

THE EFFECTS OF RESPONSE INTERRUPTION/REDIRECTION AND
DIFFERENTIAL REINFORCEMENT OF OTHER BEHAVIORS ON VOCAL
STEREOTYPY IN CHILDREN WITH AUTISM

THESIS

By

Beth Gartland, BCaBA

College of Education and Human Ecology

The Ohio State University

2009

Master's Examination Committee:

Dr. Sheila Alber-Morgan, Advisor

Dr. Helen I. Malone

Copyright by

Mary Elizabeth Gartland

2009

ABSTRACT

Vocal stereotypy is defined as any instance of noncontextual or nonfunctional speech including singing, babbling, repetitive grunts, squeals, and phrases unrelated to the present situation (Ahern et al., 2007). Examples include repeating lines from previously viewed television shows, repeating instructions delivered to other students, or repeating previously heard conversations. Nonexamples include repeating the specific instruction delivered to the participant or any response made to an instruction given. The purpose of this study was to replicate and extend a prior intervention used by Ahern and colleagues in 2007 to decrease vocal stereotypy in three individuals with differing levels of disability. The independent variable was a treatment package including response interruption and redirection (RIRD) combined with differential reinforcement of other behaviors (DRO). The experiment was conducted to evaluate the effects of RIRD and DRO on vocal stereotypy with school aged children on the autism spectrum during their school day. Generalization was also examined after the DRO portion of the treatment package was removed.

ACKNOWLEDGMENTS

First and foremost, I would like to thank my advisor Dr. Shelia Morgan, for her continuous patience and guidance throughout this process. I would also like to thank Dr. Helen Malone for acting as my second reader. It was the support and feedback from both of these individuals that helped make this document what it is now.

Thank you also to Courtney Fleming for her feedback and support throughout both writing and data collection. I can't tell you how much it helped to know that I had you there to guide me through this. I would also like to thank Abby Basbagill and Jamie Kirkpatrick for assisting with IOA data collection.

Thank you also to the wonderful teachers at the Haugland Learning Center who helped with this experiment. Libby Rosenbaum, Adam Peal, Sarah Cercone, and Andrea Helmerich you all did such an amazing job.

Lastly, I would like to thank the friends and family who have been so supportive. To my parents for providing me with the courage to know that I can take on any feat and for your endless love and support. Amanda McNeal, you have been nothing short of my rock. Thank you for being my second set of ears and eyes during this process. Without the support of these people, I would not be where I am today.

VITA

April 23, 1979	Born-Long Island, New York
2000.....	B.A. English-Creative writing Otterbein College Westerville, Ohio
2000-2003	One-on-one support staff
2003-2008.....	Behavioral Consultant Piece By Piece Consulting Columbus, Ohio
2006-2008.....	Program Supervisor Step by Step Academy Columbus, Ohio
2008-2009	Branch Coordinator Haugland Learning Center Portsmouth, Ohio Lancaster, Ohio Middleport, Ohio
2008-present	Behavioral Consultant Haugland Consulting Columbus, Ohio

FIELDS FOR STUDY

Major Field: Education

TABLE OF CONTENTS

Abstract	ii
Acknowledgements.....	iii
Vita	iv
List of Tables	vii
List of Figures.....	viii
Chapters:	
1. Introduction	1
2. Method.....	12
3. Results.....	28
4. Discussion.....	36
List of References	
Appendices:	
Appendix A: Parental Consent Form.....	53
Appendix B: Data Sheet	56
Appendix C: Guided Notes	58

Appendix D: Procedural Reliability Form Baseline	61
Appendix E: Procedural Reliability Form Intervention: Teacher Form	63

Appendix F: Procedural Reliability Form Intervention: Experimenter Form.....65
Appendix G: Social Validity Questionnaire.....67

LIST OF TABLES

Table

- 3.1 Mean inter-observer Agreement (IOA) scores per participant per condition...29
- 3.2 Mean procedural reliability scores across conditions.....29

LIST OF FIGURES

- 3.1 Multiple baseline graph depicting the results of intervention on vocal stereotypy across Mick, Lucy and Sully during baseline and treatment31

CHAPTER 1

INTRODUCTION

Vocal stereotypy is a behavior that some children with a diagnosis of autism spectrum disorder (ASD) may display (Athens, Vollmer & Sloman, 2008). This behavior may occur immediately following (e.g., repetition of a word, phrase or sound heard in their current environment) or after some time has passed (e.g., repetition of word or phrase or sound heard previously). Children with ASD often engage in a repertoire of stereotypic behavior. In order for an individual to be diagnosed with ASD, several characteristics must be present. The Diagnostic and Statistical Manual of Mental Disorders states that restricted repetitive and stereotyped patterns of behavior, interests, and activities are one part of what makes up the diagnostic criteria for ASD (American Psychiatric Association, 2000). Other common traits of individuals with autism include impairments in social interactions and communication (American Psychiatric Association, 2000). Examples include lack of eye contact, lack of desire for shared experiences, or lack of interest in the emotions of others. It is common for individuals with autism to engage in maladaptive behaviors as a means of communication (Kennedy, Meyer, Knowles & Shukla, 2000). Deficits in communication may manifest as other

maladaptive behaviors, such as engaging in tantrums, due to a lack of more adaptive communication skills (e.g., asking for help).

Stereotypy

Stereotypy is typically defined as repetitive or idiosyncratic behavior that serves no apparent social function (e.g., Lewis & Baumeister, 1982). This behavior is prevalent not only amongst the population of individuals with autism, but it also appears in individuals with mental retardation as well as typically developing individuals.

Additionally, stereotypic behaviors may be present throughout adulthood (Cunningham & Schreibman, 2008). Vocal stereotypy is only one of many types of stereotypic behaviors that may be present in children with autism. According to Lovaas, Newsome, and Hickman (1987), self-stimulatory behaviors can involve the body only (e.g., rocking, flapping, etc.) or can include an object (e.g., lining up toys). Although stereotypic behaviors are not always maintained by automatic reinforcement, the function is often difficult to determine. Other types of stereotypic behavior include motor stereotypy (e.g., hand flapping, rocking, and pacing), visual stereotypy (e.g., staring at lights, finger movements in front of the eyes), auditory behaviors (e.g., covering the ears, snapping fingers, vocal sounds), tactile stereotypy (e.g., rubbing the skin, scratching, skin picking) and can also include licking objects and sniffing people (Cunningham & Schreibman, 2008). Often times, individuals with autism will engage in repetitive play behaviors, such as scripting out a scene from a television show with their toys, lining up cars, or repeating the same action (e.g., repetitively building the same block structure). This can hinder an individual's ability to make and keep friendships with others as well as create learning

difficulties and restrict an individual to a learning environment that is not otherwise suitable.

Vocal Stereotypy

Ahern et al. (2007) defined vocal stereotypy as any instance of non-contextual or nonfunctional speech and included singing, babbling, repetitive grunts, squeals, and phrases unrelated to the present situation. In some instances, if an individual is watching a television show, they may repeat specific parts of what they are hearing such as one or two words being said, or repeat the entire script verbatim. Some children will repeat the lines spoken by the characters on the show at the same time, while others will repeat the lines hours after the program has ended. Also, vocal stereotypy may be present throughout the course of a conversation with an individual. When greeting one participant in this study, she would often repeat the greeting (e.g., “Good morning, Sully” would elicit a response of “Good morning, Sully”). On another occasion, she would repeat a conversation she was hearing between two individuals (e.g., when her mother was having a conversation with her teacher at pick up, Sully sat next to her mom and repeated her teacher’s comments word for word).

Although the function of vocal stereotypy is difficult to assess, previous research has indicated that, most commonly, vocal stereotypy is maintained by automatic reinforcement (Iwata, 1999; Ahern, Clark, MacDonald & Chung 2007). As defined by Cooper, Heron, and Heward (2007), automatic reinforcement is reinforcement that occurs independent of the social mediation of others, such as scratching a bug bite. Even though vocal stereotypy is a common characteristic amongst individuals with autism, there is little current research on treatment methods.

Previous treatment methods

Because vocal stereotypy is often thought to be maintained by automatic reinforcement, treatments have historically focused on isolating the specific source of stimulation that maintains such responding. Specific reinforcement has been used that make similar sounds or play music as a means of delivering similar stimulation (e.g., auditory input). It has long been thought that identifying a specific source of stimulation that maintains a behavior can be translated into establishing other means of accessing similar sensory stimulation that can then be used to reduce undesirable behavior (e.g., Ahern et al., 2007).

Previous research has utilized several methods for decreasing vocal stereotypy. Some of these treatment methods include Response Interruption/Redirection (RIRD; e.g., Ahern et al., 2007), improved teacher training in other instructional methods, such as Discrete Trial instruction (e.g., Dib & Sturmey, 2007), differential punishment (e.g., Doughty, Anderson, Doughty, Williams & Saunders 2007), response cost (e.g., Falcomata, Roan, Hovanetz & Kettering, 2004), self management (e.g., Koegel & Koegel 1990), non-contingent reinforcement (NCR; e.g., Ahern et al., 2005), and providing matched stimulation (e.g., Rapp, 2007).

While treatment for individuals with vocal stereotypy is highly individualized, one effective approach involves teaching an individual an appropriate replacement behavior, such as specific vocal responses (e.g., correct responses to questions, saying “I don’t know,” etc.). This is most often done through the use of stimulus fading (e.g., Athens et al., 2008; Shabani & Fisher 2007) imitation training (Schreibman & Carr, 1978) and verbal labeling (e.g., Foxx et al., 2004; McMorrow et al., 1987). While these

studies are successful, it can often be difficult to come up with appropriate replacement language and not suitable for use with students that have a limited vocal repertoire and poor imitation skills. Often, it can be difficult to fade stimuli used as prompts and the students become dependent on these measures.

