Comparison of a Consequence Based-Intervention and an Antecedent/Consequence

Hybrid Intervention in the Classroom

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ABSTRACT

Evidence supports both antecedent-based interventions and consequence-based interventions to prevent and reduce challenging behavior. The purpose of this study is to evaluate the effectiveness of an added antecedent-based intervention to an ongoing consequence-based intervention. Frequency data was collected on verbal outbursts during an ongoing consequence-based intervention. An antecedent strategy in the form of behavior-specific video recordings was implemented in conjunction with the consequence-based intervention, again, collecting frequency data on verbal outbursts. Data on the effectiveness of the interventions for reducing verbal outbursts was compared using an AB design. Results suggested that the implementation of the antecedent-based strategy in conjunction with the consequence-based intervention decreased challenging behavior in the classroom.

Keywords: Antecedent-based Interventions, Consequence-based Interventions, Autism

Contents

Comparison of a Consequence Based-Intervention and an Antecedent/Consequence Hybrid

Intervention in the Classroom

Many children diagnosed with autism spectrum disorder (ASD) engage in challenging

behavior at school that interferes with their learning and participation in the classroom (O'Reilly,

Edrisinha, et al., 2007; Rosenbloom et al., 2019). Several interventions to address behavioral

challenges derive from the field of Applied Behavior Analysis (ABA). ABA, as defined by

Cooper et al. (2019), is "a scientific approach for discovering environmental variables that

reliably influence significant behavior and for developing a technology of behavior change that

takes practical advantage of those discoveries" (p. 2). Behavioral interventions are sometimes

grouped into antecedent-based interventions and consequence-based interventions. Antecedent-

based interventions are strategies that involve modifying the environment to prevent undesirable

behaviors (Kern, 2007). Consequence-based interventions involve manipulating reinforcement

contingencies to reduce aberrant behavior and increase appropriate alternative behavior (Kang et

al., 2002). Existing literature demonstrates support for both types of interventions and how they

can be implemented within the classroom to enhance academic performance and participation

while simultaneously reducing challenging behavior (Anderson et al., 2016; O'Connor & Daly,

2018; O'Reilly, Fragale, et al., 2012; Ohtake, 2015).

Challenging Behavior

As defined by Powell et al. (2007), challenging behavior is "any repeated pattern of

behavior, or perception of behavior, that interferes with or is at risk of interfering with optimal

learning or engagement in prosocial interactions with peers and adults" (p. 83). Kiernan and

Qureshi (1993) concluded that an individual has engaged in challenging behavior if at some

point in time the behavior caused more than minor injury to themselves or others, destroyed their

immediate living or working environment, exhibited behaviors at least once a week that required the intervention of more than one staff member to control, placed them in danger, caused damage which could not be rectified by care staff, caused disruption for more than one hour, or engaged in behaviors at least daily that caused more than a few minutes of disruption. Challenging behaviors can include, but are not limited to, self-injurious behavior, aggression, property destruction, elopement, screaming/shouting, throwing objects, non-compliance, and self-stimulatory behaviors (Erturk et al., 2018; Lipschultz & Wilder, 2017; Summers et al., 2017).

Each of these behaviors can serve different functions and may differ topographically across individuals. The most reliable way to identify the function of behavior is through a functional analysis (FA). Iwata and Dozier (2008) argued "Functional analysis methodology is a well-established standard for assessment in applied behavior analysis research" (p. 3). The identified function of the behavior will help determine which intervention should be selected to decrease the probability of the challenging behavior occurring again in the future. Though functional analyses are the only method that can confirm hypotheses about functional relations between challenging behavior and environmental events (Cooper et al., 2019), they can be very time consuming and require a lot of effort and expertise. Another way to identify events that may be correlated with challenging behavior is through a functional assessment such as ABC (antecedent-behavior-consequence) recording. ABC recording involves observing the client in the natural setting and recording the occurrences of target behavior and specific antecedents and consequences. Though this method of recording cannot determine a causal relationship between the behavior and the environment, it is time efficient, can easily be done within a classroom setting, and may identify potential functions of challenging behavior.

