

*AN ANALYSIS OF RESPONSE-BLOCKING
PARAMETERS IN THE PREVENTION OF PICA*

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We manipulated two parameters of response blocking to reduce pica: (a) the criteria for initiating the procedure (either earlier or later in the response chain) and (b) the distance from which the procedure was initiated. Results suggested that response blocking may be effective only when implemented early in the chain and with near-perfect consistency. Further, additional treatment components may be required to eliminate all pica attempts.

DESCRIPTORS: pica, blocking, automatic reinforcement

Results of some studies have shown that response blocking may be an effective intervention for self-injurious behavior (SIB) maintained by automatic reinforcement (Lerman & Iwata, 1996; Smith, Russo, & Le, 1999). Although pica (the ingestion of nonnutritive substances) represents one form of SIB that is often maintained by its own consequences, response blocking as an intervention for pica has produced mixed results. For example, Rapp, Dozier, and Carr (2001) reported that response blocking (when used independently) did not reduce pica to clinically acceptable levels and produced aggression as an unwanted side effect. By contrast, LeBlanc, Piazza, and Krug (1997) found that response blocking was just as effective as restraint in preventing a young girl's pica and was associated with less therapist effort and fewer negative vocalizations. It is also

interesting to note that response blocking has been used somewhat differently across studies. LeBlanc et al. reported that a therapist gently pushed the participant's hand down just before the item entered the mouth, whereas Hagopian and Adelinis (2001) indicated that a therapist's hand was placed between the participant's hand and mouth (suggesting that no attempt was made to lower the participant's hand). It is possible that the manner in which blocking is implemented may produce different effects. For example, initiating response blocking before the pica item is brought toward the mouth might produce quicker response suppression by preventing ingestion of the item (thereby eliminating intermittent reinforcement of the response).

The purpose of the current study was to further examine the effectiveness of response blocking as an intervention for pica. Specifically, we manipulated two parameters of response blocking: (a) the criteria for initiating the procedure (either earlier or later in the chain of pica) and (b) the distance from which the procedure was initiated.

We thank Dennis Reid for his helpful comments on a previous version of the manuscript.

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doi: 10.1901/jaba.2005.92-04

METHOD

Three individuals who had been diagnosed with profound mental retardation participated. Jeremy (48 years old) ingested or attempted to ingest straw, grass, plants, coins, plastic objects, styrofoam, and cleaning fluid. Gordon (40 years old) ingested leaves, grass, paint chips, dirt, and plastic objects. Malcolm (44 years old) ingested cigarette butts. Prior to the study, a variety of pica stimuli (all approved by a physician) were presented to Jeremy and Gordon to identify items that could be used during the blocking analysis. Based on the results, small pieces of paper towel and styrofoam were used for Jeremy, and leaves were used for Gordon (small pieces of cigarette butt were used for Malcolm, who did not participate in this phase).

Two 10-min sessions were conducted daily, 3 to 5 days per week, in an assessment room (3.1 m by 3.4 m) at a state residential center. Two pink laminated squares of paper (21.6 cm by 27.9 cm) (on which pica items were placed) were initially positioned 2.4 m apart on the floor on one side of the room. A piece of masking tape was affixed to the floor on the opposite side of the room 3.1 m away from either pink square. Observers recorded data on pica successes and attempts from behind a one-way window. A *success* was defined as inserting a designated pica item past the plane of the lips. An *attempt* was defined as any blocked or otherwise unsuccessful instance of pica (e.g., an item dropped prior to insertion into the mouth). Sessions were terminated if all pica items were ingested prior to the 10-min limit. Interobserver agreement was assessed by having a second observer independently record data during at least 29% of the sessions for each participant. Agreement was calculated by dividing session time into 10-s intervals, summing the number of intervals in which both observers scored exactly the same number of occurrences, and dividing the result by the number of intervals.

Agreement for both successes and attempts was 95% or higher.

During the alone (baseline) condition, participants were free to roam about the assessment room, and access to pica items was unhindered. In the no-blocking condition, the therapist was positioned 3.1 m from the pica items, did not interfere with the participant's access to pica items, and delivered no consequences for pica or its absence. During the block-ingest condition, the therapist remained 3.1 m from the pica items but attempted to block pica when a participant brought a nonnutritive item within 0.3 m of his mouth. The therapist rapidly approached the participant and used a hand (with fingers outstretched and flat) to interrupt movement of the participant's hand with the pica item toward the participant's mouth. After blocking, the therapist placed the pica item back onto the pink square and returned back to the masking tape (3.1 m away). The block-touch condition was the same as the previous condition except that blocking was initiated earlier in the chain (when the item was first touched). The effects of distance were examined (for Malcolm only) by positioning the therapist closer to the baited items (during the block-touch condition).

RESULTS AND DISCUSSION

Results of the blocking analysis (Figure 1) are shown as the frequency of pica successes and attempts. Each participant exhibited pica in the absence of social contingencies (alone condition), suggesting maintenance (at least in part) by automatic reinforcement. Introduction of a therapist without blocking resulted in only slight decreases in Jeremy's and Gordon's pica and had no effect on Malcolm's pica. Although somewhat fewer pica successes were observed for Jeremy when blocking was initiated contingent on bringing a pica item within 0.3 m of his mouth (block ingest), this type of blocking did not affect Gordon's and Malcolm's pica (Malcolm sometimes reingested a previously