Previous research has attempted to decrease individual's engagement in behavior that is maintained by automatic reinforcement through non-contingent reinforcement (NCR) using stimuli that serve the same function as the challenging behavior. For instance, if a student is engaging in self-injury in the form of rumination (i.e., regurgitation and re-swallowing of previously eaten food), and it is determined the function of this behavior is to receive more food due to hunger, the individual may be taught to request more food, or may be given non-contingent access to food. Giving the individual more food is thought to match the function of rumination, thus decreasing their need to engage in the challenging behavior. Previous research has attempted to identify stimuli that match the function of the echolalia, in the form of preferred items (e.g., CDs with nursery rhymes, toys that make noise). In one particular study, matched stimulation was used to decrease two students' engagement in vocal stereotypy (Rapp, 2007). Participants in this study were nine year old males with diagnoses of autism and mental retardation. The experiment took place in a short-term residential facility. Prior to implementation of the intervention, preference assessments were conducted with each participant to determine the specific types of items that should be used to compete with the vocal stereotypy. After preferred stimuli were identified, the presence of vocal stereotypy was assessed during time with and time away from these items to determine if these items had any effect on the behavior. For portions of the experiment, the toys remained with the participants but

the batteries were removed in order to determine if they still had the same effect when they were no longer producing auditory stimulation. For both students, preferred stimulation was identified and evaluated. For one participant, access to toys was allowed and for the other, access to both music and chewing gum. For both students, vocal stereotypy decreased during the sessions where they were provided toys that provided stimulation, however when the auditory stimulation was withdrawn, the behavior recovered. Even though the results of the study showed promise, finding matched stimuli can be very difficult, because it is hard to ascertain the exact reinforcing quality of vocal stereotypy. Determining if the student is engaging in the behavior due to the feeling or sound may be difficult and time consuming, if not impossible. Determining matched stimulation may be more speculation about what the student may be finding enjoyable about vocal stereotypy than it is fact.

Response Interruption/Redirection

Ahern et al. (2007) utilized response interruption and redirection as a method to decrease vocal stereotypy in children with autism. With RIRD, the individual is blocked from engaging in the target behavior and redirected to a more appropriate behavior. This is based on the assumption that the individual's behavior is maintained by automatic reinforcement. Since the individual is contacting reinforcement by engaging in the behavior, blocking the behavior functions to stop or prevent the delivery of reinforcement. This method could be used with motor stereotypy (e.g., hand-flapping) by prompting the student to hold their hands still. RIRD has also demonstrated effectiveness at decreasing auditory stereotypy by masking the sound two objects make when rubbed

together, or with visual masking by covering up the stimuli that an individual is staring at. With vocal behavior, this is much more difficult. Even if an individual is successfully prompted to remain quiet, they may still be thinking of the words, which may have the same reinforcing properties as speaking them.

Previously, response blocking has been used with not only vocal stereotypy, but also with other challenging behaviors such as mouthing items (e.g., Tarbox, Tarbox, Ghezzi, Wallace & Yoo, 2007), pica (e.g., McCord, Grosser, Iwata & Powers, 2005), and self injury (Hagopian, Bruzek, Bowman & Jennett, 2007). It is an effective treatment for decreasing behavior that is maintained by automatic reinforcement, because it discontinues the delivery of that reinforcement. Other treatment methods may still be allowing the individual to engage in the target behavior. RIRD can be challenging to implement, because it requires the instructor to catch the initial occurrence of vocal stereotypy, and block each occurrence of the behavior. Although it is time consuming, this is a procedure that most individuals can be taught to implement with very little training, without any particular expertise.

RIRD was successfully used to decrease vocal stereotypy with four individuals with autism (Ahern et al., 2007). In this study, the behavior was determined to be maintained by automatic reinforcement by a functional analysis. Data were collected on occurrence of vocal stereotypy (e.g., noncontextual or nonfunctional speech such as grunting, singing, etc.) as well as appropriate vocalizations (i.e., requests for items or comments made that were not initiated by the teacher). Praise was delivered for occurrences of appropriate vocalizations that were not initiated by the teacher. When the participants engaged in vocal stereotypy, the behavior was immediately interrupted and

redirected to an appropriate vocalization. The teacher would either present the student with a known question that required a vocal response or require the student to imitate a vocalization that was presented. For each of the four participants, vocal stereotypy occurred at lower rates during the RIRD phases than during the withdrawal phases. For participant one, vocal stereotypy was occurring during an average of 50 % of the withdrawal sessions. During RIRD, this decreased to an average of 15 %. For participant two, vocal stereotypy was occurring at a lower rate during the initial phases, and even though a decrease was noted, his overall data was variable. More noteworthy is the fact that his appropriate vocalizations, which occurred very infrequently at the beginning of the study, did increase substantially during the course of this study. The third participant was engaging in vocal stereotypy at an average of 80 % of her sessions during baseline and withdrawal phases. During treatment, occurrences of vocal stereotypy decreased to about 20 % of the sessions with a steady downward trend. The final participant was engaging in vocal stereotypy during the initial baseline phase at an average of 50 % of the sessions. During the first RIRD phase, the average occurrences of vocal stereotypy decreased to around 10 % of the session. Vocal stereotypy increased initially during the return to baseline but the data were somewhat variable. A decrease to the same levels as during the initial RIRD phase was seen when the intervention was implemented. This data show that RIRD was an effective treatment for vocal stereotypy with these four participants. Each time the intervention was implemented, there was an immediate decrease in vocal stereotypy and when it was withdrawn, the vocal stereotypy increased to near baseline levels. Not only did the levels of vocal stereotypy decrease, the levels of appropriate vocalizations also increased.

Differential Reinforcement

Differential reinforcement involves reinforcing one response class while withholding reinforcement for another response class (Cooper et al., 2007). It is not only an effective strategy for decreasing problematic behavior, but also used to increase appropriate responding. There are several types of differential reinforcement, including differential reinforcement of incompatible behavior (DRI), differential reinforcement of alternative behavior (DRA), differential reinforcement of other behavior (DRO), and differential reinforcement of low rates of responding (DRL). In each of these, no attention is given to a problematic behavior (e.g., calling out in class) and the individual is reinforced for exhibiting an appropriate behavior (e.g., raising hand to ask a question) on a specific schedule of reinforcement.

Differential reinforcement has been used to increase appropriate behavior, yet little research has shown success using DRO as a method of decreasing behaviors that are maintained by automatic reinforcement (Roane, Falcomata & Fisher, 2007). It is speculated that this is because mediated delivery of reinforcement for the appropriate behavior does not effectively compete with challenging behavior. In order to be effective, the value of the putative reinforcer(s) used must be greater than the reinforcement obtained by engaging in the challenging behavior. One way to achieve this may be a package treatment, where differential reinforcement is combined with other reductive techniques such as punishment or extinction (e.g., Fellner et al., 1984).

One study that utilized a treatment package including DRO and response-cost was conducted by Conyers, Miltenberger, Maki, Barenz, Jurgens, Salier, Haugen and Kopp (2004). For the purpose of their study, they observed how this treatment package would

decrease disruptive behavior (i.e., screaming, crying, throwing objects, using objects as weapons, non-compliance with teacher's request) in 25 preschoolers in a classroom with two to three teachers. Observation sessions were broken into 10 s intervals. Alternating treatment design and reversal design (ABAB) were used to show the results of each phase. During baseline, the experimenters observed the teachers interacting with the students as per usual. Treatments consisted of DRO and response cost. For the response cost phase, a token board was displayed with 15 tokens next to each student's name. It was explained to the students that each time they engaged in disruptive behavior, they would lose a token. A certain number of tokens needed to remain next to their name in order that student to receive reinforcement. For the DRO phase, a token board was displayed with each student's name but no tokens were placed on the board. Instructions given to the student explained that they would earn tokens when the timer sounded if they were not engaging in disruptive behavior. The results of this study showed that using response-cost in order to decrease disruptive behavior was more effective than DRO alone.

Purpose of Study

The purpose of the current study was to contribute to the literature on RIRD and vocal stereotypy by replicating previous findings by Ahearn et al. (2007) in which they decreased vocal stereotypy in three individuals with ASD. The independent variable was a treatment package including response interruption and redirection (RIRD) combined with differential reinforcement of other behaviors (DRO). The experiment was conducted in order to evaluate whether the intervention (RIRD and DRO) is an effective method of

decreasing vocal stereotypy with school-aged children on the autism spectrum during their school day. We were also looking to see if the intervention would generalize to other environments, with other teachers, and at other times in the school day when the DRO component was removed.

RESEARCH QUESTIONS

1. What are the effects of response interruption and redirection (RIRD) combined with DRO on the rate of vocal stereotypy in children with autism during the school day?
2. If vocal stereotypy decreases during treatment, will those effects generalize to other environments and with other individuals during the school day?
3. What are the opinions of parents and teachers of the treatment package and its outcomes?

CHAPTER 2

METHOD

This chapter will describe the participants, setting, experimenter, materials, definition of the dependent and independent variables, experimental design, procedures, interobserver agreement, procedural reliability, and social validity of this experiment.

Participants

The participants in this experiment were three children with a primary diagnosis of autism, their classroom teachers and an experimenter from The Ohio State University. Each student participant was selected because they emitted a moderate to high frequency of vocal stereotypy. High levels of vocal stereotypy were reported by each teacher to have been interfering with the student's ability to attend to teacher instructions and remain engaged in independent work tasks. All student participants demonstrated a large vocal imitation repertoire, relatively good attending skills and receptive language skills, discrimination between visual stimuli, and past exposure to token systems. These skills were important prerequisites to this study because of the nature of the intervention. When redirecting the students, they would need to be able to label items in the environment, identify numbers, or read certain words. It was important, due to time restraints, that

these skills did not need further instruction. Additionally, student participants were selected based upon consistent attendance records. Prior to the beginning of the study, teachers were interviewed to identify potential participants. Teachers reported that the selected students engaged in high levels of vocal stereotypy, and that in their opinion, it was affecting their participation in group instruction and independent work.

The experimenter in this study was a graduate student attending The Ohio State University. At the time of the study, the experimenter was a supervisor at the school where the experiment was conducted. Prior to beginning the study, the experimenter obtained formal written consent from the parents of each student, as well as from all three teachers involved (see Appendix A). Data collection began after the experimenter obtained approval from the Institutional Review Board of The Ohio State University.

Teacher

Each student's classroom teacher was instructed on how to implement the RIRD procedure prior to beginning the intervention. During baseline, the teachers were instructed to carry on with their regular classroom schedule and treat vocal stereotypy as they had been previously. During the intervention phase of the study, the teachers were responsible for interrupting and redirecting the student each time they engaged in vocal stereotypy as well as meeting with the experimenter for training, and asking questions about part of the intervention that needed clarification.

Mick

Mick was a 17-year-old Caucasian male with a primary diagnosis of autism. His verbal abilities were extremely advanced, as he could hold conversations with familiar and non-familiar adults and peers. He was extremely friendly and seemed to enjoy the

opportunity to engage in conversations with those in his home and learning environment. The classroom focus was small group individualized instruction concentrating on daily living skills with a ratio of one teacher, two aides and three students. His daily schedule included personal care/hygiene related tasks, jobs, household chores such as laundry, and a small portion of his day was spent working on academic tasks such Math and English. In addition to vocal stereotypy, he also engaged in several other stereotypic behaviors such as rocking, hand flapping, tapping items on the desk or walls, and pacing. Mick also had difficulty understanding personal space and appropriate touching.

