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## Introduction

Response blocking has been shown to be an effective intervention for automatically maintained self-injurious behavior (SIB). However, the mechanism under which it is effective is often unknown. Lerman and Iwata (1996) introduced a methodology for determining whether response blocking functions as punishment or sensory extinction. Though if caregivers are unable to successfully block even 50% of all SIB, then it is impossible to follow their methodology. Additionally, if response blocking functions as extinction, then blocking only a small proportion of responses would produce intermittent reinforcement and thus contribute to the maintenance of the SIB (Smith, Russo, & Le, 1999). Some researchers have proposed the use of protective equipment for more consistent control and protection from injury related to SIB (Schroeder, 1977). The current study investigated the success rate and effectiveness of physical response blocking and protective equipment in the treatment of SIB maintained by automatic reinforcement.

# The Effects of Blocking versus Not Blocking Self-Injurious Behavior

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## METHOD

### Participant and Setting

The participant was Bill, a 16 year old male diagnosed with autism, and mental retardation. He was referred to a behavioral stabilization program for the treatment of high frequency and high intensity SIB to the head. Prior to admission, Bill had a history of wearing a soft padded helmet and padded gloves to prevent injury. Prior to participation in this study, an experimental functional analysis of SIB was completed and Bill's SIB was found to be maintained by automatic reinforcement.

### Data Collection and Inter-Observer Agreement (IOA)

Topographies of SIB directed towards the head were separated from those directed towards the body. SIB to the head was defined as Bill hitting his head with an open or closed hand, banging his head on surfaces, hitting his head with another part of his body, firmly pressing on his eyes with his fingers, and pinching, squeezing or pressing on his nose. SIB to the body was defined as Bill hitting any part of his body with an open or closed hand, hitting any part of his body with another part of his body, pinching any part of his body, or banging any body part on any surface. Successful blocking was defined as the prevention of Bill's hands or knees coming in contact with his head, and the prevention of Bill's head coming into contact with any surface. Unsuccessful blocking was defined as Bill's head coming into contact with his hands, knees, or any surface while the therapist was present and within arm's reach. IOA data were collected for 83% of the sessions. Agreement averaged 89% for occurrence of blocking, not blocking, and self-injury.

## PROCEDURE

### Response blocking efficiency assessment

Twelve 5-minute sessions were conducted in order to assess the therapist's effectiveness in physically blocking SIB to the head. Sessions were conducted in a 16'3" x 16'3" living room area within Bill's residence. During each session, Bill was presented with moderately preferred toys and did not receive any demands. Frequency of both successful blocks and unsuccessful blocks were recorded. The purpose of this assessment was to determine the percentage of SIB that could be successfully blocked.

### Condition A

During Condition A, Bill wore a soft padded helmet consisting of dense foam packing and a flexible plastic shell. The helmet fastened with an elastic strap which adhered to the side of the helmet with Velcro. The helmet was able to be successfully removed by Bill with relative ease. Therefore, all attempts to engage in SIB were physically blocked by staff.

### Condition B

During Condition B, Bill wore the same helmet used in Condition A. However, the staff response to SIB was modified to include response blocking only for areas of the head not covered by the helmet or if Bill removed the helmet.

### Condition C

During Condition C, Bill wore a new helmet which consisted of a denser foam material which also provided coverage to more areas of the head including the cheeks and forehead area. The helmet also closed in the back via two cinching straps which made it far more difficult for Bill to remove it. The staff response to SIB remained consistent with Condition B.

## RESULTS AND DISCUSSION

Results of the response blocking efficiency assessment indicated that success of response blocking was low ( $M = 38\%$ ). As a result Bill's behavior intervention plan (BIP) was modified from Condition A ( $M = 286$  per hour), to Condition B in which response blocking was limited to times when the protective equipment was not in place. Rates of SIB decreased 20% under Condition B ( $M = 228$  per hour) as compared to Condition A. Despite the use of a protective helmet during this condition, Bill was able to remove the helmet with relative ease and did so frequently throughout the day resulting in a decreased ability to maintain safety as well as brief bursts of SIB when the helmet was initially removed. As a result, a new helmet was introduced that both provided more protection and was more difficult to remove (Condition C). In this condition, rates of SIB decreased in variability and trend over a 3 month period ( $M = 93$  per hour), representing a 68% reduction from rates during Condition A.

The results of this study indicate that while response blocking may be an effective procedure for some topographies of SIB, the emergence of other, more intense topographies or increased frequency may limit the effectiveness of treatment. Therefore, additional supplemental treatment components may be necessary to obtain better overall treatment effectiveness.