Antecedent-based Interventions

Antecedent-based interventions are built on the fact that behaviors are influenced by the environment. Modifying the environment in which the undesirable behavior occurs may prevent the undesirable behavior from occurring (Kern, 2007). In a review done by Rivera et al. (2018), antecedent-based strategies are commonly accepted and utilized in schools due to their feasibility. Some common antecedent-based interventions include video modeling and video-based instruction, functional communication training, and offering choices (Andersen & Daly, 2013; Anderson et al., 2016; Gregori et al., 2019; Ohtake, 2015; Rispoli et al., 2012).

Video Modeling/ Video-based Instruction

Cooper et al. (2019) define video-modeling as "a behavior change strategy in which the participant views a video of a model performing the target behavior and then imitates the behavior" (p. 533). Video modeling is commonly used to teach the learner a new skill or demonstrate a behavior the learner is to imitate. Video-based instruction utilizes videos to provide verbal instruction to the learner. Video-based instruction may be used in conjunction with video modeling in that the model is engaging in the desired behavior while also providing verbal instruction (Ohtake, 2015).

Ohtake (2015) researched the effects of using a hero as a model in video instruction to improve the daily living skills of an individual with ASD within the school setting. The author created videos of a superhero completing tasks (e.g., reading a menu, folding pants) that included voiced over instructions in the voice of the superhero. The superhero used in the videos was identified as highly preferred by the participant and the authors hypothesized that students were more likely to pay attention to the model and exhibit the desired behavior. Teacher interactions were formally observed during this study. The teachers were required to prompt the participant

to watch the video before showing it, praise the performance of the hero, and encourage the

participant to imitate the hero. After the participant watched the video, the teachers were required

not to engage with him. All of the target behaviors of the participant improved dramatically and

immediately after video modeling and video-based instruction were introduced. Ohtake (2015)

also found that the participant reflected on his performance in comparison to the model and made

the statement, "I will do like Wizard." Ohtake (2015) infers that the videos were more effective

in improving the target behaviors because a model that was highly preferred was used in the

video.

Consequence-based Interventions

Consequence-based interventions focus on modifying the environment and contingencies

that occur after the behavior occurs to increase or decrease the targeted behaviors, and include

teaching and reinforcing alternative responses. A functional assessment should be conducted

prior to the design of a consequence-based intervention. Interventions can then be tailored to the

consequences identified as maintaining challenging behavior during the functional assessment

(O'Reilly, Fragale, et al., 2012). Common consequence-based interventions include token

economies, differential reinforcement, response cost, and time-out.

Token Economy

A token economy is an intervention that involves delivering generalized conditioned

reinforcers such as tokens contingent on the presence or absence of target behaviors, and then

providing an opportunity to exchange the tokens for back up reinforcers (Carnett et al., 2014).

Tokens can be used to differentially reinforce appropriate behavior. Research supports the use of

token economies in many settings, different age groups, and individual functioning levels. The

tokens that are earned contingent on the target behavior can be arbitrary objects or symbols, but

sometimes the tokens alone can be reinforcing. Charlop-Christy and Haymes (1998) studied the effects of using objects of obsessions as token reinforcers for three children with ASD, ages 7-9. Preference assessments were administered to determine which objects or symbols were most preferred. Tokens were delivered after the participant responded correctly to a task within their repertoire in a 15-minute work session. In baseline, typical tokens were delivered. In the treatment phase, objects of obsessions were used as tokens. Their results demonstrate that on-task performance increased, and inappropriate behavior decreased more when objects of obsession were used as tokens relative to typical tokens (e.g., stars, happy faces).

In an example of a typical intervention using tokens, Tarbox et al. (2006) examined the effects of token reinforcement on attending to instruction in a five-year-old boy diagnosed with ASD. During intervention, a token paired with social praise was delivered if the participant maintained eye contact with his tutor for three seconds during a 5-second opportunity. After he received 10 tokens, he was then able to exchange them for a 3-minute break from instruction. The results from this study indicate that token reinforcement was effective in increasing the target behavior when the back-up reinforcer was available immediately.