Sully

Sully was a nine-year-old Hispanic female with a dual diagnosis of autism and ADHD. Her family was bilingual and spoke both English and Spanish in the home. Sully was verbal and had an expansive vocabulary but seldom communicated in more than five word sentences. She would frequently request for preferred items or ask questions that pertained to highly preferred stimuli, but otherwise her vocalizations consisted of the repetition of preferred phrases from television programs and computer games. She participated in small group individualized instruction with a focus on academic skills. The ratio in her classroom was one teacher to five students. At the beginning of the study, she had support from a one-on-one aide during reading. This did not occur throughout the study consistently. Direct Instruction was the primary method of instruction used in the classroom. Students worked daily on English/Language Arts, Math, Science, and History, and participated in specials (i.e., art, P.E., theater, and community service) on a rotating schedule of one time per week each. Other challenging behaviors reported by staff were elopement and aggression towards peers in her environment. Sully had a twin sister who

was also diagnosed with autism and attended the same school. The sisters had a tendency to act protectively towards each other, and their conversations with each other occurred mostly in the form of scripts from television shows or computer games.

Lucy

Lucy was a seven-year-old Caucasian female with a primary diagnosis of autism. She was a vocal student who communicated mostly in five to six word sentences. The majority of her spontaneous communication consisted of requests for preferred items or to take a break. Her classroom environment was a small group with a focus on academic tasks. The ratio in her classroom was one teacher and six students. Direct Instruction was the primary method used to teach these academic skills. Students worked on English/Language Arts, Math, Science, and History each day and specials (i.e., art, P.E., theater, and community service) on a rotating schedule of one time per week each. At the beginning of the study, Lucy was also on a DRO schedule to decrease self-injurious behaviors in the form of hitting and kicking her arms, legs, and head. Vocal stereotypy occurred most often during downtime and independent work tasks, which was appearing to slow her rate of acceleration during fluency trials.

Experimenter

The experimenter was a graduate student at The Ohio State University pursuing a Master of Arts degree in Special Education/Applied Behavior Analysis. She received her Bachelor of Arts degree in English from Otterbein College in 2000. She had been working with children with autism in some capacity for nine years and had held positions ranging from one-to-one instructor to Program Coordinator for three clinics in southern Ohio. She was a behavior consultant in Franklin County for six years prior to enrolling in

the masters program at The Ohio State University. The experimenter received her BCABA in 2003 after taking continuing education classes through the University of North Texas Distance Learning program. During the study, the experimenter was employed by the school as a staff supervisor. For the purpose of this study, the experimenter was present in order to observe the teacher implementing the RIRD procedure, give the teacher feedback on their performance as well as continued training on RIRD and vocal stereotypy, to record data on the student's levels of vocal stereotypy throughout baseline and treatment and to implement the DRO procedure.

Setting

Sessions were conducted in each student's current learning environment, which was a specialized school designed to teach children with autism ranging from three to 22 years of age. The school served approximately 75 students and employs 25 teachers. Individual classrooms typically served between three and seven students with a ratio of approximately three students to one teacher. Some students had an aide that assisted them in their classroom throughout the day. There were two different types of instructional settings on the campus. Building A was designed to teach life skills to students ages seven through 21. The students worked on skills such as writing their name, doing their laundry, running the school store, and writing a check. The ratios in Building A were typically smaller due to the severity of problem behavior that the majority of the students in this program presented. Mick's classroom was in Building A. It had three students, one teacher and two classroom aides. The classroom was two conjoined five foot by 10 foot rooms both with two student desks and one teacher desk. One of the classrooms also had a large filing cabinet. There were several windows in both rooms and one door used for

both parts of the class. There were a wall and doorway between the two rooms. Minimal room decorations were placed on the walls. Typically, the teacher would display some of the student's best work, class rules or a token chart.

Building B had an academic focus. A Direct Instruction curriculum was employed for the instruction of subjects such as math and language arts. Other subjects studied throughout the day were history, science and specials. Sully and Lucy both received instruction in Building B. Sully's class had five students and one teacher. Additionally, Sully had a one-on-one assistance for several portions of her day from an independent provider. The classroom was a 15 foot by 15 foot area with one large kidney bean shaped desk where the student's received academic instruction as well as three small desks where downtime activities are set up in stations. The teacher also had a station along one wall where she kept files of paperwork. A dry erase board covered one wall of the classroom. There were several choices of reinforcing activities for the students to engage with as well as options for downtime choices. The teacher would usually designate to which downtime area the students were assigned between academic tasks. Artwork that was completed by the students decorated the walls as well as a visual schedule with the activities for the day. Students in Lucy's classroom made transitions throughout the day between two teachers depending on their academic level. One teacher taught lessons designed for Kindergarten through second grade and the other taught lessons for first through third grade. The ratio in the classroom varied anywhere from one teacher to four or six students. Her main classroom was a 15 foot by 15 foot area that had one medium sized kidney bean shaped table where the students would sit for group instruction, a computer table with a computer, a bookshelf and a reading area and a few bean bag

chairs. One wall had individual token charts for each student as well as artwork and a visual schedule with the activities for the day written on it. There were windows on two of the four walls of this classroom.

Within the building were several areas where the student could engage in preferred activities such as playing video games, tending to school pets, playing with peers, reading etc. There was a large fenced area behind Building B with a playground and a few basketball goals. Access to these areas could be earned by achieving an individual goal or receiving enough tokens.

Definition and Measurement of the Dependent Variable

The dependent variable measured during this study was vocal stereotypy. For the purpose of this study, vocal stereotypy was defined as any instance of noncontextual or nonfunctional speech including singing, babbling, repetitive grunts, squeals, and phrases unrelated to the present situation. Examples included repeating lines from previously viewed television shows, repeating instructions delivered to other students, or repeating previously heard conversations. Each instance had to be audible from a distance of at least four feet in order to be counted, for the purpose of data collection. Non-examples included repeating the specific instruction delivered to the participant or any response made to an instruction given. According to Ahern et al. (2007), non-examples also included any contextually appropriate vocalization not directed by a teacher, such as student requests (e.g., requesting a break, preferred item, help etc.).

Partial interval recording was used to determine occurrence of vocal stereotypy for each participant. Each 30 min observation session was broken into 15 s intervals. The data collectors recorded whether or not the behavior occurred at any point during the

interval by circling Y for yes and N for no on the data sheet (see Appendix B). At the end of the session, the Ys were tallied and recorded as percentage of occurrences per 30 min session by dividing the total number of Ys by the number of Ys plus Ns.

Training Procedures

Training for each teacher took place within the school facility one day prior to implementation of the intervention. The procedure for training consisted of reviewing, modeling, explaining, and practicing the correct procedures in the following format.

Reviewing. Guided notes were used (see Appendix C) to teach the instructors the difference between examples and non-examples of vocal stereotypy. They were asked to identify examples and non-examples while viewing a video of the student they would be working with in a typical class session. The following instructions were given prior to video identification:

“We will watch the following video together. When you see an example of vocal stereotypy, raise your hand. We will stop the video and review together the definition and see if everyone agrees or disagrees with what we saw being an example of vocal stereotypy. Once we reach 80 % agreement, we will start a second video clip. We will watch the entire clip for 5 minutes and take data simultaneously. At the end, we will compare our data for inter-observer agreement.”

Modeling. The experimenter showed a video tape of the student engaging in vocal stereotypy and being redirected by an adult. For example, if a student was working on a math worksheet and repeating “the elephant, the elephant,” the teacher in the video would redirect the behavior by asking the student a question such as “what is three plus three”

and prompting that student to say “six.” After the response, the teacher in the video would respond with “good – keep working.” The experimenter went into the classroom 15 min prior to the beginning of the first treatment session and implemented the intervention in front of the classroom teacher and provided an opportunity for the teacher to ask questions before beginning.

Explaining. Any time the teacher had questions for the experimenter, she would review again portions of the training that pertained to the question and provide examples as well as a model (when necessary) to clear up any confusion.

Practicing. The teacher was asked to identify vocal stereotypy not only while watching the video tapes, but also during practice sessions with their student while the experimenter observed them. These practice sessions took place prior to the beginning of the session. During practice sessions, no timer was used. The teacher was asked to acknowledge when the student was engaging in vocal stereotypy by redirecting the behavior as they had observed in the videotaped modeling sessions previously. When the teacher noticed the student engaging in vocal stereotypy, she would make eye contact with the experimenter. If the experimenter agreed that this was a correct identification, she would nod her head and the teacher would then begin the redirection process. If the teacher missed an opportunity to redirect, the experimenter would stop the teacher and make sure they understood what behavior they were looking for by reviewing the definition.

Independent Variable

The independent variable was a treatment package consisting of response interruption and redirection procedure (RIRD) combined with differential reinforcement

of other behaviors (DRO). RIRD took place throughout each student's day and was implemented by their classroom teacher. The teacher approached the student and interrupted the behavior by asking them a question that pertained to the ongoing activity. The DRO was only implemented by the experimenter during the 30 min observation period.

Experimental Design

A multiple baseline design across participants was used to determine the effectiveness of the treatment during academic and free time activities as well as analyze generalization of the intervention in different settings and with different instructors.

Procedure

Baseline

Baseline data were taken prior to implementation of the intervention over the course of several non-consecutive school days a minimum of two days per week. Each student was observed during a regularly scheduled 30 min time period by the experimenter in order to determine the frequency of vocal stereotypy. A generalization probe was also conducted in a different setting for each student. During baseline, the experimenter would go into the student's classroom, explain to the teacher that they should continue with instruction as per usual and continue with their regular routine. The teachers were instructed to continue treating the vocal stereotypy in the same fashion that they had been previously. At this time, the experimenter sat a minimum of four feet from the student and the teacher and did not give any feedback to either the teacher or student about the rate of the student's vocal stereotypy. A watch with an interval timer was used to track the 15 s intervals. The experimenter used a specific data sheet to track

occurrences of vocal stereotypy during each 15 s interval. Every 15 s the watch would beep. The watch used had a beep that was almost inaudible and the experimenter sat far enough away from the students so that this would have no effect on the behavior of the students. None of the student's attended to the noise. The experimenter would indicate on the data sheet whether the student had engaged in vocal stereotypy during that time by circling either Y for yes (i.e., the behavior was occurring during that interval) or N for no (i.e., the behavior did not occur during that time period). At the end of the 30 min session, the experimenter totaled the amount of occurrences of vocal stereotypy during that time.

