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Using a Multicomponent Intervention to Increase Appropriate Transitions to School

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Masters of Applied Behavioral Analysis
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University of South Florida

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DEDICATION

I dedicate this manuscript to my parents who have given me more than I have ever needed alongside their love and support throughout the years. I also dedicate it to my siblings who have encouraged me and supported me in my decisions, giving me the strength to continue.

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I would like to acknowledge Dr. Kimberly Crosland for guiding me through this process. Her willingness and flexibility all throughout allowed me to continue my research to this point. I would also like to acknowledge Dr. Catia Cividini-Motta and Dr. Raymond Miltenberger for providing me with their time and any additional support. Their insight allowed me to expand my understanding of the field as a researcher.

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ABSTRACT

School attendance is important for the social and academic development of children. Therefore, appropriate transitions to school are a necessary skill for students. Differential reinforcement of other behaviors (DRO) is a non-intrusive procedure used to decrease undesired behaviors. Likewise, differential reinforcement of alternative behaviors (DRA) is a widely used procedure to increase appropriate alternative behaviors while reducing inappropriate behaviors. This procedure has been assessed throughout behavior analytic literature alongside other behavioral components. The use of DRA without extinction has been shown to be an effective procedure to increase appropriate behaviors and decrease disruptive behaviors without completely withholding reinforcement for behaviors that may be difficult, or not advisable, to put under extinction. This study aimed to assess the effectiveness of an intervention package to increase the appropriate transitions into school of a child with autism spectrum disorder (ASD). Results from this study showed that the intervention appeared to be effective in increasing the client's transitions within the 5-min timeframe, although the client continued to engage in at least one instance of problem behavior during transitions.

INTRODUCTION

Callahan et al. (2016) mention the importance of addressing social validity in the field of applied behavior analysis (ABA). This includes evaluating consumer acceptance of the goals selected for treatment, the treatment program, and treatment outcomes. The Professional and Ethical Compliance Code for Behavior Analysts explains that the responsibility to clients requires the use of evidence-based treatments with the client's best interest in mind (Behavior Analyst Certification Board, 2014, Section 2.03). Kearney and Graczyk (2013) indicate the importance of school attendance in children's foundational success. The authors point out the importance of children attending school to improve both academic and social skills.

Every child that attends school in person engages in the behavior of transitioning into the school building at the beginning of the day. Appropriately transitioning without problem behavior allows children and school administrators to ease into the process of starting the academic day. Vitaro et al. (1999) discuss the influence disruptive behaviors can have on school-related behaviors, such as attendance and academic enrollment. For this reason, the authors aimed to reduce disruptive behavior to prevent school dropout. Multiple studies have been conducted to study the implementation of different interventions at school, including a study by Dillenburger et al. (2012) which showed high parental satisfaction with school-based ABA interventions.

Different evidence-based procedures have been studied in the field of ABA, including differential reinforcement. A type of differential reinforcement used to decrease inappropriate

behaviors is differential reinforcement of other behavior (DRO). Kim (2012) describes DRO as a procedure that provides reinforcement contingent on the absence of an inappropriate behavior. Likewise, the author mentions that this type of differential reinforcement is one of the least intrusive yet effective procedures. This study used DRO as part of a package intervention to decrease the scripting behavior of a child with ASD. The author used a partial interval recording method to provide reinforcement contingent on the absence of scripting during that interval. Results from this study showed that the intervention was effective in reducing scripting. Another type of differential procedure is differential reinforcement of alternative behavior (DRA). LeGray et al. (2013) used an alternating treatments design to evaluate the effectiveness of pre-teaching the alternative behavior when implementing a DRA procedure to reduce attention-maintained inappropriate vocalizations and increase appropriate vocalizations. The study compared the effectiveness of just providing reinforcement for the first occurrence of the alternative behavior after 30s of absence of the inappropriate behavior with pre-teaching the expectations for the occurrence of the appropriate behavior prior to implementing the DRA component. Results from this study showed that pre-teaching the behavioral expectations was more effective in increasing the alternative behavior and reducing the occurrence of the inappropriate behavior than implementing DRA alone. Additionally, Flynn and Lo (2015) trained teachers to implement DRA to increase appropriate replacement behaviors of children with ASD or emotional and behavioral disorder (EBD). The study consisted of a Board-Certified Behavior Analyst (BCBA) training three teachers using instruction, role-play, and feedback of implementation of DRA with their six students. The results of Flynn and Lo (2015) showed increased procedural fidelity by the teachers after training with performance feedback as well as

a reduction of all the student's inappropriate behaviors and an increase in the alternative behaviors targeted.