Differential Reinforcement

Cooper et al. (2007) defines differential reinforcement as "Reinforcing only those responses within a response class that meet a specific criterion along some dimension(s) (i.e., frequency, topography, duration, latency, or magnitude) and placing all other responses in the class on extinction" (p. 693). For example, speaking at an appropriate volume "inside voice" can be differentially reinforced relative to yelling. Differential reinforcement is used as a consequence-based intervention to address challenging behaviors by reinforcing appropriate behaviors and extinguishing or not reinforcing the challenging behaviors. The challenging

behavior can explicitly be targeted for reduction by using a differential reinforcement of zero rate of behavior schedule (DRO). When implementing a DRO, the individual will be reinforced if they did not engage in the targeted behavior for a set amount of time. The DRO is also referred to as differential reinforcement of other behavior because if the target behavior is not occurring, any other behavior that is occurring is reinforced at the end of the specified time period. DRO schedules are often used to decrease challenging behaviors displayed by individuals with ASD in the classroom (Rozenblat et al., 2009; Taylor et al., 2005).

Response Cost

In addition to DRO to decrease challenging behaviors, response cost is another procedure used to decrease challenging behavior. Kazdin (1972) defined response cost as a punishment procedure in which conditioned reinforcers (tokens) are withdrawn contingent on a response to suppress that response. Response cost is commonly used in token economies and has shown to be effective in suppressing undesired behaviors. Truchlicka et al. (1998) examined the effects of a token reinforcement system and response cost on the accuracy of spelling performance with middle-school students with behavioral disorders. Students could earn tokens (points) for accuracy of academic performance, and points could later be exchanged for leaving school 30 minutes early, playing games, going to the library, and free time. In the treatment phase, students had to obtain a minimum of 85% on a daily spelling exam. If they met the criteria, they received the grade they would normally earn and an additional 100 points. Students that failed to meet the criteria were required to stay inside during a recess period to study their spelling words or lose 100 points. For the response cost contingency, the students would lose points for any instance of undesired behaviors (e.g., swearing, cheating, fighting). The results show that token

reinforcement plus response cost were effective in increasing academic behavior and decreasing undesired behaviors.

Falcomata et al. (2004) examined the effects of response cost in the treatment of inappropriate vocalizations in an individual with ASD. After conducting a functional analysis, they identified the function of the inappropriate vocalizations as automatic reinforcement. The participant Derek was given continuous access to a Walkman radio, which was identified as highly preferred after a preference assessment. During treatment, the radio was removed for 5 seconds upon any instance of inappropriate vocalizations. This response cost reduced the occurrence of the inappropriate vocalizations.

The purpose of the current study was to evaluate the effectiveness of an added antecedent-based intervention to an ongoing consequence-based intervention. The consequence-based intervention consisted of a token economy with DRO and response cost, and time out. The antecedent-based intervention utilized parent-delivered instructional video recordings that were played before activities that challenging behavior occurs as reported by the participants' teachers. The researcher hypothesizes that the implementation of the videos in conjunction with the token economy with response cost will decrease attention-maintained behavior in the classroom.

Method

Participant and Setting

The participant was "Jordan," a 12-year-old male identified with ASD. Jordan is mostly non-verbal; he is able to say a few words, but usually communicates with vocalizations that approximate other words and phrases. He also displays some physical gestures to communicate, such as head shakes for "yes" and "no" responses. Jordan attends The Rich Center for Autism, a

non-profit, university affiliated organization that specializes in providing education for

individuals with ASD. In the 8 years that Jordan has attended the Rich Center, it has been

reported that he intermittently engaged in disruptive behavior in the form of verbal outbursts

(yelling, laughing), property destruction, and aggression (pushing/shoving). Because of these

challenging behaviors, Jordan's involvement in academic activities during school was

decreasing.