Reinforcer Assessment

Prior to beginning the intervention, the experimenter conducted a 5 min reinforcer assessment with each of the participants. The experimenter showed them a selection of edible reinforcers (e.g., jelly beans, ju ju bees, sweet tart minis, Reece's pieces, m&ms, etc.) and asked the student to take one. After one of each had been sampled, the experimenter placed one piece of each type of candy in front of the student and told them to take the one they liked the best. Both girls were able to tell the experimenter which was their favorite and rank the others from most to least preferred. Mick was assessed through a different method. Instead of presenting him with choices of tangibles, the experimenter asked him to identify some of his favorite items or activities. Due to his age, it was determined by his teacher that delivering a piece of candy every minute was not appropriate. Even though he did mention a few edible items that he liked, he did relay that edibles were not something he considered highly preferred. Instead, he requested that he be allowed to talk to a person for three minutes (e.g., socialize, ask questions) following an interval of time where he refrained from engaging in vocal stereotypy. For

his reinforcer assessment, the experimenter simply asked him who he preferred to talk to at the end of sessions, and what types of things he would want to talk about.

Intervention

During intervention, RIRD was delivered by the classroom teacher upon the occurrence of vocal stereotypy. When the student engaged in vocal stereotypy, the teacher interrupted each occurrence with a verbal instruction related to the activity the student was engaged in. For instance, if the student was completing a reading comprehension worksheet and began to engage in vocal stereotypy, the teacher would approach the student and ask him/her “what number are you on?” The student would then respond with an answer to the question at which point, the teacher would deliver praise, such as “good”. If the student did not respond, the teacher used a three part correction technique that was implemented as follows:

Interruption	Student Response	Teacher Response
“what # are you on?”	No response/incorrect response	“(no/no alternative)”
“What # are you on?” w/prompt	Correct prompted response	Thank you. Keep it up.

After a prompted response the teacher delivered a neutral form of praise (“thanks” or “you’re right”). Each time the student engaged in vocal stereotypy, this process was started.

An interval differential reinforcement of other behaviors schedule (interval DRO) was also incorporated. Each participant’s schedule of reinforcement was determined

based on their rate of responding at baseline. For Lucy and Sully, the intervals were started at 1 min and increased to a 5 min interval by the end of the study. For Mick, the interval was based on activity length (e.g., he was instructed to complete a worksheet and was reinforced for the absence of vocal stereotypy throughout completion of the worksheet). The students were reinforced for an absence of vocal stereotypy during that interval of time. Contingent upon vocal stereotypy, the time interval was immediately reset. This process created a delay in access to reinforcement. At the end of the interval, the students were allowed to choose from a selection of previously determined reinforcers.

Generalization

One generalization probe was conducted with each student during baseline and during treatment to ensure that the treatment was effective in settings not directly targeted in the intervention. The sessions were conducted either in a different environment, with a different teacher, or at a different time than they were typically conducted. During these sessions, the experimenter sat at least four feet away from the student and simply observed and recorded data. The teacher was instructed to continue with the RIRD procedures but told that the experimenter would just sit back and continue taking data on the occurrence of vocal stereotypy without the DRO. Lucy's generalization sessions were conducted with an alternative teacher during a different subject. The generalization sessions for Sully were conducted with a substitute teacher in a smaller classroom, during the same subject as her other sessions. Mick's sessions took place in the same classroom but during a different activity, and at a different time of day.

Interobserver Agreement (IOA)

In order to assess for interobserver agreement, a second graduate student from The Ohio State University observed the session either via video tape or by coming into the live session with the experimenter. For the live sessions, the experimenter and the second observer would sit approximately two feet away from each other positioned in a way that their data sheets were not visible to each other but situated so that both could hear the signaling of the stop watch. At the end of the session, the data sheets were compared. For videotaped sessions, the experimenter and a second observer would watch the session either at the same time or at separate times. When observing the videotaped session simultaneously, the experimenter and second observer would sit at least two feet away and situate themselves so that the signal was audible to both but so that their data sheets were not visible. In the event that they watched the sessions separately, these measures were not necessary. Agreements were scored each time the experimenter and the second observer circled the same response for that 15 s interval (total count IOA). IOA data were collected for 33 percent of baseline sessions and 33 percent of intervention sessions. Percentage of agreements was determined by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100 percent.

Procedural reliability.

In order to avoid observer drift, the definition of vocal stereotypy was reviewed twice per month with all observers and the videotaped sessions were also reviewed at that time to make sure each teacher was able to identify the behavior accurately.

To assess procedural reliability, a checklist was completed by the teacher and by the experimenter upon completion of a session. A separate form was used to assess procedural reliability during baseline and intervention phases. Only one form was used during baseline (see Appendix D). This was the experimenter form that was used during baseline. This form consisted of seven statements and required the experimenter to circle a + if that statement was true and a – if the statement was false. It included statements that pertained to the distance the experimenter sat from the participant, whether or not the experimenter reminded the teacher of the rules of the session, whether or not the experimenter interacted with the participant and the specifics of the observation period (e.g., observed for 30 min at 15 s intervals).

During the intervention phase, one form was completed by the teacher (see Appendix E) and one was completed by the experimenter (see Appendix F). The form completed by the experimenter consisted of 10 statements pertaining to whether or not the teacher followed the protocol for interruption and redirection correctly (e.g., did the teacher interrupt with a command that was contextually appropriate, did the teacher interrupt each time the student engaged in vocal stereotypy). Procedural reliability data were collected for 25 percent of all baseline sessions and 25 percent of all sessions during treatment. For one student, the experimenter was able to intercede when the teacher was involved in one-on-one teaching with another student in the class. This created some variation in the data.

Social Validity

Due to the cognitive level of two of the students participating in the experiment, social validity was determined by parent and staff questionnaire (see Appendix G). The

staff questionnaire was five questions long and focused on ease of implementation of the intervention, success of the intervention, and the student's reaction to the intervention. The parent questionnaire was also five questions long and asked questions to determine if the intervention had any effect on the student's engagement in vocal stereotypy in the home. We also include anecdotal data such as statements made by the students, their parents, teachers and any other individual of significance (e.g., peers or siblings). Throughout the study and at its conclusion, data were collected on the social validity of the intervention used to decrease vocal stereotypy. Assessment was conducted in the form of a questionnaire given to the teachers of all three participants as well as to the parents. Additionally, anecdotal information was retrieved from conversations with the teachers and the students throughout the study. The questionnaires were delivered a week after conclusion of the study and consisted of five questions and the teachers were asked to circle their response. They were asked to respond to each question by rating on a five point scale where one represented agree completely and five represented do not agree. At the bottom of the questionnaire was a section where the teachers could include additional comments about the intervention.

CHAPTER 3

RESULTS

This chapter describes the results for all participants involved in this study. The results of the experiment including interobserver agreement data, procedural reliability and the vocal stereotypy data for each of the three participants is reported in this chapter.

Interobserver Agreement

Inter-observer agreement (IOA) data were collected during baseline and treatment for each student involved in this experiment and was assessed using total count IOA. The average of agreements across all participants was 92 % (range 82-100 %). Table 3.1 depicts the results of IOA per participant.

Procedural Reliability

In order to assess the reliability of the procedures implemented by the teachers and the experimenter, two separate checklists were used. Percent reliability was calculated by adding the total number of steps performed correctly by either the experimenter or the teacher, dividing by the total number of steps on the checklist, then multiplying by 100 (see Table 3.2). The mean range of procedural reliability during baseline was 96 %. During treatment, the mean range of procedural reliability was 92 %.

Students	Baseline	Treatment
Sully	91 % (range, 89-93%)	90 % (range, 87-94%)
Lucy	87 % (range 84-90%)	90 % (range, 85-98%)
Mick	82 % (range, 81-83%)	94 % (range, 92-96%)

Table 3.1 Interobserver Agreement (IOA) scores (mean) per participant per condition

Student	Baseline	Treatment
Sully	94 % (range, 93-95%)	88 % (range, 87-90%)
Mick	99 % (range, 98-99%)	92 % (range, 85-99%)
Lucy	100 % (range, 100-100%)	98 % (range, 98-100%)

Table 3.2 Procedural Reliability scores across conditions

Student Data

Figure 3.1 shows the percentage of vocal stereotypy for each student during baseline and treatment conditions. It also includes the results of generalization probes that were conducted during baseline and treatment for each student. All three students engaged in significantly higher levels of vocal stereotypy during baseline than during treatment and showed an immediate decrease once the intervention was implemented. The results of each generalization probe showed rates that were similar to the data taken in the non-generalized setting.

Sully

Figure 3.1 details the percentage of intervals Sully engaged in vocal stereotypy during baseline and treatment. During baseline, her responding was variable and steadily increased after the second session. Vocal stereotypy occurred at a mean of 18% (range, 0-28%). On session number two, when stereotypy was 0 %, Sully's teacher reported that Sully's medication had been adjusted. For the first part of her school day she had been acting extremely sedated and hadn't been speaking at all unless prompted by her teacher to respond to a question.

With the implementation of the intervention, an immediate decrease in vocal stereotypy was observed. The mean percentage of Sully's vocal stereotypy was 8% (range, 4-14 %) during treatment. Even though there was an immediate decrease in vocal stereotypy during treatment, the data show a slight upward trend starting at Session 10 and continuing through the end of the study. Circumstances changed during the last two weeks of the study. Her teacher was diagnosed with a health problem and was too ill to teach her class.