A literature review by Trump et al. (2019) indicated that DRA can be used with and without extinction. Extinction refers to the withholding of a behavior's maintaining consequence. The authors explain the different side effects that may arise with extinction, such as extinction bursts and behavior variability. For this reason, depending on the severity and context of some behaviors, it may not be advisable to implement extinction as a behavior reduction procedure. Briggs et al. (2019) studied the use of DRA without extinction to reduce escape-maintained problem behavior and increase alternative behavior. The researchers completed a pretreatment attention assessment to determine what topography of attention was preferred by the participants. They then manipulated and combined the magnitude and quality of both positive and negative reinforcement. Results from this study showed that by manipulating the quality and quantity of the reinforcers, problem behavior reduced, and alternative behaviors increased without the use of extinction. The findings from this study demonstrate the potential effectiveness of DRA as a behavior reduction and skill acquisition procedure even without the extinction component. This is particularly important when the target behavior should not be put under extinction, primarily due to potential side effects, as previously mentioned by Trump et al. (2019). The purpose of the current study was to evaluate the effectiveness of an intervention package using DRA without extinction and DRO to increase appropriate transitions into school for a child with autism spectrum disorder (ASD).

METHOD

Participants and Setting

The participant for this study was BS, a 12-year-old boy diagnosed with autism spectrum disorder (ASD). He had limited communication skills, using a communication book as his primary source of communication. The participant received ABA services throughout the academic day, requiring assistance with academic and independent living skills. This included completion of language arts and math worksheets, as well as appropriate hygiene behaviors, such as hand washing and bathroom usage. He engaged in frequent disruptive behaviors when access to preferred items and/or activities were denied. The behaviors outlined in his behavior plan included screaming, aggression, dropping, property destruction, elopement, and tantrums. He attended a private school for children with special needs. His classroom had similar aged peers, some of which also received behavioral services. The school allowed for some flexibility in the schedule, as deemed necessary for each student. The agency that worked with the participant had a clinic inside the school, used for discrete trial training (DTT) and for de-escalation procedures when necessary.

Materials

The therapists' cellphone was used to record the frequency of the behavior as well as for the use of the timer. Additionally, an edible reinforcer (e.g., a gummy) was provided once the client had transitioned completely into the school building.

Target Behaviors and Data Collection

The target behavior was transitioning into the school building within a 5-min time frame of arriving to school, without engaging in problem behavior. Transitioning was defined as walking from the drop off gate to the entrance of the school building. A transition was completed once the client's body was inside the building with the entrance door closed. The participant was able to engage in one instance of the target behavior per day, at the beginning of the day when dropped off at school. Data was collected on two dimensions of the target behavior, transitioning within the predetermined time frame and transitioning without any instances of problem behavior. Transitioning within the predetermined time frame referred to if the participant transitioned within 5-min of being dropped off and the trial was marked as an occurrence. If there was a longer duration of transition, the trial was scored as a non-occurrence. Transitioning without any instances of problem behavior referred to if the participant transitioned without engaging in any problem behavior, regardless of the time it took, the trial was recorded as an occurrence. If he engaged in any instance of problem behavior the trial was recorded as a non-occurrence. As previously mentioned, problem behaviors included screaming, aggression, dropping, property destruction, elopement, and tantrums. Screaming was defined as engaging in a vocal response that was high in pitch and above normal voice level. Aggression was defined as pushing, choking, hitting, slapping, pinching, scratching, or biting. Dropping was defined as falling to the floor from a standing or seated position. Property destruction was defined as hitting with an open or closed fist, kicking any surface, and/or tearing up work materials. Elopement was defined as leaving within one foot of therapist distance without permission. Lastly, tantrums included screaming, crying (with or without tears), and could include dropping and/or elopement from the current area. The therapist that worked with the participant started the timer once he had

stepped into the gated hallway with the gate closed and would stop the timer once his whole body was inside the school building.