This study took place within Jordan's assigned classroom at The Rich Center. His

classroom consisted of four instruction specialists, a classroom assistant, and six same age peers.

Jordan was fully included in the classroom.

Materials

Prior to the study, a record review was completed on Jordan that included ABC data

collected by Jordan's teachers during his normal routine, which indicated verbal outbursts were

maintained by attention. Teacher reprimands and teacher directives were common antecedents to

Jordan's verbal outbursts. Teacher reprimands and ignoring the verbal outbursts were common

consequences. Though a direct preference assessment was not conducted, a reinforcement

assessment form filled out by his parents indicated that watching videos, praise, and time with

his dad were identified as reinforcing.

Jordan's father was asked to create four pre-recorded videos on an iPhone (15-30 seconds

each) of himself speaking that included behavior-specific instructions and encouraging phrases

such as, "Please be quiet in class and earn your tokens, buddy," and "Keep your voice down so

you can earn your tokens." His father sent the videos via email and they were played to Jordan in

the beginning of each structured activity on an iPad during the intervention sessions. A hand-

held counter was used to collect frequency data on verbal outbursts during baseline, intervention, and the reintroduction phase.

Dependent Variable and Design

The primary dependent variable was the frequency of Jordan's verbal outbursts. *Verbal outbursts* were defined as anytime Jordan engaged in non-communicative vocalizations at a greater volume than is appropriate for the setting. This definition includes sounds like "AAAAAAH" or "EEEEEEE," laughter at a volume inappropriate for the setting, or both in combination. This definition does not include communicative vocalizations or laughter at a volume appropriate to the setting.

Research Design

A single-subject AB design was used for this study. Experimental condition A represented the participant's current consequence-based intervention; condition B was the implementation of the antecedent-based intervention in conjunction with the consequence-based intervention. The intervention was reintroduced 10 days after the last day of intervention.

Procedure

Baseline

Prior to the implementation of treatment, frequency data was collected on verbal outbursts with a hand-held counter during Jordan's typical school day. Data was collected during four times during his school day- Morning Meeting, Math, Language Arts, and Functional Skills. These times were selected because they were structured activities in Jordan's day where his participation and attention were required. These four times totaled two hours out of Jordan's five and-a-half-hour school day. During baseline, Jordan's ongoing consequence-based intervention continued to be implemented. There was a momentary DRO in 3-minute intervals in place and a

token board with response cost. Four tokens were required to complete the board. Five different sets of picture tokens were made for this intervention and when complete, it formed a picture of preferred items as identified by Jordan in a preference assessment. Jordan earned one token if he was quiet when the timer went off (differential reinforcement of zero rate of inappropriate vocalizations). If the timer went off and Jordan was not quiet, he lost a token (response cost). In the case that Jordan lost his last token and he was not quiet when the timer sounded for the following interval, the token board was removed from his possession. If he lost two tokens in a row, a time-out from positive reinforcement occurred where he was taken to a separate room and was expected to remain quiet for one minute before returning to the classroom. Because the function of these verbal outbursts was identified as attention seeking, he was not given attention while he spent time in this room. Behavior-specific praise was delivered every time Jordan earned a token. Once Jordan completed the board with all four tokens, behavior-specific praise was provided, and he was given a choice board of reinforcing items to choose from. These items were identified as reinforcing by a preference assessment conducted by Jordan's teacher. Some of the choices on the board included Skittles, Reeses Pieces, a walk, and viewing pictures on an iPad. Typically, data was collected on the total number of tokens Jordan earned during each structured activity, however, for the purpose of this study, the researcher collected additional frequency data on verbal outbursts during baseline, intervention, and reintroduction of the intervention.