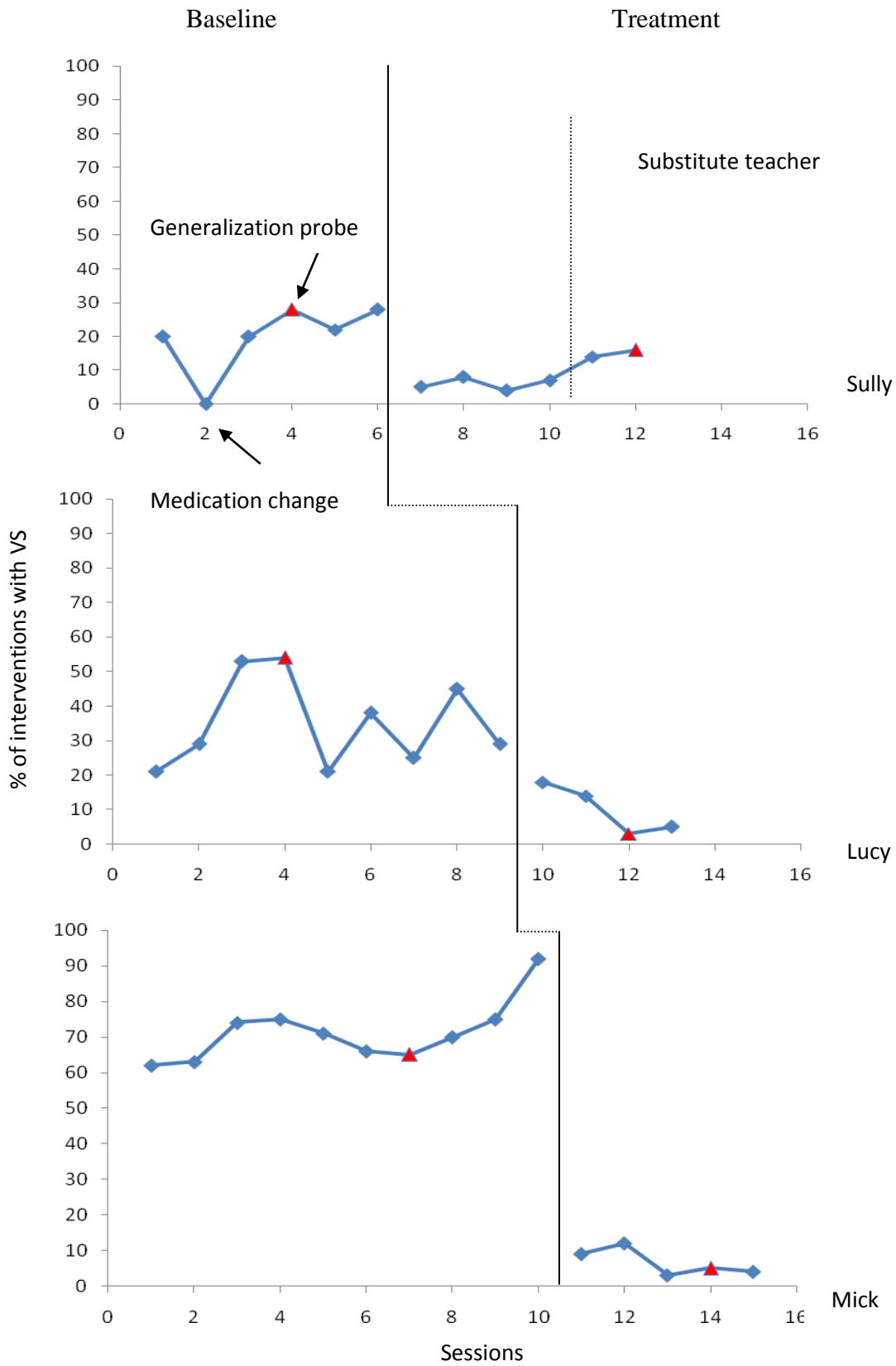


Figure 3.1 depicts the results of intervention on vocal stereotypy across participants

During this time period, Sully's class was taught by two different substitute teachers. Even though these teachers were both qualified to teach the class, neither of them had experience in implementing a procedure such as this. At this point, we had to train them in the procedure. One of the substitute teachers worked with her during session 12 only. After session 12, a second teacher took over substitute teaching for Sully's class. The class size became much larger at this point and the substitute teacher commented that she would be unable to follow through as strenuously as the previous teacher. At this point, we conducted our final generalization probe with Sully and concluded data taking.

For Sully's generalization probe during baseline, rate of vocal stereotypy was similar to data taken during the remainder of baseline data. This probe was conducted during a different subject, at a different time of day and with a larger class size. The generalization probe during treatment was conducted during a session taught by a substitute teacher that had very little history with Sully.

Lucy

During baseline, mean occurrences of vocal stereotypy for Lucy was 33% (range, 21-53%). The data were slightly variable with an upward trend. Even though the data were slightly variable, vocal stereotypy still occurred at a high percentage of intervals throughout baseline. Data from the generalization probe showed that the behavior was occurring at similar rates at other times in the day, with other people, and during other subjects.

Once treatment was implemented, there was an immediate decrease in levels of vocal stereotypy continuing in a downward trend throughout. The average rate of occurrences during treatment was 12 % of the session (range, 5-18%).

During baseline a generalization probe was conducted on session four. Lucy was still in her regular classroom with the same teacher for this session; however it took place at a different time of day and during a different subject matter. Vocal stereotypy occurred at a similar percentage of intervals. During treatment, a generalization probe was conducted during session 12. This was a session with a different teacher, during a different subject, and at a different time of day. Percentage of intervals where vocal stereotypy occurred during this session was lower than during her other sessions.

Mick

During baseline, vocal stereotypy was occurring at a mean of 72% (range, 62-92%). Vocal stereotypy occurred at a steady rate with an upward trend. Vocal stereotypy occurred during the generalization probe at similar rates to baseline. During intervention, vocal stereotypy immediately decreased to 7% of session (range, 3-12%). Baseline data shows a steady upward trend. As soon as the intervention was implemented with Mick, the percentage of vocal stereotypy during his session immediately decreased and remained at low rates throughout the intervention. The trend during intervention was substantially lower than baseline and remained at low rates throughout. During the generalization probe, the behavior occurred at similar rate to that of the rest of the sessions during treatment.

Social Validity

Anecdotal Information

Due to each student's level of functioning, a questionnaire to assess social validity was not used. Instead, the experimenter took note of comments made by the students throughout the study that were relevant to the question of social validity. During one session, Mick inquired about the data sheet. Upon the experimenter's explanation of the sheet he appeared to be excited and stated that he had a lot more N's than Y's. When the experimenter told him that he had "made her day" he smiled and responded excitedly with "I made your day!" Each student was asked if they liked working with the experimenter. One student responded with the statement "I like jelly beans" and another responded with "yes." Whether or not either of these responses were relative to the study, each indicates that the students did not experience any discomfort related to the study. When asked by the experimenter "should I come back tomorrow?" all three students responded with an affirmative response (Lucy "yes. Bring more pink jelly beans", Sully "ok, sure" and Mick "um, I think you should. Yes. Are you bringing your friend?")

Teacher's questionnaire

The results of the teacher's questionnaire indicated that they all found the procedures to be relatively easy to implement but that they would have been easier with an aide in the classroom to help. They also indicated that decreasing vocal stereotypy increased the student's engagement in appropriate classroom tasks. All three teachers agreed that they would implement this procedure with another student engaging in vocal stereotypy in their class. However, one of the teachers indicated that even though the procedures were easy enough to implement during table time activities, it was nearly

impossible to stay on top of redirecting the vocal stereotypy during downtime and that occasionally she felt that it made those activities less enjoyable for the student. All three students appeared to enjoy working with the experimenter and did not have any aversion to the procedures being implemented, according to the results of the questionnaire.

Teacher's anecdotal

Lucy's teacher commented that her rate of responding during fluency trials increased after the intervention started. Sully's teacher indicated that her student's appropriate conversations with others increased during this time as well as her ability to answer questions and remain on task during independent work and reading. Mick's teacher additionally responded that she noticed an increase in general compliance as well as a decrease in all stereotypy.

Parent's questionnaire

As of this point, no parents have responded to the questionnaire. Anecdotally, Mick's mother did vocalize to the experimenter that she was happy to have her son involved in the study and that he enjoyed working with the experimenter and her friend when they came to his class. Lucy's mom mentioned at the start of the study that she was happy someone was finally going to try and wished the experimenter luck. Sully's mom stated that if the intervention worked at school, she would like to be trained to try it at home as well.

CHAPTER 4

DISCUSSION

The purpose of this chapter is to discuss the results of the study. Answers to each research question will be outlined and the impact that was had on each participant will be shown. This chapter will also present limitations of study, implications for practitioners and directions for future research.

RESEARCH QUESTION 1

What are the effects of response interruption and redirection (RIRD) combined with DRO on the occurrence of vocal stereotypy in children with autism during the school day?

The results of this study indicate that combining a DRO procedure with RIRD had a significant effect on the occurrence of vocal stereotypy in children with autism during the school day. Each student was engaging in high levels of vocal stereotypy during baseline and after the implementation of the intervention, there was a consistent downward trend amongst all three participants involved. Mick was engaging in the highest levels of vocal stereotypy during baseline. On his first day of the intervention, his levels decreased from 92 % of intervals to nine % of intervals. As the intervention

progressed, his levels remained low not only during the regularly scheduled session time but also during a generalized session time, which was later in the day.

Sully's data were variable throughout the study. During her second baseline session, she did not exhibit any instances of vocal stereotypy. After speaking with her teacher, we discovered that Sully's medications had been changed that morning and she had not engaged in any vocal communication. This continued throughout the day. Even though she exhibited vocal stereotypy at variable rates throughout baseline, she continued engaging in vocal stereotypy consistently throughout. After implementing the intervention with Sully, there was a decrease in the mean rates of the behavior that continued for the duration of the study. For sessions 11 and 12 Sully had a substitute teacher in her classroom due to her teacher's illness. During session 11 her class was taught by a teacher that had previously partnered with her regular classroom teacher. Even though she had been instructed by this teacher prior to this session, it was not common during this particular time of day. During Session 12 she was in class with a different teacher and in a new classroom. Even with those changes, her levels of vocal stereotypy still remained low enough to show that the intervention was an effective measure to decrease vocal stereotypy with this participant.

Lucy engaged in vocal stereotypy at the highest levels during independent work at baseline. Even though she would complete the tasks given, she would be repeating lines from her favorite shows, which was a distraction for the other students and slowed her acquisition rate. Her overall levels during baseline were not as high as Mick's, but were consistently high. After the intervention was implemented, her percentage of intervals of

vocal stereotypy decreased steadily and remained repressed for the remainder of the study.

