USING DIFFERENT TYPES OF PRAISE STATEMENTS IN TEACHING A CHILD WITH
ASD INTRAVERBAL BEHAVIOR

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ABSTRACT

Autism spectrum disorder (ASD) is a developmental disorder that impacts an individual's behavior, social, and communication skills (American Psychiatric Association, 2013). A common approach to teach socially significant behaviors to individuals with ASD is applied behavior analysis, which utilizes reinforcement to increase the chances of behaviors occurring again. Research typically suggests that when teaching children with ASD new skills, descriptive praise will lead to faster acquisition and mastery compared to using general praise. However, previous studies comparing using the two types of praise have demonstrated mixed findings regarding which one leads to faster acquisition of skills. The purpose of current study is to extend research conducted by Polick and colleagues (2012) by examining the use of general praise, descriptive praise, and irrelevant statements in teaching 1 young child with ASD intraverbal behavior. An adapted alternating treatment design embedded within a multiple baseline design across behaviors was used to teach the participant to respond to simple "what" questions. The results showed that sets assigned to descriptive praise condition met mastery criteria first. However, the difference between mastery of descriptive praise sets and the other sets were small. Future research is needed to fully understand the correlation between descriptive praise and acquisition speed of learning new skills for children with ASD.

TABLE OF CONTENTS

INTRODUCTION

Autism spectrum disorder (ASD) is a developmental disorder that impacts an individual's behavior, social, communication skills, and their ability to learn (American Psychiatric Association, 2013). In the most recent ASD surveillance report conducted in 2020, approximately 1 in 36 children are diagnosed with ASD (Centers for Disease Control and Prevention, 2023). Other characteristics of ASD may include delayed communication and motor skills, delayed cognitive and learning skills, limited eating and sleeping, inattentive behavior, difficulty with social skills, and restrictive or repetitive behaviors (Centers for Disease Control and Prevention, 2022). While there is no cure for ASD, there are many types of treatments available, with the most common treatment being applied behavior analysis (ABA) therapy. ABA therapy identifies socially significant behaviors of concern, defines the behaviors in observable and measurable ways, implements a plan to help the individual reach the desired goals, and constantly analyzes data to adjust the plan (Cooper et al., 2020). When teaching new skills, the desired response may first be prompted and then these prompts are faded until the individual is able to perform the skill independently. Positive reinforcement, which is the presentation of a stimulus contingent on behavior, is commonly used in ABA to increase the likelihood of the behavior occurring again under similar conditions (Cooper et al., 2020).

A reinforcer is defined as "a consequence that increases the likelihood of a specific behavior or a response will occur again" (Barowski, 2021). There are two categories of reinforcement, primary reinforcers and secondary reinforcers. Primary reinforcers are reinforcers that are naturally driven and have not been previously learned to be reinforcement (Cooper et al., 2020). Examples of primary reinforcers include food, water, physical touch, and sleep. Secondary reinforcers are reinforcers that are conditionally learned to be reinforcement though

the pairing of primary reinforcers (Cooper et al., 2020). For example, money is not a natural reinforcer but can become a reinforcer when conditionally paired with primary reinforcement. Earning money is learned to be reinforcing because it becomes associated with things that are already reinforcing by allowing access to desired items. Praise is another example of a secondary reinforcer where praise can be given after performing a desired behavior and can be paired with other primary reinforcers, such as food or tickles until the praise itself can eventually become reinforcement. Receiving praise can function as a reinforcer for people. For example, when a child washes their hands after using the bathroom, a mother may give them praise by saying, "Thank you for washing your hands." The praise statement may act as a reinforcer, which would increase the likelihood of the child washing their hands again after using the bathroom. Using praise as a reinforcer in ABA may be one way to increase the likelihood that individuals with ASD learn new skills without always having to rely on the use of primary reinforcers. The two most common types of praise statements are general praise and descriptive praise. General praise is defined as "a statement of approval that does not clearly state the specific behavior being praised" (Stevens et al., 2010). For example, seeing a child use their fork to eat their dinner and saying to them "great job" is general praise. Descriptive praise is defined by "the specification of the exact behavior that is being reinforced" (Cortes & Wiskow, 2022). For example, seeing a child use their fork to eat their dinner and saying to them "great job using your fork!" is descriptive praise. Several studies have evaluated the effectiveness and efficiency of using different types of praise statements for teaching new skills to individuals with ASD.