Intervention

Succeeding baseline assessments, the antecedent-based intervention was implemented in conjunction with the consequence-based intervention used in baseline. The antecedent-based intervention utilized four different video clips of 20-s, 25-s, and 30-s duration of Jordan's father

providing behavior-specific requests and praise. The experimenter verbally prompted "Here's a video from Dad" and played one video for Jordan on an iPad at the start of the four selected times. To prevent satiation, Jordan's father provided one new video every week. As in baseline, frequency data was collected on verbal outbursts during intervention.

Reintroduction of Intervention

There was a 10-day gap in treatment after the intervention phase ended. After those 10 days, the intervention was reintroduced for two days and frequency of verbal outbursts was collected during the same times as baseline and intervention.

Results

Figure 1 displays the frequency of verbal outbursts during baseline, treatment and reintroduction of treatment. Baseline averaged 161 instances of verbal outbursts per session, intervention phase averaged 33 instances per session, an 80% reduction, and the reintroduction phase averaged 146 per session. The overall results indicate that verbal outbursts decreased significantly during the treatment phase but increased close to baseline levels during the reintroduction phase.

Interobserver Agreement

To assess interobserver agreement (IOA), a Board Certified Behavior Analyst (BCBA) from the center and the experimenter independently and simultaneously observed and collected frequency data on verbal outbursts during the reintroduction phase. Because of the ambiguous nature of "verbal outbursts," in addition to an operational definition, researchers observed Jordan during a separate activity to ensure any ambiguity of verbal outbursts was clarified. IOA was collected for two days consisting of five sessions each day (22% of sessions). IOA was calculated using mean count-per-interval by calculating agreement per interval (smaller number

divided by larger number, multiplied by 100%), adding interval IOA, and dividing by the total intervals. Mean agreement for verbal outbursts on day one of the reintroduction phase was 94% (range, 88-100%), and day two of the reintroduction phase was 98% (range, 92-100%).

Discussion

In this study we demonstrated that pre-recorded videos of a preferred individual delivering instruction and behavior-specific phrases could be utilized as an antecedent-based intervention in conjunction with a consequence-based intervention to reduce attention-seeking behavior if the intervention was implemented consistently.

Truchlicka et al. (1998) found a token economy with response cost decreased undesired behavior. However, in the current study, implementing the instructional videos in conjunction with the token economy and response cost was necessary to decrease verbal outbursts substantially. While he was watching the videos, Jordan was informally observed nodding his head, smiling, signing "I love you," and putting his fingers to his mouth denoting to be quiet and that he understood the message from the videos. Not only did the videos serve as a prompt for Jordan to follow directions in class, from these subjective observations, it appeared that Jordan also enjoyed viewing the videos. These findings support Ohtake (2015) in that the participants were more likely to follow instructions when they were delivered by a preferred individual (superhero, Ohtake; dad, current study).

Limitations and Directions for Future Research

Some limitations of this study include the limited access to the classroom. Due to prior commitments at The Rich Center and time constraints, sessions were conducted only two days a week during baseline, intervention, and reintroduction. It is also unknown if Jordan's teachers implemented the intervention with fidelity on the days the experimenter was not in the

classroom. Because of this and additional extraneous variables such as absences and snow days, there was a 10-day gap in treatment resulting in the reintroduction phase rather than a maintenance phase. It is possible that verbal outbursts increased in the reintroduction phase due to a gap in treatment and inconsistent treatment. Another limitation was the AB research design used. Due to time restraints and prior commitments to The Rich Center, an AB design was utilized for this study. However, a withdrawal design would've yielded higher experimental control. A final limitation is the limited amount of research on video-based instruction without the modeling component. There is little to no research on the effects of verbal instruction alone to decrease challenging behavior.

Because there is little to no research on the use of behavior-specific videos as an antecedent-based intervention. Future research can study the effects of the video instruction alone as an intervention for decreasing attention-maintained challenging behaviors. It would also be suggested that the intervention be implemented more consistently and with higher fidelity by creating a treatment integrity checklist and training staff on how to properly implement the intervention.

