



DEVELOPING ANTECEDENT AND CONSEQUENT-BASED INTERVENTION STRATEGIES TO PREVENT THE OCCURRENCE OF CHALLENGING BEHAVIORS IN A CHILD WITH AUTISM

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Abstract:

Many children with autism spectrum disorder engage in challenging behaviors in order to escape from a demand or to have access to tangibles. Sometimes, they may engage in challenging behaviors because they have language delay or they do not have a functional communicative repertoire at all. The subject of this study is a 7-year old boy with autism spectrum disorder who based on the functional analysis engages in screaming and hitting when he wants to escape from a demand and when he wants to have access to tangibles. These challenging behaviors sometimes are followed by additional behaviors such as flopping and crying. The purpose of the study was to implement antecedent and consequent strategies in order to prevent the occurrence of these behaviors. The implementation of the intervention took place across 6 sessions. During the sessions, behavior therapist recorded the target behaviors, with tally counters, and at the end of the day the therapist recorded the total number of occurrence of these behaviors on the tracking sheet. The graphs showed a decrease of the occurrence in both challenging behaviors, but further time needed in order to determine the effectiveness of the intervention, as the goal is to decrease these behaviors to near zero levels.

Keywords: antecedent, consequent, screaming, hitting, functional analysis, autism spectrum disorder

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1. Introduction

The Behavior Intervention Plan (BIP) changes environmental conditions in order to decrease challenging behaviors and increase appropriate alternative behaviors (Smith, 2011).

Many studies have used BIPs in order to eliminate problem behaviors and introduce more acceptable behaviors. Cote, Thompson, and McKerchar (2005) stated that antecedent interventions can be highly effective when they are implemented with extinction, especially when the goal was to increase individual's compliance during transitions. Another study (Kern & Clemens, 2007) highlighted the power of antecedent strategies and stated that by providing praise, increasing predictability through transitions, and providing preferred items after the occurrence of the appropriate behavior, we can promote appropriate behaviors. Mesibov, Browder, & Kirkland (2002) identified the effectiveness of using individualized schedules as a component of BIP. Researchers used visual schedules for easing transitions, in order to perform series of tasks.

The purpose of our study was to examine the positive approaches of a BIP for challenging behaviors in a participant with autism spectrum disorder (ASD). We conducted antecedent and consequent interventions in order to prevent the occurrence of screaming and hitting behaviors which based on the functional analysis (FA) occurred during escape and access to tangible conditions. The results indicate a decreasing trend of screaming and hitting through 6 consecutive sessions implementing the BIP.

2. Participant

Our participant is a 7-year-old boy with a diagnosis of ASD. He has been receiving 20 hours per week of therapy on his Intensive Behavior Intervention (IBI) program for the past two months.

He can follow simple one-step instructions (i.e., throw away), he has basic imitation skills (i.e., clap hands), and he can emit one-word requests for actions (i.e., move) and objects (i.e., cars). The current target behaviors that have been tracked and targeted for reduction are screaming and hitting. Screaming has been defined as any vocalization above conversational level which ends when there are no vocalizations for 5 seconds. This behavior is paired with negative affect and may occur with other behaviors such as crying, hitting, and/or flopping. Hitting has been defined as any forceful contact with any part of participant's body to another person.

Before the intervention, we informed his parents about this research study and obtained their permission to implement the strategies with their son.

By trying to prevent the occurrence of these behaviors, and in the future introducing alternative skill programs, we will replace them with more socially appropriate behaviors (Hozella & Ampuero, 2013). These skills will help his verbal

interactions (Wallace, 2007), and they will decrease the occurrence of challenging behaviors without implementing aversive contingencies, by just gradually shaping his inappropriate behaviors into acceptable ones (Drash, High, & Tudor, 1999; Michael, 1988).