In one study, Stevens and colleagues (2010) studied the effects of descriptive and general praise along with the use of a token board on participants' rate of acquisition of tacting animals and vegetables when asked "what is it?". There were two participants in the study, a 15-year-old

male diagnosed with ASD and a 6-year-old male diagnosed with pervasive developmental disorder. Both participants mastered the ability to tact sets under descriptive and general praise conditions at about the same rate, with all sets mastered within three sessions of each other. Although acquisition of the target behavior occurred at about the same rate for both types of praise statements, a primary limitation of the study was the use of the token board, which could have served as reinforcement instead of the praise statements.

Polick and colleagues (2012) extended the work done by Stevens and colleagues (2010) by comparing the effects of general and descriptive praise on intraverbal responding among two young children with ASD by removing the token board. Both participants were recruited from an integrated preschool, where the study also took place and scored in the level 2 range of the intraverbal behavior subtest on Sundberg (2008)'s Verbal Behavior Milestones Assessment and Placement Program (VB-MAPP). The study used an adapted alternating treatments design embedded within a concurrent multiple baseline design (for within-participant replication) to see if using general or descriptive praise as reinforcement lead to faster acquisition of six sets of three simple what questions. The skill was taught by using a least to most vocal prompting procedure and providing praise to the participants for correct responding with the least intrusive prompt while withholding praise for responding with the most intrusive prompt. The overall results of this study showed that for both participants, descriptive praise produced independent responses in intraverbal behavior more quickly when compared to general praise, but the difference was small and not significant enough to say that one type of praise should be used over the other.

In a more recent study, Cortes and Wiskow (2022) compared the effects of general praise, descriptive praise, and general plus descriptive praise on the acquisition of tacting skills

among two typically developing preschool aged children. First, the researchers taught participants to tact digital pictures using a least to most echoic teaching procedure. After all sets were mastered, a concurrent-chains procedure was conducted by showing the participant a mastered tacting stimuli and the researcher told them what type of praise they were going to receive if they got it correct. The researcher did this for all three conditions and then asked the participant to "pick your favorite way to learn." The results from the concurrent chains procedure showed that one participant preferred general praise and the other preferred descriptive praise. Neither participant chose general plus descriptive praise, which was praise that had the greatest number of words. The overall results showed that descriptive praise did meet mastery criteria first, but only by a difference of one session at most, concluding that there was no significant difference in the acquisition of tacts by praise type.

The purpose of the current study was to extend the study conducted by Polick and colleagues (2012) to evaluate if the type of praise statement impacts the acquisition of intraverbal behavior of a young child with ASD. The current study extends previous research by adding a third condition, the "irrelevant statement" condition. The purpose of the irrelevant statement condition was to determine if the statement itself functions as a reinforcer or if the length of the statement functions as a reinforcer. The current study addresses the following research question. Will general praise, descriptive praise, or irrelevant statements be more effective in teaching a child with ASD intraverbal behavior as measured by independent responses per opportunity?

METHODS

Participants, Settings, and Materials

The participant qualifications for the study included receiving ABA services from an early intensive behavioral intervention clinic, between the ages 2 and 6, a medical diagnosis of ASD, and scored in the Level 2 on the intraverbal sub-category in accordance with Sundberg (2008)'s Verbal Behavior Milestones Assessment and Placement Program (VB-MAPP). Also, the supervising Board Certified Behavior Analysts® (BCBAs) was interviewed to determine if potential participants would be appropriate to be included in the study. One participant met the qualifications at the current clinic and was recruited for the study. This participant was a 3-year-old boy with a medical diagnosis of ASD. Participant 1 had been receiving ABA services for 8 months and attended ABA therapy for approximately 30 hours per week. Participant 1's most recent VB-MAPP score was 113.5 points and was in the Level 3 range for manding, Level 2 range for tacting, intraverbal, and echoics, and the Level 1 range for vocal imitation. Participant 1 could communicate vocally without the use of a communication device.

The study took place at an early intensive behavioral intervention clinic in the Mid-west. The treatment room of the clinic was divided into different sections and had a play area, a kidney shaped table for eating meals, large group meeting area, and several small tables for individual therapy sessions. At any given time, the treatment room also consisted of the BCBA, up to 12 Behavior Technicians, and up to eight clients. During the study, all sessions were conducted in the participant's individual treatment area, which consisted of a small table and two chairs that were placed across from each other. Next to the table was a cart that contained materials for client programming and a variety of child specific reinforcers. The materials used for the study

were a video camera to record sessions, reinforcers based on the results of the participant's preference assessment, a timer to time breaks, data sheets, and a pen to record data.

