

*RESPONSE BLOCKING WITH AND WITHOUT  
REDIRECTION FOR THE TREATMENT OF PICA*

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Although response blocking can decrease problem behavior, one potential adverse side effect is the induction of aggression. In the current study, we report on a young adult who engaged in high rates of pica maintained by automatic reinforcement. Blocking pica, however, led to aggression. When redirection to an alternative preferred food item was added to an intervention consisting of response blocking, pica was effectively treated without increasing aggression.

DESCRIPTORS: extinction-induced aggression, pica, redirection, response blocking

Care providers of individuals with mental retardation often physically block occurrences of dangerous behavior, such as self-injury. A number of studies have demonstrated that response blocking can effectively decrease problem behavior. The reductive effects of response blocking likely are attributable to either punishment or extinction (e.g., Lerman & Iwata, 1996), both of which can have adverse side effects such as increases in aggression (Miltenberger, 2001). To date, no studies on response blocking have reported such adverse side effects. In the current study, increases in aggression were observed when response blocking was implemented for severe pica. A strategy for attenuating this undesirable side effect then was evaluated.

## METHOD

### *Participant and Setting*

Dave was a 26-year-old man who had been diagnosed with moderate mental retardation and bipolar disorder. He had been admitted to an inpatient unit for the treatment of pica (ingestion of paper, pencils,

paint chips, and human feces) and other problem behavior (aggression and self-injury). Dave was ambulatory, could follow simple two-step instructions, and communicated using two- to three-word sentences. Results of a functional analysis suggested that pica was at least partly maintained by automatic reinforcement (the procedures and results are available from the first author upon request).

### *Data Collection and Interobserver Agreement*

*Pica* was defined as attempting to or successfully placing baited items (pieces of paper) or any other inedible object past the plane of his lips. *Aggression* was defined as hitting, kicking, pulling hair, and biting others. During the blocking analysis, trained data specialists collected frequency data on the target behaviors using laptop computers, and the data were calculated as responses per minute. During the treatment analysis, an event-recording data sheet was used to record the frequency of aggression. A product measure also was used to determine the total number of pieces of paper consumed by subtracting the pieces of paper remaining at the end of session from the pieces of paper available during the session. A product measure was used because multiple pieces of paper

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were sometimes placed in the mouth during a single occurrence of pica.

Two observers collected data simultaneously but independently during 41% of the blocking sessions and 53% of treatment sessions. Blocking-analysis sessions were partitioned into 10-s intervals to calculate interobserver agreement. Exact agreement coefficients were calculated by dividing the number of intervals during which both observers recorded the same frequency of a target response by the total number of intervals and multiplying by 100%. Mean exact agreement coefficients were 89% for aggression and 95% for pica. Mean total agreements for aggression and paper consumption during the treatment analysis were 91% and 98%, respectively.

#### *Procedure*

For all sessions, the room was baited with small pieces of paper on the floor, the inedible item Dave most often consumed (no other potentially consumable items were available). Because the occurrence of pica was necessary to evaluate treatment, a baited item was used to ensure Dave's safety (the use of paper was approved by the attending physician responsible for his medical management). Sessions were 10 min during blocking analysis and 5 min during the treatment analysis.

*Blocking analysis.* Observations and parental report prior to the study indicated that blocking pica led to aggression. The effects of blocking pica on pica and aggression were examined using a reversal design. In the ignore condition, the room was baited with paper, and the therapist ignored pica and aggression. The response blocking condition was similar to the ignore condition, except that the therapist attempted to block all occurrences of pica by placing a hand between Dave's hand and mouth to prevent him from eating the paper. Aggression was ignored.

*Treatment analysis.* Response blocking

with redirection to an alternative food item was evaluated using a reversal design. A paired-choice preference assessment identified popcorn as a highly preferred item. It should be noted, however, that the results of a previous analysis indicated that continuous noncontingent access to popcorn alone (without blocking or redirection) did not suppress pica. All sessions were conducted in a room (6 m by 6 m) that was divided into three equal sections (marked with tape on the floor). During each session, pieces of paper (on the floor) and popcorn (in a bowl) were made available in either the right or left section of the room (each item was replenished during the session as necessary). Stimulus position was counterbalanced across sessions to control for a position bias. The middle section was always free of popcorn and paper. At the start of the session, Dave was guided to the middle section.

During response blocking, popcorn was available as described above, and pica was blocked. Response blocking involved providing a verbal prompt to stop engaging in pica, and, if necessary, physically blocking pica while guiding Dave to go to the middle section of the room and to remain there for 30 s. If he engaged in aggression, the blocking procedure was discontinued for 30 s due to the severity of his aggression. Response blocking with redirection was similar to response blocking in that popcorn was freely available, pica was blocked, and blocking was discontinued for 30 s contingent on aggression. However, the therapist also verbally prompted Dave to obtain the popcorn contingent on pica while guiding him to go to the section of the room with popcorn and to remain there for 30 s.