A second trained observer was present for 33% of baseline sessions and during 27% of intervention sessions. An agreement between the first and second observer was considered as both observers recording the same response for each of the behaviors (e.g., both recording an occurrence or both recording a nonoccurrence). A disagreement was considered if the data of one observer differed from the data obtained by the second observer (e.g., one observer recording an occurrence and one recording a nonoccurrence). Interobserver agreement (IOA) was calculated by dividing the number of agreements over agreement plus disagreements and multiplying it by 100. IOA data for both the baseline and intervention phases was 100%.

Treatment integrity data was not collected during the study. However, each therapist was trained to observe and record the behavior, as well as on how to implement the intervention.

Experimental Design and Procedures

An AB design was used to evaluate the effectiveness of the procedure to increase appropriate transitions to school.

Baseline

During the baseline phase of the study, the caregiver would unbuckle the client from the opposite side while the therapist positioned themselves at the client's door to facilitate ease of access into the gated entrance. The client would then be provided with verbal prompts to transition into the school building independently. The procedures in place required the use of response blocking with an open hand and least-to-most prompting (verbal to model to physical) for elopement, property destruction, and aggression. These procedures were outlined in the

client's behavior plan for the occurrence of these problem behaviors. Vocal prompts for a quiet voice and calm body were provided contingent on screaming.

Intervention

The procedure implemented required the use of antecedent manipulations and differential reinforcement of appropriate transitioning in the absence of problem behaviors. Additionally, due to results from ABC data, it was hypothesized that these behaviors were maintained by attention. Therefore, and a parameter manipulation for the quality of attention provided was implemented to increase the likelihood of the occurrence of appropriate transitioning and reduce reinforcement for problem behaviors during transitions. The antecedent manipulations implemented included beginning the transition process once most of the car line was done dropping students off to reduce the likelihood of injury to another student as well as the risk of the participant's elopement into the parking lot. The client's caregiver would park next to the entrance of the gated hallway. The client's bag and lunchbox were placed by the school's entrance door to reduce the likelihood of throwing and property destruction. The client's caregiver would then open the car door to allow the client to step into the gated hallway. The transition and data collection began once the participant was inside the gated hallway, during which the therapist would face the entrance, extending the arm to allow the participant to hook his arm independently. Hooking his arm was used as reinforcement since it was highly preferred by the client during transitions. If the client hooked his arm and walked towards the entrance without engaging in disruptive behaviors, the therapist would provide praise for a calm body and quiet voice, allowing him to continue hooking his arm contingent on appropriate transitioning. If the participant engaged in any problem behavior, the therapist would unhook his arm, providing minimal attention to the participant. A neutral reminder for a calm body and quiet voice was

provided. If he engaged in property destruction (e.g., hitting the windows or walls of the school building), the therapist would response block without commenting on the behavior and avoiding eye contact. Once the participant began transitioning appropriately without engaging in problem behaviors, the therapist would allow the client to hook his arm again. Lastly, if the participant transitioned within the 5-min time frame, a preferred edible, typically a gummy, alongside verbal praise would be provided once the transition was complete.

RESULTS

The data obtained from the study show that the intervention may have been effective in increasing the participant's transitions into school within the 5-min time frame (see Figure 1). In baseline, BS never met the 5-min transition time but after intervention was implemented, he met the 5-min transition time 8 out of the 10 occurrences. Data for problem behavior did not show similar changes as he continued to engage in at least one instance of problem behavior during transitions, except for one day during intervention.