Dependent Variables

There were two dependent variables that were measured for this study. The first variable was the percentage of correct responses per condition, which was calculated by counting the number of correct response trials per condition, dividing it by the total number of trials ran per condition, and multiplying that number by 100. A correct response was defined as the participant clearly and independently (no prompting) vocalizing a correct, acceptable answer within 5 s of the question presented to them the first time (see Table 1). An incorrect response was defined as the participant vocalizing an unacceptable response or no response within 5s of the question being presented the first time.

The second variable was the number of sessions it took for the participant to reach mastery criteria for each condition. For behaviors in Tier 1, mastery criteria was defined as the participant scoring a correct and independent response percentage of 89% or higher for three consecutive sessions. However, due to time constraints, mastery criteria was modified to require 89% or higher responding across two sessions for behaviors in later tiers. Mastery criteria was calculated by counting the number of sessions it took until the participant reached mastery criteria.

Independent Variables

There were three independent variables (IV) for this study. The first IV was descriptive praise, which was defined as any instance in which the researcher provided a four-word statement related to the correct response that described what the participant did correctly, such as saying, "Great job, saying fork" after a participant correctly answers the question, "What do you

eat macaroni and cheese with?" The second IV was general praise, which was defined as any instance in which the researcher provided a two-word praise statement, such as "Great job," "Good job," or "That's right" after a correct response from the participant. The third IV was an irrelevant statement, which consisted of a statement of equal length to the descriptive praise (four-word) delivered after the participant responded correctly, but with words that were not related to the question or target response. For example, the researcher may say "It is sunny outside" after the participant correctly answered the question "What do you sit in?" during the irrelevant statement condition. Three different irrelevant statements were chosen per tier and assigned to a question where if the participant got the answer correct, then the researcher responded using the irrelevant statement assigned to that question. The irrelevant statements were rotated to different questions after each session.

Experimental Design

The design implemented for this study was an adapted alternating treatment design embedded with a multiple probe design across behaviors. This study consisted of teaching participants nine sets of simple "what" questions (three questions per set), which was broken down into three tiers (see Figure 1). Each tier had three sets of simple "what" questions (one set per condition). Only one tier was taught at a time and the participant would not move on to the next tier until they met mastery criteria for all sets in that tier. This was followed for Tier 1, however, due to time restraints, this was modified for Tiers 2 and 3, and the participant moved on to the next Tier after they met mastery criteria for one set in that tier. Each set was randomly assigned to a praise or irrelevant statement condition.
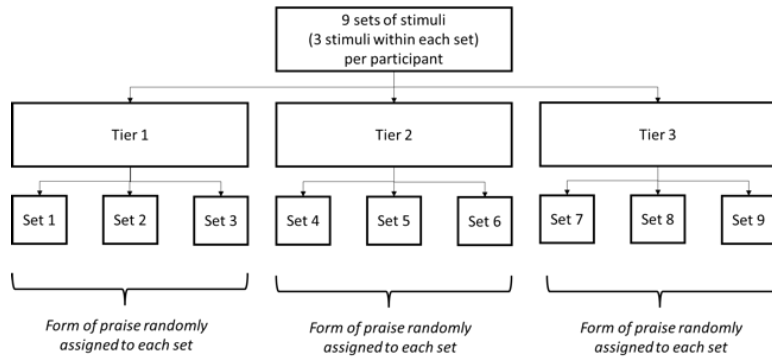
Figure 1: Experimental Design visual

Pre Baseline

Prior to baseline, a list of 60 simple what questions with one or two possible correct responses across 10 different categories (six questions per category) was developed and sent to a committee consisting of three doctoral level BCBAs and one doctoral candidate for review. Based on feedback from the committee, minor adjustments were made to some of the wording of the questions and the possible correct answers reduced to one response. Once the final list was set, the first three questions across nine categories were initially probed during one pre-baseline session using the baseline procedures described below. If the participant answered a question correctly during a pre-baseline session, the question was replaced with the next potential question on the list. During pre-baseline sessions, a total of 10 questions were replaced prior to the first baseline session. A total of three pre-baseline sessions were conducted until there were 27 questions (nine categories with three questions per set) that the participant did not know the answers.

Baseline Probe Sessions

During baseline probe sessions, trials were conducted by presenting each of the 27 questions from all sets one time to the participant. During probe sessions, nine questions were

presented in a random order before the participant was provided with a 1-2 min break with access to a moderate reinforcer during this time. Questions were presented in groups of nine until all 27 questions were probed.

To initiate a trial during a baseline probe session, the researcher asked the question and waited up to 5 s for the participant to respond. If the participant answered with a response that was listed as acceptable (see Table 1), the trial was counted as counted as a correct response [+]. If the participant did not respond within 5 s or answered with something that was not listed as acceptable, the trial was counted as an incorrect response [-]. After each trial, regardless of the participant's response, a neutral statement was given such as saying "okay" or "let's move on." No prompting or praise was given during baseline probe trials.