## RESULTS AND DISCUSSION

During the blocking analysis (Figure 1), pica was relatively stable during the ignore condition ( $M = 3.8$ ) and was somewhat

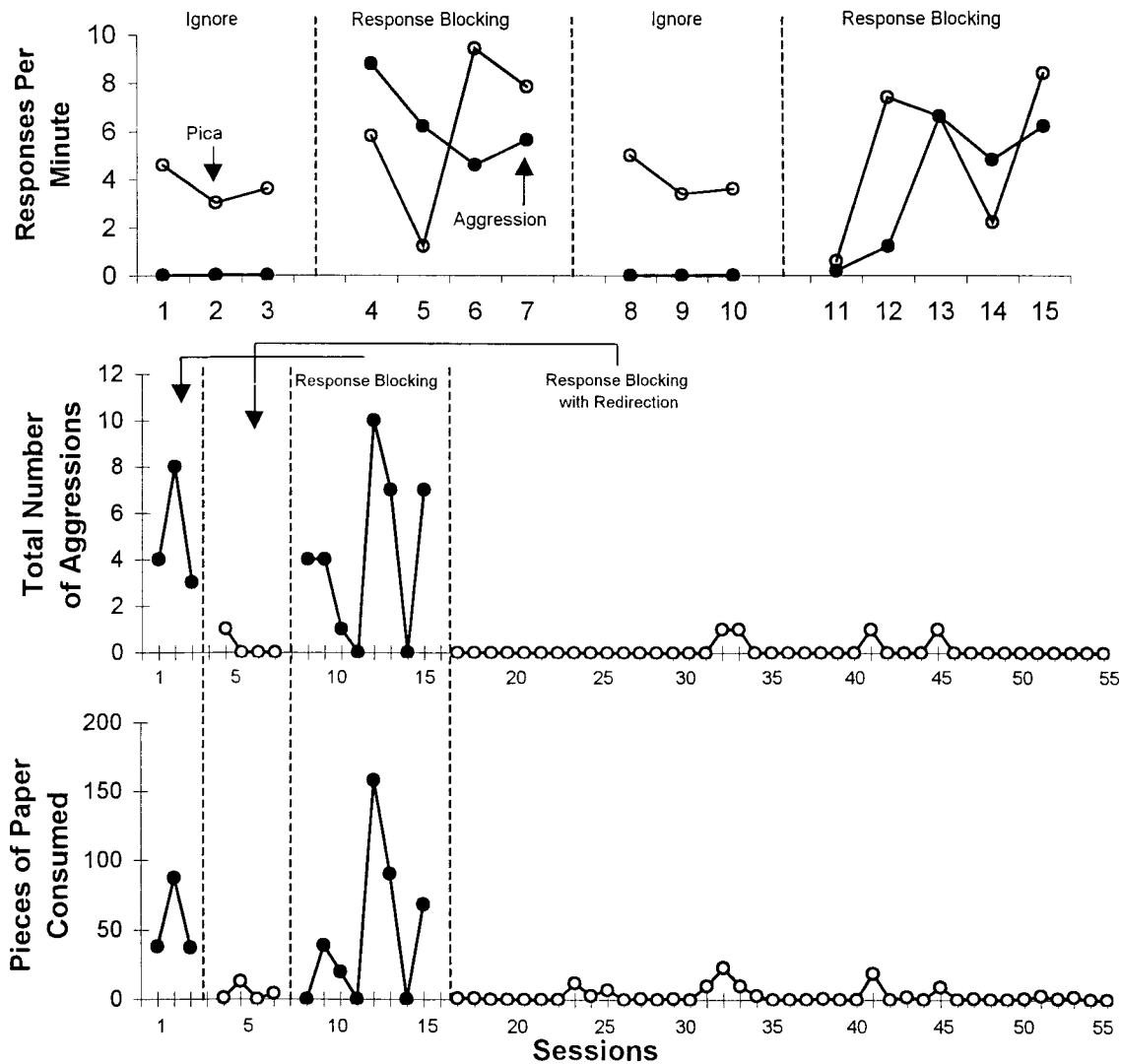


Figure 1. Number of responses per minute of pica and aggression during the blocking analysis (top panel); total number of instances of aggression and pieces of paper consumed during the treatment analysis (middle and bottom panels).

higher and more variable in the response blocking condition ( $M = 5.9$ ). Aggression did not occur during any of the ignore sessions but occurred at high rates in the response blocking sessions ( $M = 4.9$ ), indicating that blocking pica led to aggression. Response blocking with redirection was associated with lower levels of aggression ( $M = 0.1$ ) relative to response blocking ( $M = 4.3$ ). Pica also was substantially lower when blocking was combined with redirection ( $M$

$= 2.9$  pieces vs.  $M = 48.8$  pieces). Although data on popcorn consumption were not collected, it was anecdotally reported that popcorn consumption was considerably higher during blocking with redirection.

These findings suggest that problem behavior may occasion responses from others that, in turn, lead to other problem behavior. Aggression may have been induced by extinction or punishment in the form of response blocking. Alternatively, it may have

increased when pica was prevented because aggression historically produced access to pica materials or terminated response blocking. Although the findings suggest that the effectiveness of response blocking can be enhanced, and its negative collateral effects reduced, by prompting individuals to obtain freely available preferred stimuli, the mechanisms responsible for these effects are unclear and warrant additional investigation. The redirection component may have increased access to alternative reinforcement because it included prompts to consume popcorn or made pica a more effortful response because the participant was moved farther away from the baited materials.

These findings also should be considered preliminary because just 1 individual participated and the effectiveness of this procedure in naturalistic settings was not evaluated.

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