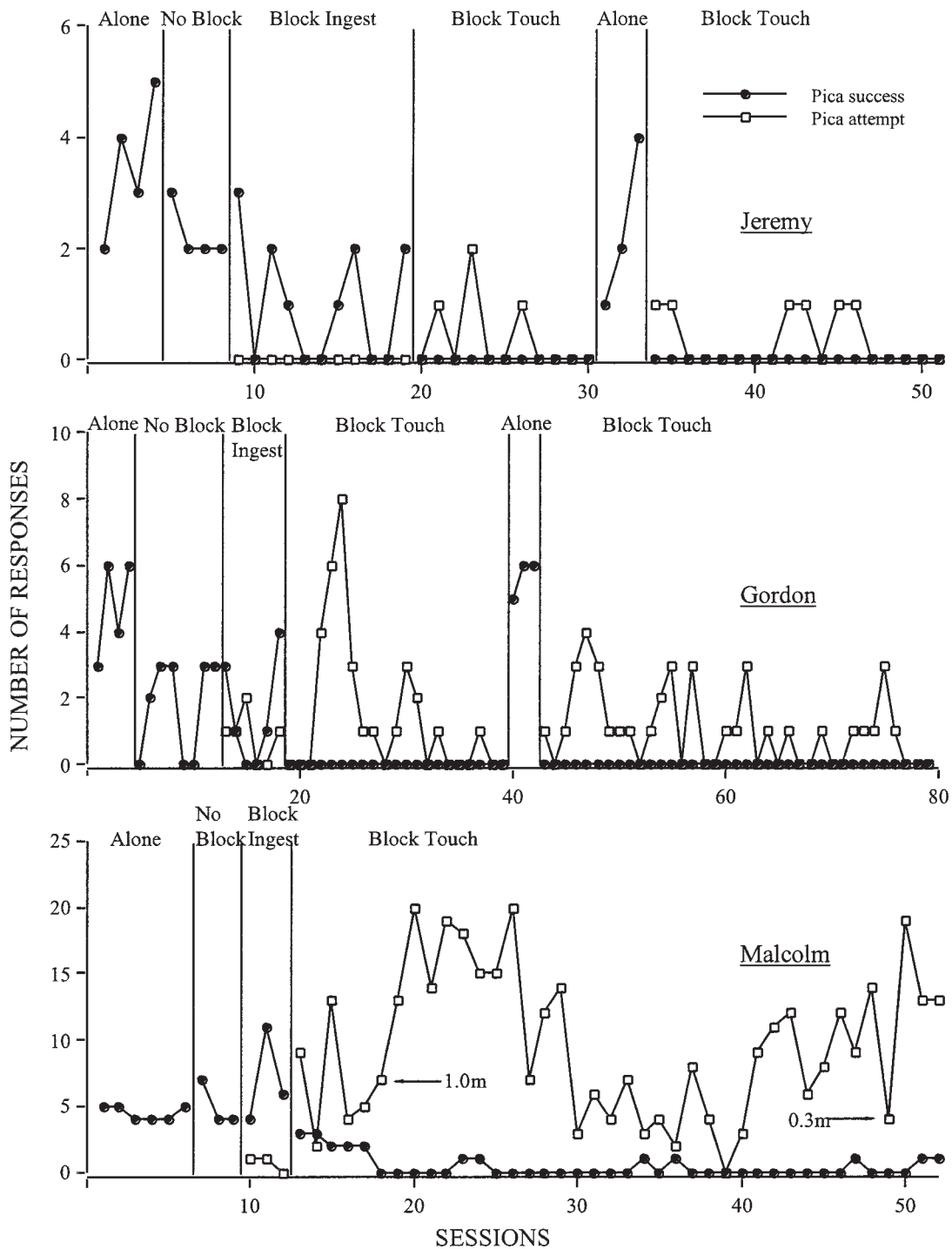


Figure 1. Number of pica successes and attempts during baseline and blocking conditions.

expelled cigarette butt; as a result, his pica successes exceeded the maximum number of allotted cigarette butts during Sessions 7 and 11). In the next condition, blocking was made contingent on touching the item. During block touch, all of Jeremy's pica successes were prevented, and his pica attempts decreased to zero within eight sessions. Gordon's pica successes also were prevented during block touch, although he continued to exhibit pica attempts during most sessions. Jeremy's and Gordon's pica increased during a return to baseline and decreased (with no pica successes) when block touch was reinstated. During block touch, there was a slight decrease in Malcolm's pica successes; however, he still was able to ingest several cigarette butts during every session. When the therapist was positioned closer to the baited cigarette butts (1 m), blocking was more effective (with pica successes reduced to near zero). However, his attempts increased markedly. When the therapist's distance was decreased further to 0.3 m, Malcolm still frequently made pica attempts, which were occasionally successful. Additional interventions (noncontingent reinforcement, blocking, and redirection) were implemented in a subsequent phase and reduced Malcolm's pica to near zero (results available from the first author).

These results show that none of the participants' pica was managed effectively when a therapist attempted to block items being brought to the mouth. However, when a response earlier in the chain leading to pica (touching the pica item) was blocked, Jeremy's and Gordon's pica was preventable with the therapist positioned at a distance of 3.1 m (although Gordon continued to exhibit some pica attempts throughout the evaluation).

Blocking Malcolm's responses required a high level of therapist effort and was ineffective in preventing his pica (even when the therapist stood less than 1 m away). Overall, the results suggest that blocking may be effective in preventing pica only when it is initiated early in its response chain and with near-perfect consistency. Further, additional treatment components may be required to eliminate all pica attempts in some individuals.

The methodology used in the present study provided an empirical basis for evaluating some parameters that may affect the effectiveness of blocking procedures for pica. The methodology could be extended to other forms of SIB, and future research might examine the limits of stimulus control associated with distance.

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Received July 7, 2004

Final acceptance April 18, 2005

Action Editor, Richard Smith