Due to the fact that the decrease in vocal stereotypy for all three participants occurred only after the intervention was implemented, and remained at low levels throughout the study, it shows that there is a functional relationship between the intervention and the decrease in the behavior. This is consistent with the research conducted by Ahern et al. (2007). Percentages of intervals of responding for their participants were consistently high during baseline and immediately decreased during the RIRD intervention. The present study extends the research of Ahern et al. by including a differential reinforcement of other behaviors (DRO) component. When determining how to implement these procedures, we decided to instruct the teachers in the implementation of the RIRD in order to allow them to continue with these procedures throughout the entire school day, instead of only during a short portion of the day. This was done in an effort to reduce any negative side effects (e.g., increase in vocal stereotypy after withdrawal of treatment, aggression induced by blocking vocal stereotypy) that may be seen the remainder of class time. The experimenter implemented the DRO procedure because it was speculated that the classroom teacher may not be able to handle implementing both procedures at the same time. Since it is desirable for a DRO schedule to be thinned out, as was the presence of the experimenter in the classroom, it made the most sense to have the experimenter deliver the reinforcers on the interval schedule.

This study also extends previous research in that it attempted to transfer control of the behavior to the student's learning environment and the student's classroom teacher. Previous research has conducted the experiment in a separate environment free from

distractions. However, for this research, the experimenter went into the student's classroom and taught the teacher to implement the RIRD procedures. This gave the teachers the ability to continue throughout the day with redirecting the student's vocal stereotypy.

For this present investigation, a multiple baseline design was used to test the effects of the intervention. Previous research used a withdrawal design (ABAB). We chose a multiple baseline design due to the environmental effects of the current learning environment. Having the teachers implement the intervention could lead to more consistency in implementation once the intervention was started. We thought that withdrawing and restarting the intervention with the teachers would be confusing and could lead to incorrect implementation.

The sessions during baseline and treatment in the present study were 30 min in length and broken down into 15 s intervals. Partial interval recording was used to collect data on the occurrence of vocal stereotypy during these sessions. The sessions were designed to follow the student's activity schedule. Each subject matter was taught for approximately 45 min. Using a 30 min session, the observers could watch the students for a portion of the Direct Instruction lesson as well as the fluency drill, which was independent work time. It was important to see a portion of each of these to see how frequently the behavior occurred during both group instruction and independent work time. We were able to discern that while the behavior occurred more frequently during independent work time, vocal stereotypy still occurred at high rates during group instruction for all three students.

Previous research has also conducted functional analysis prior to implementing an intervention. Due to time constraints, this was not done for the present study. Instead, the experimenter drew information from previous research that has shown the function of vocal stereotypy to be automatic reinforcement. The experimenter paid attention during baseline to the each teacher's way of working with the student to ensure there was no attention being delivered that may have been maintaining vocal stereotypy. Attention was also given to a potential escape function. During baseline, it was determined that none of the participants were escaping demands due to an occurrence of vocal stereotypy. With these considerations taken, we felt confident that the behavior was maintained by automatic reinforcement and that the RIRD procedure would be an effective method to decrease the behavior.

RESEARCH QUESTION 2

Will the results of the intervention generalize to other settings, during other times of day and with other teachers?

The present study assessed for generalization by observing the student in either a different classroom, with a different teacher, or at a different time of day. For some of the participants, the generalization probes were a combination of these aforementioned traits while with others, it was just one or two. For example, Sully's generalization probe was conducted at a different time of day with a substitute teacher, while Mick's was just at a different time of day, during a different subject. Lucy's generalization probes were conducted in a different classroom with a teacher that she frequently worked with but that was not common during her other sessions. They also took place at a different time of day and in a different classroom than the remainder of her sessions. For each of the

participants, the percentage of vocal stereotypy during the generalization probes occurred at high rates, which was similar to the remainder of baseline data. During the intervention, vocal stereotypy rates were low during the generalization probes, similar to the remainder of intervention sessions. This shows that the behavior was not affected by the presence of the experimenter or teacher, the environment, time of day or subject matter being taught.

Due to constraints on time, generalization was only assessed with each participant at one point during baseline and at one point during the implementation of the intervention. Previous research did not assess for generalization during their study, but did include follow-up sessions where maintenance was assessed. Future research should include more sessions to assess both generalization and maintenance if time will allow.

RESEARCH QUESTION 3

What are the opinions of parents and teachers of the treatment package and its outcomes?

According to the results of the social validity questionnaire, the teachers involved in the study all had positive opinions of the procedures that were implemented. Each teacher stated that during the course of the study they saw a noticeable decrease in their student's vocal stereotypy. They saw no aversive reactions from their students in regards to the intervention implemented. When asked if they thought this intervention was simple to implement, one teacher was neutral and two agreed that it was not difficult to implement. The teacher that indicated a response of neutral to the aforementioned question additionally commented that occasionally it was difficult to implement the intervention with a classroom of students all engaging in challenging behaviors. This

procedure would have been easier to implement with assistance from a classroom aide. Even though she did not find the procedures easy at all times, she did agree that in the future she would implement this procedure with another student that engaged in vocal stereotypy, as did the other teachers involved in the study.

At this time, none of the parents have responded to the questionnaire that was delivered. However, throughout the study each expressed that they were happy their son or daughter was involved in the study and were excited to see the outcomes. Towards the end of the study, Mick's mom mentioned that he was enjoying being a part of the study and seemed to really like both the experimenter and the second observer. Since the study concluded during the last week of the school year, it is possible that the parents did not know where to return the forms. The experimenter sent the forms home in the student's book bag, so it is also possible that the parents did not see the form.

Limitations and Future Directions

The purpose of this section is to outline any limitations to the present study including environmental discrepancies, issues with attendance and time constraints. This section will also provide recommendations for future research on this topic.

Each student involved in the study was in a different grade level. This particular educational environment utilizes a classroom setting for academic and life skills instruction. The teachers employed by this school all have different educational backgrounds as well as different levels of experience in the field of special education. Most of the teachers employed hold an undergraduate degree in a related field, while some may be certified teachers or working on a master's degree. These different levels of experience may have an effect on the way instruction is designed in the classroom. Each

teacher is responsible for creating an academic plan for their students based on their Individualized Education Program (IEP). After this is created, the teachers are not given a lot of feedback on their performance. Where one teacher's classroom may be poorly designed from the beginning, others may have a good idea of how to use appropriate behavior management strategies. This limitation was considered before the beginning of the study. One way we attempted to work around it was to include a training piece for the teachers at the beginning of the study. This was a very important part due to the fact that prior to this study, none of the teachers had used these methods with any of their students. Additionally, when conducting future research, I would try to encourage the teachers to read previous research on the topic. Seeing previous success may have given them a bit more confidence in the procedure.

When approaching the teachers about the present study, each reacted differently. From the beginning, some teachers gave their support, offered to help in any way they could and stated that they would be thrilled to be a part of such research. Others did not share this level of commitment to the study. However, once the intervention began, and progress was seen, they certainly became more interested in seeing their student's make even more progress.

Another limitation was attendance. Even though all three of the teachers involved had excellent regular attendance, towards the end of the study, one of them had emergency surgery and was out sick for two weeks. This is something that is very difficult to control for. Had we been conducting the study in closed sessions, a teacher absence may not have had an effect on the rate of the behavior. However, since we were

conducting the experiment in the student's classroom, we then had to work around a substitute teacher, and a new classroom environment.

Even though the behavior change was significant, another limitation of the study was that we had to rely on the teachers to implement the procedure even without the experimenter present. Occasionally, we ran into some difficulty during sessions where a teacher would state that they had too much on their plate to worry about the procedure that day. In these instances, we would remind the teacher to do the best that they could do to redirect the behavior. During the experiment sessions, we had the opportunity to reinforce the teachers' use of the procedure as well as model the appropriate methods when mistakes were made. However, it was difficult to know if this continued after the sessions were concluded. For future research, experimenters may want to consider having several sessions that are not planned and attempting to observe the teachers from out of view of the teachers in order to ascertain if they are implementing the procedures correctly even when they aren't being observed.

The student's at this school all had previous learning habits and histories of reinforcement prior to the implementation of this study. This all becomes a part of how quickly behavior change will take place. Two of the students were under the age of 10 years old. Both were familiar with token systems and had fast acquisition rates. The third participant, Mick, was 17 years old at the beginning of the study. According to his mother, he had been engaging in vocal stereotypy for as long as she could remember. This makes behavior change more challenging. Other strategies that have been utilized in an attempt to change this behavior in the past may have had an effect on our ability to

change this behavior. When conducting similar research in the future, it may be wise to use participants within a certain age range to try and control for this.

Throughout the study, each student's life continued as it had previously outside of school. For one student, this meant changes in medication. On day two of our baseline sessions, one participant, Sully, had a doctor's appointment and medication levels were adjusted in such a way that her entire performance that day was affected. According to her teacher, she was lethargic and did not speak at all that day unless she was prompted to do so. Her levels of vocal stereotypy were at zero that day as well as all other challenging behaviors including elopement and aggression. This change in medication produced a decreasing trend in baseline. Even though the behavior did recover the following session at similar to previous rates, the medication change did effect when we could start the intervention with her. In the future, I would recommend attempting to gather information about the participants pending appointments.

Having an experimenter present can create disturbances for both teachers and students. For this study, we collected live data for over 90 percent of the sessions. At the beginning of the study, we attempted to collect data via video taped sessions. The tapes caused some difficulties in that it was hard to hear the student's vocalizations. When collecting live data, the experimenter could see what the student was working on and hear what they were saying in order to determine if the vocalization was in fact stereotypic or if it pertained to what the student was working on. This was a more prominent issue in dealing with Mick's vocal stereotypy. He would often work out math problems out loud, but would occasionally switch from the appropriate vocalization to a stereotypic one. On video tape this was hard to discern, but when sitting even four feet away from him, you

could hear more clearly what he was saying. Live data collection was a limitation, however, in that occasionally the data collector became a distraction for the students in the classroom. The other students in the class were interested in why there was someone different in the classroom and what they were doing. Once the intervention was implemented and edible reinforcers were used, it became even more of a distraction in that the other students wanted to know how they could earn the candy as well. One student began watching the participant and imitating her behavior. The classroom teacher very quickly set up rules for how she could earn reinforcers as well, which helped that student to remain on task.

Live data collection is also a limitation when the person collecting data becomes a prompt for the teacher or student. Occasionally, a teacher would make a statement such as, “oh yeah, I should have redirected that” which could lead to the conclusion that in the presence of the experimenter, the teacher was reminded to use the RIRD procedures, however when the experimenter was not present, they may forget to do so. The students were also occasionally affected by the presence of the experimenter. Lucy became aware of the schedule of reinforcement. On some occasions she would ask the experimenter how many beeps until she could have a jelly bean. This was dealt with by having her teacher provide a natural consequence for talking out during instruction. The teacher would remind her that the experimenter was only there to watch and that she should stay on task.