3. Method

This program took place in a therapy space, across 6 3-hour sessions. The antecedent program included the following:

- First/Then Board-Token Board: will be implemented in order to increase the amount of work our participant is able to complete prior to receiving tangible reinforcement. At the same time, it will act as a visual aid to show him when he can access the preferred items.
- Functional Communication Training (FCT): Intensive mind training will be run throughout his sessions. Participant will be encouraged to make requests for preferred items throughout the day. If he requests the item prior to completing his token board, the first-then will be used and the behavior therapist will show him the token board so he can see when he can have the item.
- Preference assessments: will be conducted to identify which reinforcers he is motivated for in a day. This will guide the reinforcers that are used throughout his sessions.
- Breaks away from the teaching environment: he will be permitted to take breaks away from the teaching environment after he earns all of his tokens. If he chooses to stay at the table, he can, but the therapist will ensure that some breaks are taken away from the table.
- Transitions: Transition items will be provided when transitioning between rooms in the clinic. This will help prevent challenging behaviors. When transitioning from highly preferred activities, he will be provided with a countdown before the activity is over. His visual schedule will be used to help show him the order of events planned. When transitioning to potentially aversive environments, his first-then board will be used.
- Mealtimes: The first-then board will be used to provide reinforcement for appropriate behavior at the table such as sitting in a chair and using a quiet voice when communicating him wants and needs. He will be reinforced with edibles and praise when he does not engage in any of the target behaviors for a specified period of time.

The consequence program included the following:

- When a demand is placed on our participant and he engages in target behavior:
 - a. The behavior will be ignored with any aggression directed towards the behavior therapist to be blocked, but not attended to.
 - b. Continue with the task demand. Provide prompting if necessary, so that he completes the demand and to avoid frustration.

- c. Differentially reinforce him once he has completed the task and the target behavior has stopped.
- When remove a toy that he likes and he engages in target behavior:
 - a. Ignore the behavior and wait for him to stop engaging in the behavior.
 - b. Once he has not engaged in the behavior for 5 seconds and is quiet, prompt him to request the item.
 - c. Give him the item following a request without a target behavior.
- He sees an item he wants but does not request for it or you have prompted him to use words and he engages in the target behavior:
 - a. Ignore the behavior and wait for him to stop engaging in the behavior.
 - b. Once he has not engaged in the challenging behavior for 5 seconds and he is quiet, prompt him to request the item.
 - c. Give him the item following a request without engaging in a target behavior.

During the sessions, behavior therapist had 2 tally counters (i.e., one for screaming, one for hitting). Thus, every time our participant engaging in challenging behavior, behavior therapist indicated that on the appropriate tally counter and at the end of the day the therapist recorded the total number of occurrence of target behaviors in a track sheet. The goal of the intervention was to decrease the target behavior to near zero rates for 4 consecutive weeks.

4. Results

We used frequency (i.e., number of occurrences of behaviour/sessions) of screaming and hitting data collection per session and we graphed the frequency per session daily. The changes in occurrence of the target behaviors are interpreted in the graphs below.

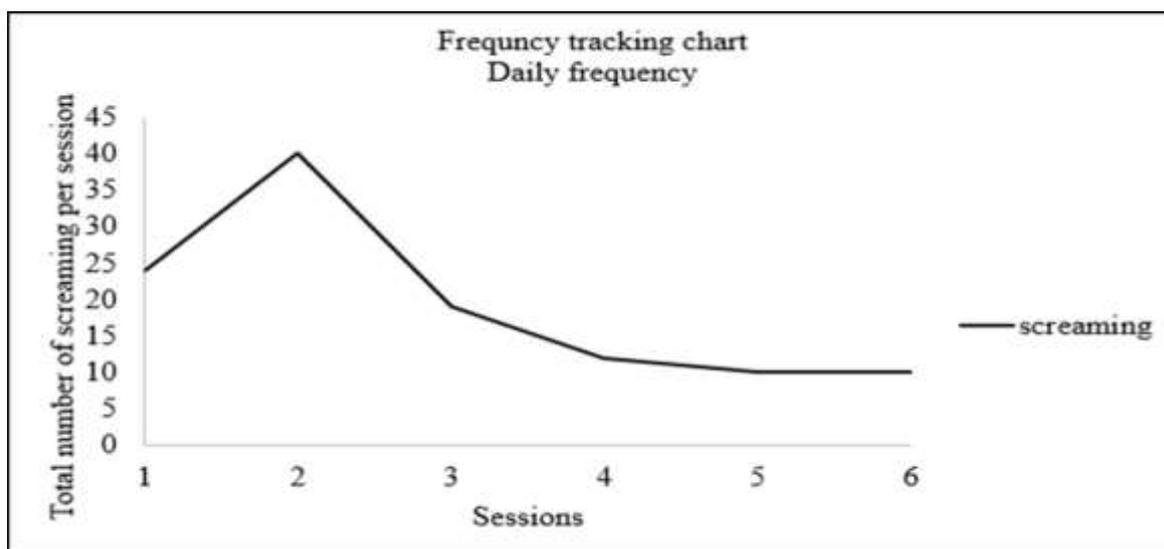


Figure 1: Total number of occurrence of screaming behavior across 6 consecutive sessions

During the first two days of the interventions, we observed high levels of occurrence of screaming, and more specifically an increasing trend which abruptly decreased, during the third session. Through the last three sessions, the trend of the line stays stable and close to 10-15 occurrences. There is a significant decrease of the occurrence of screaming between the first and the last days of the BIP.