References

Andersen, M., & Daly, E. J., III. (2013). An experimental examination of the impact of choice of treatment components on treatment integrity. *Journal of Educational & Psychological Consultation*, *23*(4), 231–263. https://doi.org/10.1080/10474412.2013.845493

Anderson, E., Barretto, A., McLaughlin, T. F., & McQuaid, T. (2016). Effects of functional communication training with and without delays to decrease aberrant behaviour in a child with autism spectrum disorder. *Journal on Developmental Disabilities*, *22*(1), 101–110.

Boniecki, K. A., & Moore, S. (2003). Breaking the silence: Using a token economy to reinforce classroom participation. *Teaching of Psychology*, *30*(3), 224. https://doi.org/10.1207/S15328023TOP3003_05

Carnett, A., Raulston, T., Lang, R., Tostanoski, A., Lee, A., Sigafoos, J., & Machalicek, W. (2014). Effects of a Perseverative Interest-Based Token Economy on Challenging and On-Task Behavior in a Child with Autism. *Journal of Behavioral Education*, *23*(3), 368–377. https://doi.org/10.1007/s10864-014-9195-7

Charlop-Christy, M. H., & Haymes, L. K. (1998). Using objects of obsession as token reinforcers for children with autism. *Journal of Autism & Developmental Disorders*, *28*(3), 189–198. https://doi.org/10.1023/A:1026061220171

Cooper, J., Heron, T., & Heward, W. (2019). *Applied Behavior Analysis* (3rd ed.). Pearson.

Delano, M. E. (2007). Video modeling interventions for individuals with autism. *Remedial and Special Education*, *28*(1), 33–42. https://doi.org/10.1177/07419325070280010401

Erturk, B., Machalicek, W., & Drew, C. (2018). Self-injurious behavior in children with developmental disabilities: A systematic review of behavioral intervention

literature. *Behavior Modification*, *42*(4), 498–542.

https://doi.org/10.1177/0145445517741474

Falcomata, T. S., Roane, H. S., Hovanetz, A. N., Kettering, T. L., & Keeney, K. M. (2004). An

evaluation of response cost in the treatment of inappropriate vocalizations maintained by

automatic reinforcement. *Journal of Applied Behavior Analysis*, *37*(1), 83–87.

https://doi.org/10.1901/jaba.2004.37-83

Gregori, E., Wendt, O., Gerow, S., Peltier, C., Genc-Tosun, D., Lory, C., & Gold, Z. S. (2019).

Functional communication training for adults with autism spectrum disorder: A

systematic review and quality appraisal. *Journal of Behavioral Education*, *29*(1), 42–

63. https://doi.org/10.1007/s10864-019-09339-4

Iwata, B. A., & Dozier, C. L. (2008). Clinical application of functional analysis

methodology. *Behavior analysis in practice*, *1*(1), 3–9.

https://doi.org/10.1007/BF03391714

Kazdin, A. E. (1972). Response cost: The removal of conditioned reinforcers for therapeutic

change. *Behavior Therapy*, *3*(4), 533–546. https://doi.org/10.1016/s0005-7894(72)80001-

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Kern, L., & Clemens, N. H. (2007). Antecedent strategies to promote appropriate classroom

behavior. *Psychology in the Schools*, *44*(1), 65–75. https://doi.org/10.1002/pits.20206

Lipschultz, J. L., & Wilder, D. A. (2017). Behavioral assessment and treatment of

noncompliance: A review of the literature. *Education & Treatment of Children*, *40*(2),

263–298. https://doi.org/10.1353/etc.2017.0012

McCoy, K., & Hermansen, E. (2007). Video modeling for individuals with autism: A review of

model types and effects. *Education and Treatment of Children, 30*(4), 183-213. Retrieved

March 26, 2021, from http://www.jstor.org/stable/42899952

Powell, D., Fixsen, D., Dunlap, G., Smith, B., & Fox, L. (2007). A synthesis of knowledge

relevant to pathways of service delivery for young children with or at risk of challenging

behavior. *Journal of Early Intervention*, *29*(2), 81-

106. https://doi.org/10.1177/105381510702900201

O'Connor, M. A., & Daly, E. J., III. (2018). Selecting effective intervention strategies for

escape-maintained academic-performance problems: Consider giving 'em a

break! *Journal of School Psychology*, *66*, 41–53.