Due to the end of the school year, we did not have time to assess maintenance of the intervention. This is another limitation of the present study. Even though we were not able to do this, we were able to conduct a few generalization probes where the DRO

portion of the treatment package was withdrawn. The generalization probes enhanced our study by giving us information about the student's performance in other areas of their learning environment. Future research should attempt to conduct generalization probes and maintenance follow-up probes.

This experiment was conducted in a school for children with autism serving students ages five through 21. Future research should attempt to investigate the effects of RIRD with different populations of students and potentially in different settings. It would be interesting to see the effects of the RIRD procedure in a one-on-one setting where the intervention could easily be implemented throughout the day. If a teacher had only one student to concern themselves with, it would be more likely they would be more aware of each instance of vocal stereotypy and would be capable of redirecting every time. Teachers in this environment most likely would not feel quite as overwhelmed when asked to intervene in this fashion, because it would not interfere with any other student's instruction, as it did in the case of this present study. Also, looking at what adjustments would need to be made if future research attempted to implement an RIRD procedure in a hospital setting or a special education classroom where there is an even higher ratio of students to teachers would be an interesting direction for future research.

Each participant involved in this study was a youngster with a diagnosis of autism spectrum disorder. Two students were Caucasian and one student was Hispanic. A direction for future research could include involving students with more diverse diagnosis and ethnicity. Would this be an effective treatment for students with a diagnosis of Asperger's Syndrome?

Implications for practice

The results of this study show that combining RIRD with DRO is an effective strategy for decreasing vocal stereotypy in students with autism. It shows that allowing the classroom teacher to be a part of the intervention could help for the intervention to take affect more quickly and to generalize to other environments. Having the teachers implement the procedure also shows that an expert does not need to be a part of behavior change. As long as you use individuals with a vested interest in their student that are capable of implementing the procedure you can have an effective intervention.

Effective training strategies were a large contributor to the success of this study. When designing a training package, we made sure to include certain things to make sure that the teachers were given the tools they would need to implement this strategy skillfully. These strategies included using guided notes, modeling the correct implementation of the intervention, practicing with the teacher and giving feedback as they implemented the procedure. These are all very important pieces of training. Most of the teachers involved in this study had not been a part of a large staff training or staff development situation prior to this study. It was important that they were given the opportunity and encouraged to ask questions about any part of the intervention that they did not understand. If training was to be conducted with a large group of teachers that were not being closely monitored in a situation such as an experimental design, training may have been conducted over the course of a few days. Also, the teachers may have been provided with choices such as what time of day to take data and during what subject would they like to see the intervention being implemented.

An intervention such as this would be possible to implement in a regular education facility. However, it would be important to include changes to the training,

such as continued support throughout the school year from a specialist to ensure that they were implementing the intervention consistently and making appropriate choices about what types of reinforcers to use and when to make changes if the treatment was not having the effect that was predicted.

Summary

Children with autism often display stereotypic behavior. Vocal stereotypy can be disruptive to not only the student engaging in the behavior but also the other members of the class as well as the teacher. Often students that engage in high levels of vocal stereotypy are placed into more restrictive environments than would be academically necessary due to the level of distraction it creates for others in their environment. Having an effect on this behavior in a group environment gives hope to the idea that these students could potentially be placed in a less restrictive environment and that potentially this behavior could be controlled in these types of environments.

Although research has been conducted with this population of students engaging in vocal stereotypy, it has not been conducted in an environment such as this and it is exciting to report the success that we had. The generalization piece was important because it showed that the behavior was not being controlled by outside stimuli, a particular teacher or the classroom in which the intervention was originally implemented.

LIST OF REFERENCES

- Ahern, W. H., Clark, K. M., DeBar, R., & Florentino, C. (2005). On the role of preference in response competition. *Journal of Applied Behavior Analysis, 48*, 247-250.
- Ahern, W. H., Clark, K. M., & MacDonald, R.P.F. (2007). Assessing and treating vocal stereotypy in children with autism. *Journal of Applied Behavior Analysis, 40*, 263-275.
- American Psychiatric Association. (2000). Diagnostic and statistical manual of mental disorders (Revised 4th ed.). Washington, DC. American Psychiatric Association.
- Athens, E. S., Vollmer, T. R., Sloman, K. N., & Pipkin, C. S. (2008). An analysis of vocal stereotypy and therapist fading. *Journal of Applied Behavior Analysis, 41*, 291-297.
- Buckley, S. D., & Newchok, D. K.,. (2005). An evaluation of simultaneous presentation and differential reinforcement with response cost to reduce packing. *Journal of Applied Behavior Analysis, 38*, 405-409.
- Carr, J. E., Bailey, J. S., Ecott, C. L., Lucker, K. D., & Weil, T. M. (1998). On the effects of noncontingent delivery of differing magnitudes of reinforcement. *Journal of Applied Behavior Analysis, 31*, 313-321.
- Charlop, M. H. (1983). The effects of echolalia on acquisition and generalization of receptive labeling in autistic children. *Journal of Applied Behavior Analysis, 16*, 111-126.
- Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied Behavior Analysis* (pp 470-480). Upper Saddle River, NJ: Prentice Hall.

- Cunningham, A. B., & Schreibman, L. (2007). Stereotypy in autism: The importance of function. *Research Autism Spectrum Disorders, 2*(3), 469-479.
- Dib, N., & Sturmey, P. (2007). Reducing student stereotypy by improving teachers' implementation of discrete-trial teaching. *Journal of Applied Behavior Analysis, 40*, 339-343.
- Doughty, S. S., Anderson, C. M., Doughty, A. H., & Williams, D. C., Saunders, K. J. (2007). Discriminative control of punished stereotyped behavior in humans. *Journal of the Experimental Analysis of Behavior, 87*, 325-336.
- Falcomata, T. S., Roane, H. S., Hovanetz, A. N., & Kettering, T. L. (2007). An evaluation of response cost in the treatment of inappropriate vocalizations maintained by automatic reinforcement. *Journal of Applied Behavior Analysis, 37*, 83-87.
- Fox, R. M., Schreck, K. A., Garito, J., Smith, A., & Weisenberger, S. (2004). Replacing the echolalia of children with autism with functional use of verbal labeling. *Journal of Developmental and Physical Disabilities, 16*, 307-320.
- Goh, H., Iwata, B. A., & Kahng, S. W. (1999). Multicomponent assessment and treatment of cigarette pica. *Journal of Applied Behavior Analysis, 32*, 297-316.
- Hanley, G. P., Piazza, C. C., Fisher, W. W., & Maglieri, K. A. (2005). On the effectiveness of and preference for punishment and extinction components of function-based interventions. *Journal of Applied Behavior Analysis, 38*, 52-65.
- Hanley, G. P., Iwata, B. A., Thompson, R. H., & Lindberg, J. S. (2000). A component analysis of "stereotypy as reinforcement" for alternative behavior. *Journal of Applied Behavior Analysis, 33*, 285-297.
- Kennedy, C. H., Meyer, K. A., Knowles, T., & Shukla, S. (2000). Analyzing the multiple functions of stereotypical behavior for students with autism: implications for assessment and treatment. *Journal of Applied Behavior Analysis, 33*, 559-571.
- Koegel, R. L., & Koegel, L. K. (1990). Extended reductions in stereotypic behavior of students with autism through a self-management treatment package. *Journal of Applied Behavior Analysis, 23*, 119-127.
- Lerman, D. C., & Vorndran, C. M. (2002). On the status of knowledge for using punishment: Implications for treating behavior disorders. *Journal of Applied Behavior Analysis, 35*, 431-464.

- Lerman, D. C., Kelley, M. E., Vorndran, C. M., & Van Camp, C. M. (2003). Collateral effects of response blocking during the treatment of stereotypic behavior. *Journal of Applied Behavior Analysis, 36*, 119-123.
- Lovaas, I., Newsom, C., & Hickman, C. (1987). Self-stimulatory behavior and perceptual reinforcement. *Journal of Applied Behavior Analysis, 20*, 45-68,
- McCord, B. E., & Grosser, J. W. (2005). An analysis of response blocking parameters in the prevention of pica. *Journal of Applied Behavior Analysis, 38*, 391-394.
- Michael, J. (2000). Implications and refinements of the establishing operation concept. *Journal of Applied Behavior Analysis, 33*, 401-410.
- Piazza, C. C., Fisher, W. W., Hanley, G. P., LeBlanc, L. A., Worsdell, A. S., Lindauer, S. E., & Keeney, K. M. (1998). Treatment of pica through multiple analysis of its reinforcing functions. *Journal of Applied Behavior Analysis, 31*, 165-189.
- Rapp, J. T. (2007). Further evaluation of methods to identify matched stimulation. *Journal of Applied Behavior Analysis, 40*, 73-88.
- Rapp, J. T., Vollmer, T. R., Peter, C. S., Dozier, C. L., & Cotnoir, N. M. (2004). Analysis of response allocation in individuals with multiple forms of stereotyped behavior. *Journal of Applied Behavior Analysis, 37*, 481-501.
- Roane, H. S., Falcomata, T. S., & Fisher, W. W. (2007). Applying the behavioral economics principle of unit price to DRO schedule thinning. *Journal of Applied Behavior Analysis, 40*, 529-534.
- Shabani, D. B., & Fisher, W. W. (2006). Stimulus fading and differential reinforcement for the treatment of needle phobia in a youth with autism. *Journal of Applied Behavior Analysis, 39*, 449-452.
- Sidener, T. M., Carr, J. E., & Firth, A. M. (2005). Superimposition and withholding of edible consequences as treatment for automatically reinforced stereotypy. *Journal of Applied Behavior Analysis, 38*, 121-124.
- Tarbox, R. S. F., Tarbox, J., Ghezzi, P. M., & Wallace, M. D. (2007). The effects of blocking mouthing of leisure items on their effectiveness as reinforcers. *Journal of Applied Behavior Analysis, 40*, 761-765.
- Thompson, R. H., Iwata, B. A. (2005). A review of reinforcement control procedures. *Journal of Applied Behavior Analysis, 38*, 257-278.