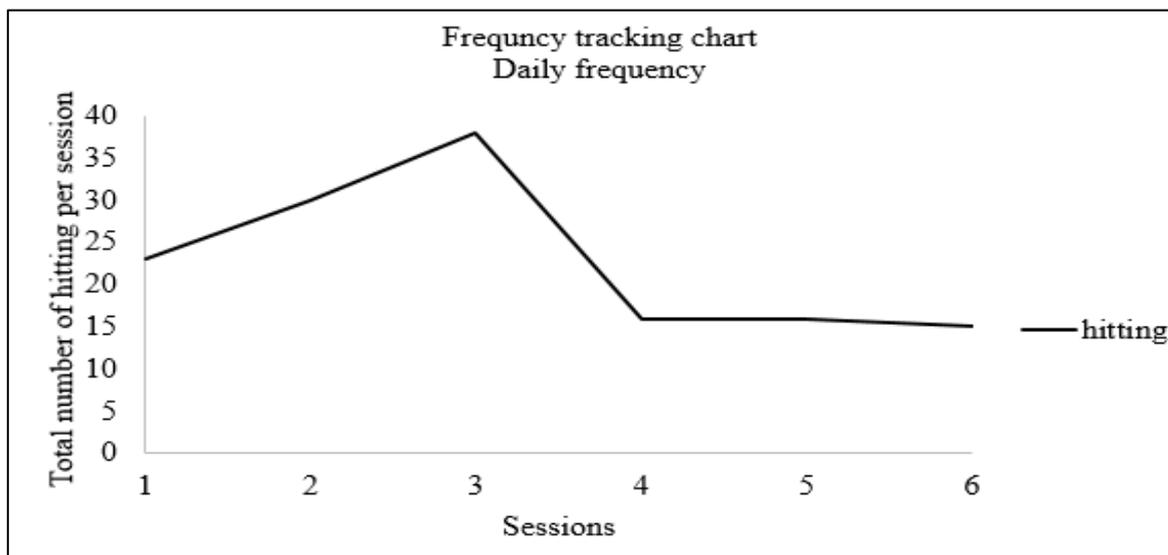


Figure 2: Total number of occurrence of hitting behavior across 6 consecutive sessions

Changes have been also observed in the occurrence of hitting. There is a significant increase on line trend between the first two days, where the behavior is in peak during the third day, with total amount of occurrence around 40 times. Through the day 4, there is an abrupt decrease of the line trend and the occurrence of hitting, decreases. Through the next couple of sessions (4 and 6) the trend of line stays to lower rates and close to 15 times occurrence of hitting per session.

Through visual analysis, for both behaviors it is clear that during implementation of the BIP there is a gradually decrease of the occurrence of the target behaviors and both of them have rates close to 10-15 times per session, which is a good sign that our strategies are working and can be effective for our participant.

The conditions that were tested in the FA were access to tangibles, access to escape, and a control condition. Before the implementation of the FA, we obtained consent form from parents (see Appendix 1). Based on the results of the FA (see Appendix 2), our participant engages in target behaviors, when he wants to have access to tangibles and at the same time he engages in additional behaviors (e.g., flopping, crying). Also, when a demand was placed, then he engaged in target behavior in order to escape from the demand that has been placed. Target behaviors have not been observed during the control condition. Hypothesized functions of the behaviors are socially mediated and are the following:

- Escape from task demand: He engages in the behavior in order to avoid or escape a demand that was placed on him.
- Access to tangible: He engages in the behavior to gain access to preferred items.