https://doi.org/10.1016/j.jsp.2017.09.003

O'Reilly, M., Edrisinha, C., Sigafoos, J., Lancioni, G., Cannella, H., Machalicek, W., &

Langthorne, P. (2007). Manipulating the evocative and abative effects of an establishing

operation: influences on challenging behavior during classroom instruction. *Behavioral

Interventions*, *22*(2), 137–145. https://doi.org/10.1002/bin.226

O'Reilly, M., Fragale, C., Gainey, S., Kang, S., Koch, H., Shubert, J., El Zein, F., Longino, D.,

Chung, M., Xu, Z., White, P., Lang, R., Davis, T., Rispoli, M., Lancioni, G., Didden, R.,

Healy, O., Kagohara, D., van der Meer, L., & Sigafoos, J. (2012). Examination of an

antecedent communication intervention to reduce tangibly maintained challenging

behavior: A controlled analog analysis. *Research in Developmental Disabilities*, *33*(5),

1462–1468. https://doi.org/10.1016/j.ridd.2012.03.017

Ohtake, Y. (2015). Using a Hero as a Model in Video Instruction to Improve the Daily Living

Skills of an Elementary-aged Student with Autism Spectrum Disorder: A Pilot

Study. *International Journal of Disability, Development & Education*, *62*(4), 363–378.

https://doi-org.eps.cc.ysu.edu/10.1080/1034912X.2015.1027179

Rispoli, M., Lang, R., Neely, L., Camargo, S., Hutchins, N., Davenport, K., & Goodwyn, F.

(2012). A comparison of within- and across-activity choices for reducing challenging

behavior in children with autism spectrum disorders. *Journal of Behavioral*

Education, *22*(1), 66–83. https://doi.org/10.1007/s10864-012-9164-y

Rivera, G., Gerow, S., & Kirkpatrick, M. (2018). A review of school-based interventions to

reduce challenging behavior for adolescents with asd. *Journal of Developmental and*

Physical Disabilities. https://doi.org/10.1007/s10882-018-9626-9

Rosenbloom, R., Wills, H. P., Mason, R., Huffman, J. M., & Mason, B. A. (2019). The effects of

a technology-based self-monitoring intervention on on-task, disruptive, and task-

completion behaviors for adolescents with autism. *Journal of Autism & Developmental*

Disorders, *49*(12), 5047–5062. https://doi.org/10.1007/s10803-019-04209-4

Rozenblat, E., Brown, J. L., Brown, A. K., Reeve, S. A., & Reeve, K. F. (2009). Effects of

adjusting DRO schedules on the reduction of stereotypic vocalizations in children with

autism. *Behavioral Interventions*, *24*(1), 1-15. https://doi.org/10.1002/bin.270

Stichter, J. P., Randolph, J. K., Kay, D., & Gage, N. (2009). The use of structural analysis to

develop antecedent-based interventions for students with autism. *Journal of Autism and*

Developmental Disorders, *39*(6), 883–896. https://doi.org/10.1007/s10803-009-0693-8

Summers, J., Shahrami, A., Cali, S., D'Mello, C., Kako, M., Palikucin-Reljin, A., Savage, M.,

Shaw, O., & Lunsky, Y. (2017). Self-Injury in autism spectrum disorder and intellectual

disability: Exploring the role of reactivity to pain and sensory input. *Brain Sciences*, *7*(12), 140. https://doi.org/10.3390/brainsci7110140

Tarbox, R. S., Ghezzi, P. M., & Wilson, G. (2006). The effects of token reinforcement on attending in a young child with autism. *Behavioral Interventions*, *21*(3), 155-164. https://doi.org/10.1002/bin.213