APPENDIX A
PARENTAL CONSENT FORM

February 10th, 2009

Dear Parents:

My name is Dr. Sheila Morgan. I am a member of the special education faculty at The Ohio State University. One of the supervisors of your child's school, Ms. Beth Gartland, and I are working together to do a study. This study is being done to find ways to decrease vocal stereotypy in children with autism. Ms. Gartland will observe your child during 30 minute sessions on three days each week in his or her regular class. Specifically, whenever your child engages in vocal stereotypy, your child's teacher will implement the following procedures: (a) interrupt the vocal stereotypy, by asking the student a relevant question pertaining to the child's task that will elicit an appropriate vocalization (e.g. "what is your name?" "what color is the toy?" "What number are you working on?"), and (b) The teacher will provide praise for an appropriate response or provide another prompt for an appropriate vocalization. These procedures are currently being used by the teachers in the center. Ms. Gartland will simply be observing and taking data on the frequency of vocal stereotypy when these procedures are being implemented as a package.

The students will not be removed from their classroom placement in order for this study to be conducted. Observations will take place during table time instruction and independent work. Our hope is that this intervention will increase the student's appropriate communication skills and decrease their engagement in vocal stereotypy.

We would like your permission to observe your child during the regular school day, and anonymously report the results of this intervention. Your child's identity will not be revealed in any report, and confidentiality will be maintained by using pseudonyms on all reports and data collection forms. We expect this study to continue for about 12 weeks.

Your consent is voluntary. If you allow your child to participate in the study, you may discontinue his or her participation at any time without penalty or loss of benefits. Please contact me at 614-247-8714 or Beth Gartland at 614-581-0423 if you have any questions.

Sincerely,

Sheila Morgan

Associate Professor

CONSENT FOR PARTICIPATION IN RESEARCH

I consent to my child's participation in research entitled: The Effects of Response Interruption/Redirection and Differential Reinforcement of Other Behaviors on Vocal Stereotypy in Children With Autism.

Dr. Sheila Morgan, Principal Investigator, or her authorized representative Beth Gartland has explained the purpose of the study, the procedures to be followed, and the expected duration of my (my child's) participation. Possible benefits of the study have been described, as have alternative procedures, if such procedures are applicable and available.

I acknowledge that I have had the opportunity to obtain additional information regarding the study and that any questions I have raised have been answered to my full satisfaction. Furthermore, I understand that I am (my child is) free to withdraw consent at any time and to discontinue participation in the study without prejudice to me (my child).

Finally, I acknowledge that I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date:

Signed:

(Participant)

Signed:

(Principal Investigator or his/her authorized representative)

Signed:

(Person authorized to consent for participant, if required)

Witness:

APPENDIX B
DATA SHEET

Vocal Stereotypy Recording Form

Date: _____ Student: _____ Session #: _____

Observer: _____ IOA Session: Y N

Experimental condition: baseline treatment maint/gen

Observation start time: _____ end time: _____

15 sec interval		15 sec interval		15 sec interval		15 sec interval	
1	Y N	31	Y N	61	Y N	91	Y N
2	Y N	32	Y N	62	Y N	92	Y N
3	Y N	33	Y N	63	Y N	93	Y N
4	Y N	34	Y N	63	Y N	94	Y N
5	Y N	35	Y N	65	Y N	95	Y N
6	Y N	36	Y N	66	Y N	96	Y N
7	Y N	37	Y N	67	Y N	97	Y N
8	Y N	38	Y N	68	Y N	98	Y N
9	Y N	39	Y N	69	Y N	99	Y N
10	Y N	40	Y N	70	Y N	100	Y N
11	Y N	41	Y N	71	Y N	101	Y N
12	Y N	42	Y N	72	Y N	102	Y N
13	Y N	43	Y N	73	Y N	103	Y N
14	Y N	44	Y N	74	Y N	104	Y N
15	Y N	45	Y N	75	Y N	105	Y N
16	Y N	46	Y N	76	Y N	106	Y N
17	Y N	47	Y N	77	Y N	107	Y N
18	Y N	48	Y N	78	Y N	108	Y N
19	Y N	49	Y N	79	Y N	109	Y N
20	Y N	50	Y N	80	Y N	110	Y N
21	Y N	51	Y N	81	Y N	111	Y N
22	Y N	52	Y N	82	Y N	112	Y N
23	Y N	53	Y N	83	Y N	113	Y N
24	Y N	54	Y N	84	Y N	114	Y N
25	Y N	55	Y N	85	Y N	115	Y N
26	Y N	56	Y N	86	Y N	116	Y N
27	Y N	57	Y N	87	Y N	117	Y N
28	Y N	58	Y N	88	Y N	118	Y N
29	Y N	59	Y N	89	Y N	119	Y N
30	Y N	60	Y N	90	Y N	120	Y N

% of intervals where VS was present: _____

APPENDIX C
GUIDED NOTES

- Intervention Training
- Beth Gartland
- Vocal Stereotypy
- **Definition:** any instance of noncontextual or nonfunctional speech including singing, babbling, repetitive grunts, squeals, and phrases unrelated to the present situation
- **Examples:** repeating lines from previously viewed television shows, repeating instructions delivered to other students, or repeating previously heard conversations
 - Give some specific examples from your student

-
-
- Non-Examples
 - Any contextually appropriate vocalization not directed by a teacher including any request (break, attention, tangible item, activity to start or stop) and contextually appropriate comments.
 - Specific non-examples for each student:

-
-
- Interventions
 - For the purpose of this study, we will be using a combination of Response Interruption and Redirection as well as Differential Reinforcement of Other Behaviors at an interval schedule
 - You will not be expected to take any data or deliver tokens. We will be asking you to interrupt the behavior when it is present as well as redirect the student to a contextually appropriate vocalization
 - RIRD
 - Response Interruption and Redirection
 - Any time the student begins to engage in vocal stereotypy, this sequence should be followed in order to interrupt the automatic reinforcement of the behavior. Redirect them to an appropriate vocalization and reinforce correct responding.
 - Example

student is engaging in vocal stereotypy → ask a question pertaining to something the student is engaging in (i.e. “What number are you on?”)

Student responds with a correct response (“number 4”)

Give mild amounts of verbal praise (“great! Keep working”)

- RIRD
- In the event that the student does not respond, or responds incorrectly, we will use a corrective procedure as follows
- If the student continues to respond incorrectly, the teacher should prompt a receptive response and move on, continuing to interrupt any vocal stereotypy.
- Video Review

- Now, lets watch 2 video clips together. During the first video clip, I want you to raise your hand to signal that what you are observing is an instance of vocal stereotypy.
- During the second video clip, we will watch it straight through for 5 minutes taking data simultaneously and compare at the end to make sure we are in agreement.
- Let's Practice
- I will be the student and engage in vocal stereotypy similar to that of your student.
- RIRD w/compliance
- RIRD w/corrective procedure
- Quick Review
- What is the procedure we will be using?
- What does that mean?
- What should you do if the student does not respond correctly to your redirection?
- What should you do if the student does respond correctly?

APPENDIX D

PROCEDURAL RELIABILITY BASELINE FORM

Procedural Reliability Checklist for Baseline	
+ -	The experimenter goes into the classroom and sit at least 4 feet away out of the line of vision of the student
+ -	The experimenter reminds the teacher not to change anything he/she has been doing
+ -	The experimenter observes for 15 second intervals
+ -	The experimenter stays for 30 minutes
+ -	The experimenter records instances of vocal stereotypy using partial interval time sampling
+ -	The experimenter circles Y on the data sheet if an instance of vocal stereotypy occurs and will circle N if no instance occurs.
+ -	The experimenter does not interact with the teacher or students during the observation

APPENDIX E
PROCEDURAL RELIABILITY FOR INTERVENTION
TEACHER FORM

Procedural Reliability Checklist for Intervention (Experimenter Form)	
+ -	Experimenter reminds the teacher to follow the intervention procedures
+ -	The experimenter asks the teacher if he/she has any questions before the observation begins
+ -	The experimenter collects data on student behavior
+ -	The experimenter gives feedback at the end of the observation session

APPENDIX F
PROCEDURAL RELIABILITY FOR INTERVENTION
EXPERIMENTER FORM

Procedural Reliability Checklist for Intervention (Experimenter Form)	
+ -	Student engages in vocal stereotypy.
+ -	The teacher interrupts with an SD related to activity
+ -	Student responds to the SD with a correct response
+ -	Teacher delivers praise
+ -	If the student does not respond or responds incorrectly, the teacher begins the correction technique by stating "no, not quite, try again"
+ -	The teacher redelivers the same SD
+ -	The teacher prompts the student to respond.
+ -	Upon responding the teacher praises the student for responding.
+ -	Every (x) minutes, the teacher delivers a token for the absence of the target behavior
+ -	When the student engages in vocal stereotypy, the teacher restarts the timer and reminds the student to work/play quietly.

APPENDIX G
SOCIAL VALIDITY QUESTIONNAIRE

Social Validity Questionnaire (Teacher Form)

Instructions: Please read and respond to the following questions by circling one response for each.

1. This intervention was easy to implement within the structure of my classroom

Agree completely *Agree* *Neutral* *Agree somewhat* *Do not agree*

2. This intervention had an effect on my student's engagement in vocal stereotypy

Agree completely *Agree* *Neutral* *Agree somewhat* *Do not agree*

3. Previously, the student's engagement with vocal stereotypy limited their social interactions with other students.

Agree completely *Agree* *Neutral* *Agree somewhat* *Do not agree*

4. There were no aversive side effects during the implementation of this procedure during the study

Agree completely *Agree* *Neutral* *Agree somewhat* *Do not agree*

5. I would implement this intervention with another student that engaged in this behavior

Agree completely *Agree* *Neutral* *Agree somewhat* *Do not agree*

Additional comments:

Social Validity Questionnaire (Parent Form)

Instructions: Please read and respond to the following questions by circling one response for each.

1. Prior to the beginning of this intervention, my child appeared to be talking to themselves throughout the day

Agree completely Agree Neutral Agree somewhat Do not agree

2. This behavior kept my son/daughter from having conversations with other members of the family

Agree completely Agree Neutral Agree somewhat Do not agree

3. People often commented on my son/daughter talking to themselves when we were in public

Agree completely Agree Neutral Agree somewhat Do not agree

4. This kept me from being able to take my son/daughter out in public or made me feel embarrassed when I did

Agree completely Agree Neutral Agree somewhat Do not agree

5. Since this study was conducted, I have noticed a decrease in my son/daughter's behavior of talking to themselves

Agree completely Agree Neutral Agree somewhat Do not agree

6. My son/daughter did not have an increase in other inappropriate behaviors during this study

Agree completely Agree Neutral Agree somewhat Do not agree

Additional comments (please continue on the back if needed):