5. Discussion

The present study indicated that antecedent-consequence strategies can be implemented with a client who engages in challenging behaviours in daily basis. Our participant used to engage in screaming and hitting when he wanted to escape from a demand or when he wanted to have access to tangibles. The goal was to decrease the occurrence of these behaviors, to near to zero levels and throughout his IBI sessions, replace them with alternative behaviours. Before the implementation of the program, we were conducted an Analogue FA in order to identify the function of the behavior, as several studies have determined the importance of the FA prior the design of any program (Hanley, Iwata, & McCord, 2003; Haynes & O'Brien, 1990). For the antecedent intervention, a visual schedule, a token board system, a FCT/mind training, preference assessment, breaks from teaching environment and careful transitions were implemented. For the consequence strategies, once he engaged in challenging behavior there were some specific steps in order to protect him, us, and at the same time try to reduce the occurrence of the behavior.

The results demonstrated the effectiveness of these interventions as a significant decrease in the total number of occurrences of the target behaviours through the sessions was observed. Some of this study's strengths are that we successfully decreased the target behaviors from high number of occurrences to a lower number of occurrences by implementing a visual schedule and first-then board which was considered as an effective tool for him. One more strength was the presence of another preferred item when we wanted to remove a highly preferred item from him, by preventing the occurrence of the target behaviors.

There are couple of technical improvements that we should have implemented or we can implement through the next sessions. Using family context in order to inform intervention planning for the treatment, would be helpful for our participant, as based on his parents many time he engages in target behaviors at home and/or in public, and they do not know how to react. Thus, family training and involvement on this support plan would help him to decrease target behaviors out of site (Buschbacher & Fox, 2003; Moes & Frea, 2000; Moes & Frea, 2002).

Improving child's communication skills and vocal repertoire can reduce the occurrence of problem behaviors. At the same time, we should keep in mind what responses require the least amount of effort, as responses with a lot of effort may put him in risk of engaging in challenging behavior (Buschbacher & Fox, 2003).

We need safety plan, in case there is an event which occurs in which the child engages in a higher rate or more intense level of the target behavior and at the same time we need staff training in case where he starts screaming and hitting other people. There is no clear protocol yet and staff has not be trained in order to know how should react in case where X engages in challenging behaviour (Lipsky & Richards, 2009).

6. Conclusion

At the end of this study, we identified the importance of conducting an FA and determine the function(s) of the target behavior, before appropriate interventions be implemented. During the implementation of the BIP we had the chance to see a significant decrease of challenging behaviors, which tells us that this intervention can be beneficial for the child. Combination of FA, BIP, and alternative skill development can replace challenging behaviors with more appropriate ones without putting our participant on risk.

References

- Buschbacher, P. W., & Fox L. (2003). Understanding and intervening with the challenging behavior of younger children with autism spectrum disorder. *Language, Speech, and Hearing Services in Schools, 34*, 217-227.
- Kern, L., & Clemens, N. H. (2007). Antecedent strategies to promote appropriate classroom behavior. *Psychology in the School, 44* (1), 65-75.
- Cote, C. A., Thompson, R. H., & McKerchar, P. M. (2005). The effects of antecedent interventions and extinction on toddlers' compliance during transitions. *Journal of Applied Behavior Analysis, 38* (2), 235-238.
- Drash, P. W., High, R. L., & Tudor, R. M. (1999). Using mind training to establish an echoic repertoire in young children with autism. *The Analysis of Verbal Behavior, 16*, 29-44.
- Hanley, G. P., Iwata B. A., & McCord, B. E. (2003). Functional analysis of problem behavior: A review. *Journal of Applied Behavior Analysis, 36* (2), 147-185.
- Haynes, S. N., & O'Brien, W. H. (1990). Functional analysis in behavior therapy. *Clinical Psychology Review, 10* (6), 649-668.
- Hozella, W., & Ampuero, M. (2013, July). *Mind Training Basics*. Paper presented at National Autism Conference, Pennsylvania.
- Lipsky, D., & Richards, W. (2009). *Managing Meltdowns: Using the S.C.A.R.E.D. Calming Technique with Children and Adults with Autism*. London and Philadelphia: Jessica Kingsley Publishers.
- Mesibov, G. B., Browder, D. M., & Kirkland, C. (2002). Using individualized schedules as a component of positive behavioral support for students with developmental disabilities. *Journal of Positive Behavior Interventions, 4* (2), 73-79.
- Michael, J. (1988). Establishing operations and the mind. *The Analysis of Verbal Behavior, 6*, 3-9.
- Moes, D. R., & Frea, W. D. (2000). Using family context to inform intervention planning for the treatment of a child with autism. *Journal of Positive Behavior Interventions, 2* (1), 40-46.