Truchlicka, M., McLaughlin, T. F., & Swain, J. C. (1998). Effects of token reinforcement and response cost on the accuracy of spelling performance with middle-school special education students with behavior disorders. *Behavioral Interventions*, *13*(1), 1–10. https://doi.org/10.1002/(SICI)1099-078X(199802)13:1<1::AID-BIN1>3.0.CO;2-Z

Wilder, D. A., Zonneveld, K., Harris, C., Marcus, A., & Reagan, R. (2007). Further analysis of antecedent interventions on preschoolers' compliance. *Journal of Applied Behavior Analysis*, *40*(3), 535–539. https://doi.org/10.1901/jaba.2007.40-535

Figure 1

Frequency of Jordan's verbal outbursts for each session.

Verbal Outbursts in the Classroom
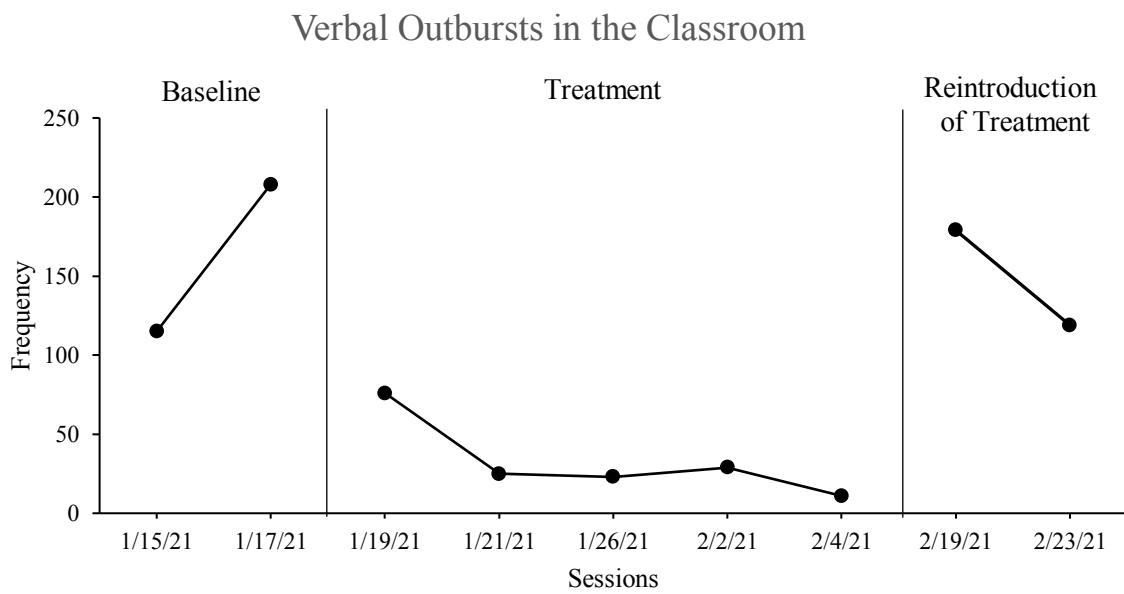
Dear Investigators,

Your protocol entitled A Comparison of Consequence-Based Interventions
and Consequence/Antecedent Hybrid Interventions in the Classroom has been reviewed and is
deemed to meet the criteria of an expedited protocol, category 7, in which data is collected in the
regular educational setting using an intervention that is common for students with behavior
issues. You will be comparing the effectiveness of interventions for reducing
challenging behaviors in a regular classroom setting and to discover any added benefit to adding
antecedent-based strategies to a consequence-based intervention. You will not report any
students name or information with their data, if you have their permission to
participate. Students can exit the study at any time without consequence. You will be getting
parent consent before recruiting your student. The student must provide assent to participate.

You may begin the investigation immediately. Please note that it is the responsibility of the
principal investigator to report immediately to the YSU IRB any deviations from the protocol
and/or any adverse events that occur. Please reference your protocol number 062-21 in all
correspondence about the research associated with this protocol.

Good luck with your research.

Karen

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