test condition than in the control condition, and problem behavior after blocked attempts to arrange the items persisted at modest levels in test conditions. Figure 1 (bottom) depicts the percentage of session duration of toy arrangement. Initially, arrangement occurred at lower levels during the test condition, but we observed a corresponding increase in arrangement as levels of problem behavior increased beginning in Session 9 (higher rates of problem behavior meant fewer blocking attempts). These results suggested that Laura's problem behavior was evoked by blocking her attempts to restore her arrangements and was reinforced by the opportunity to restore the arrangement.

Figure 2 depicts rates of problem behavior and appropriate communication during the treatment evaluation. Laura engaged in high rates of problem behavior in all baseline conditions. FCT plus extinction decreased problem behavior in both contexts. The fact that problem behavior occurred consistently in two contexts that involved arrangement disruption (disruption of ritualistic arrangements and item removal) suggested that removing toys entirely was sufficient, but not necessary, to evoke problem behavior. Instead, disruption of the ritualistic arrangement and prevention of its restoration, common to both conditions, appeared to be the critical variables.

When repetitive or ritualistic behavior is undesirable, response blocking may limit the behavior (Rodriguez, Thompson, Schlichenmeyer, & Stocco, 2012), but in some cases, blocking may evoke more severe forms of problem behavior (Hagopian, Bruzek, Bowman, & Jennett, 2007). Results of this assessment were ultimately used as part of a more comprehensive treatment package that included permitting Laura to request "my way" to regain the opportunity to complete an activity. However, although it is effective in circumscribed evaluations like the current study, FCT may not always be feasible (e.g., when engagement in the ritualistic activity is not permissible). A better approach might involve teaching the individual to tolerate the interruption. Alternatively, researchers could target the ritualistic behavior directly. Thus, one limitation of this study was that we did not assess the function of the ritualistic behavior. A more complete analysis of the variables that maintain ritualistic behavior is warranted (Rodriguez et al., 2012), as is research to examine the functions of other complex repetitive behavior in different populations (e. g., obsessive compulsive disorder).

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Figure 1. Rate of problem behavior and blocked attempts to arrange during test and control conditions of the blocking assessment (top) and percentage of session duration of toy arrangement (bottom).

Figure 2.

Rate of problem behavior and appropriate communication during baseline and treatment conditions across contexts during the treatment evaluation. FCT = functional communication training.