- Moes, D. R., & Frea, W. D. (2002). Contextualized behavioral support in early intervention for children with autism and their families. *Journal of Autism and Developmental Disorders*, 32 (6), 519-533.
- Smith, R. G. (2011). Developing Antecedent Interventions for Problem Behaviour. In Fisher, W. W., Piazza, C. C., & Roane, H. S. (Eds.), *Handbook of Applied Behavior Analysis* (pp. 335- 369). New York, NY: The Guilford Press.
- Thomasson-Sassi, J. L., Iwata, B. A., Neidert, P. L., & Roscoe, E. M. (2011). Response latency as an index of response strength during functional analysis of problem behavior. *Journal of Applied Behavior Analysis*, 44 (1), 51-67.
- Wallace, M. D. (2007). A comprehensive analysis of mind training. *The Journal of Speech and Language Pathology - Applied Behavior Analysis*, 2 (3), 278-286.

Appendix 1

A. Target behavior

- Screaming will be defined any vocalization above conversational level which ends when there are no vocalizations for 5 seconds. This behavior is paired with negative affect and may occur with other behaviors, such as crying, hitting, and/or flopping.
- Hitting will be defined any forceful contact with any part of participant's body to another person.

B. Purpose

The main purpose of a functional analysis is to demonstrate a functional relationship between environmental events and the target behavior, or in other words to determine why the behavior is occurring. A functional analysis is a specific type of assessment where several "sessions" are run to test hypotheses to contribute to a better understanding of why a behavior is occurring. Sessions are set up to increase the chance that the child will engage in screaming and hitting, thus allowing us to determine which environmental conditions tend to occur prior to screaming and hitting.

Each session tests a different behavioural function, including:

- Escape from demand: To see if he will engage in screaming and hitting to get out of doing something she was asked to do.
- Access to tangibles: to see if he will engage in screaming and hitting to get access to preferred items, locations, or activities.
- A play condition, will be our control condition in which he will be given access to a highly preferred toys, and no demands or instructions to create a situation where it is not likely he will engage in screaming and/or hitting.

Due to the associated risk of injury from our participant engaging in screaming and/or hitting, a modified functional analysis will be conducted to minimize the frequency of potential screaming and/or hitting. We will be measuring response latency (how long it takes him to engage in screaming and/or hitting in a session) and will terminate each session after the first instance of screaming and/or hitting which falls within the parameter of the definition of the target behaviour (Thomason-Sassi, Iwata, Neidert, & Roscoe, 2011).

C. Risks and Benefits

The benefits of this procedure include the ability to provide causal data, allowing us to develop a function based intervention to increase the likelihood that it will be effective in treating the behavior.

Risks of the procedure include: increase in screaming and/or hitting during and possibly after the session, and risk of injury due to hitting. Note that the occurrence of any serious injury would mean an immediate end of the assessment.

D. Confidentiality

As with all services at the clinic, all information provided during the functional analysis remains confidential, as indicated in the IBI/Applied Behavior Analysis (ABA) services consent form.

E. Videotaping

The functional analysis may be videotaped and viewed by the senior behavior therapist, for the purposes of training, feedback, and data collection.

F. What to Expect

Prior to participant's arrival, the room will be prepared for the assessment. All conditions will be a maximum of 5 minutes in length and there may be a short 1-2 minutes breaks between each condition. During the breaks, he may be removed from the room. A total of 9 conditions will be run. Depending on his behaviour, a second assessment day may be established to continue the session if necessary.

Appendix 2

Functional Analysis Session Schedule

Target Behavior: Screaming and Hitting

Session	Antecedent Manipulations	Consequence for target behavior	Max. sessions duration	Discriminative Stimuli
Access to tangibles	Therapist will hold preferred items and sit across the room from exit.	Therapist will give all the preferred items to participant.	5 min (300 seconds)	Therapist sitting or standing facing a wall, wearing a white shirt.
Control	Provide highly preferred toys and materials on the floor and say "Want some?". Allow participant to access materials.	None	5 min (300 seconds)	Therapist sitting on the floor facing participant, wearing a black shirt.
Demand	Program materials will be ready at the table. Therapist will provide instruction "It's time to work". Current program tasks will be delivered with prompting used as per written program. Verbal praise will be provided for correct responses but no other reinforcement will be provided.	Immediate removal of the task. Program materials are removed from the table and placed into a bin. The therapist will turn away from the child.	5 min (300 seconds)	Therapist sitting beside the child wearing a red shirt.

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