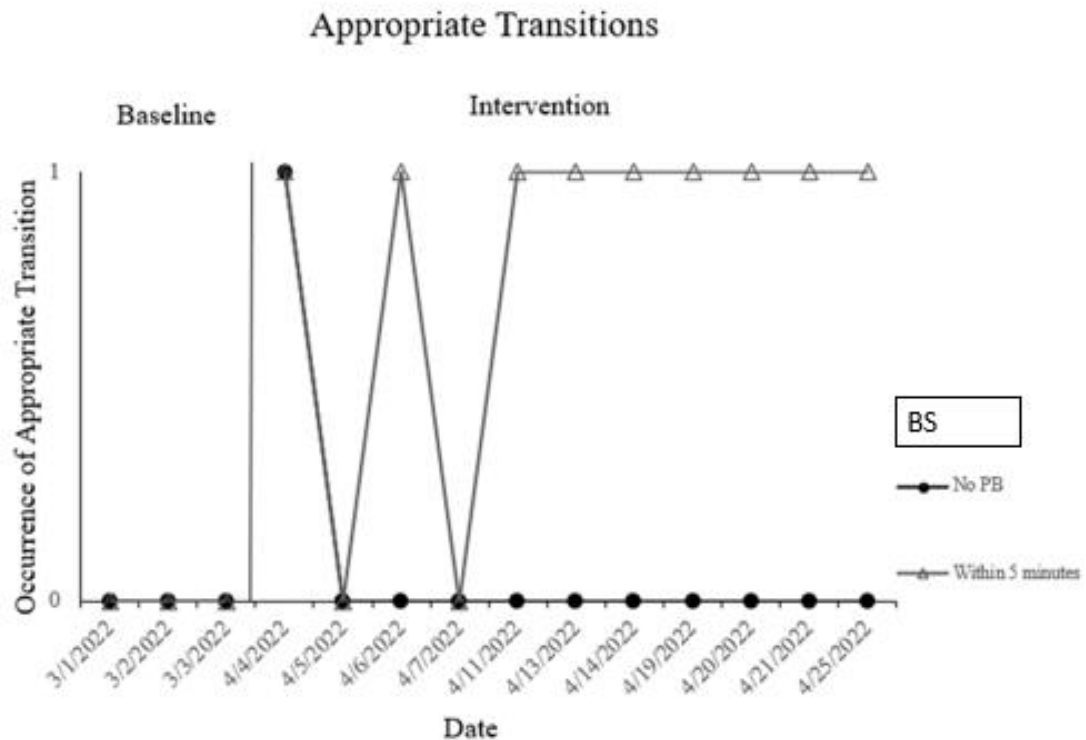


Figure 1. Data showing the occurrence of appropriate transitions the participant engaged in during baseline and intervention.

DISCUSSION

The results from this study show that the multicomponent intervention was effective in increasing the number of times the client transitioned within the 5-min time frame across days. Although there is some variability in the data, a stable data path is observed after the fifth session of the intervention phase. Nonetheless, as the data path for no problem behavior shows, the client continued to engage in at least one instance of problem behavior during transitioning, showing that the procedure was not effective in reducing the occurrence of problem behaviors to zero during this time.

A limitation to this study is the lack of data for frequency of problem behavior. The client was only able to achieve 100% of opportunities with no problem behavior if he did not engage in any instances. However, the frequency of problem behavior may have reduced with the reduced transition time. It is also important to note that, although not recorded on the graph, the duration of transitions into school gradually decreased as the intervention phase progressed. Nearing the end of the intervention, the client was consistently transitioning within a 2-min timeframe. Comparing this decrease in transition duration to baseline, it may be important to consider future implications of this in any modifications to the client's procedures. With a decrease in the duration of transitioning, it may be appropriate to reduce the time criteria to get into school. Having a 5-min criterion may be too long if the client is reliably transitioning within a shorter amount of time. Another limitation to this study is the AB design which does not show adequate experimental control.

An additional consideration is measuring procedural fidelity to ensure consistency of implementation across therapists. This would allow higher validity to the effectiveness of the procedure implemented. Additionally, future research could develop a task analysis (TA) on the procedures implemented including an interval schedule to provide reinforcement contingent on appropriate transitioning in the absence of problem behaviors. This would allow for consistency of implementation across sessions and therapists. Observations of the interresponse time (IRT) between each instance of problem behavior could allow for the development of a more accurate and effective reinforcement schedule.

Likewise, it may be important to modify the objectives for transitioning into school without engaging in problem behavior. The client only transitioned without problem behavior one day during the intervention phase, indicating a need to modify the procedures and/or objectives in place for that target. In the future it may be beneficial to implement a changing criterion design to decrease the instances of problem behavior the client engages in to determine if the procedures in place are effective in changing the target behavior. Additional considerations for future procedural modifications include fading the procedure out to increase independent transitions. This would allow the participant to engage in appropriate transitions along with the rest of his peers to increase independence and age-appropriate behaviors.

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