Intervention

General session procedures

Three sets of intraverbal questions were used during each tier of the intervention phase. Each set consisted of three simple "what" questions. Sets 1-3 were in the first tier, sets 4-6 in the second tier, and sets 7-9 in the third tier. To prevent reinforcement of chained responses, the order in which sets and questions within each set was determined by using a random number generator. During intervention sessions, each set consisted of nine trials per session, with each question in the set being asked three times. Trials were conducted by asking the participant the question and waiting 5 s for their response. If the participant responded correctly, either a type of praise statement or irrelevant statement was given. An incorrect response or no response resulted in the trial being scored as incorrect and the implementation of prompting procedures (described

below). In between sets, the participant was given a 1 to 2 min break with a moderate reinforcing item based on the results of the preference assessment conducted prior to the study.

Prompting Procedures

Prompting was provided using a least-to-most prompting hierarchy during the intervention phase when the participant gave an incorrect response or no response. A partial prompt was used first following an incorrect response. Immediately after the trial ended, the researcher re-stated the question, followed by the researcher saying the first part of the correct answer. For example, if the correct answer to the question was yellow, the researcher would ask the question again and then immediately say, "Yel." If a participant correctly responded after the partial prompt, then a praise statement or irrelevant statement was provided depending on the assigned condition. If the participant did not correctly respond after the partial word prompt, then the question was re-stated and a full word prompt was immediately given. After a full word prompt was provided, a neutral statement such as "let's move on" was given and the next trial was conducted.

Descriptive praise

When the participant correctly responded to a 'what' question from a set randomly assigned to the descriptive praise condition, the researcher followed that correct response with descriptive praise. A descriptive praise statement consisted of verbally telling the participant a four to five word praise statement such as, "That's right, it's …[correct answer]," "Great job saying [correct answer]," or any similar praise statement that had four words and the correct answer in the statement.

General praise

When the participant correctly responded to a 'what' question from a set randomly assigned to the general praise condition, the researcher followed that correct response with general praise, which was verbally telling the participant a two word statement such as "That's right" or "Great job" or any similar praise statement that had two words and did not include the correct answer to the what question.

Irrelevant statement

When the participant correctly responded to a 'what' question from a set randomly assigned to the irrelevant statement condition, the researcher followed that correct response with an irrelevant statement. An irrelevant statement had the same number of words as the descriptive praise (four words), but the statement had nothing to do with the correct response provided. To ensure irrelevant statements were consistent across sets, three irrelevant statements were pre-selected per tier and were delivered based on a randomly assigned pre-rotation sequence. See Table 2 for a list of irrelevant statements for each tier.

Inter-observer agreement

The primary researcher first trained a secondary observer to define and identify correct and incorrect responses. The secondary observer then watched video recorded sessions in order to take interobserver agreement (IOA) data for 31% of treatment sessions and for 30% of baseline session that were assigned at random by picking session numbers out of a hat. Trial by trial IOA was used and calculated by dividing the number of agreements by the number of agreements plus disagreements. The number was then calculated into a percentage by multiply

that number by 100. The mean of agreements for baseline sessions was 100%. The mean of agreements for treatment sessions was 98.58% and the range was 89 to 100%.

Procedural fidelity

Procedural fidelity was measured for 31% of randomly selected treatment sessions and 30% of randomly selected baseline sessions by a secondary observer via video recorded sessions using the procedural fidelity checklist, which had nine operationally defined steps for treatment sessions (Appendix A), and seven operationally defined steps for baseline sessions (Appendix B). The researcher trained the secondary observer by defining each step, demonstrating or describing what each step looked like, and demonstrating how to score the procedural fidelity checklist. Each step on the checklist was scored as correct, incorrect, or not applicable. Procedural fidelity was calculated by adding the total number of correctly ran steps and dividing that by the overall total number of steps implemented and multiplying by 100 to convert it into a percentage. The mean of the PI scores for baseline sessions was 93% (range, 86 to 100%). The mean of the PI scores for teaching sessions were 96.5% (range, 89 to 100%).

RESULTS

Results for each of the nine sets for the participant can be found in Figure 2. Sets 1-3 were part of the Tier 1 category and each set was randomly assigned to a specific type of praise or irrelevant statement. Set 1 was assigned to descriptive praise, Set 2 was assigned to general praise, and Set 3 was assigned to irrelevant statements. In Tier 1, the descriptive praise set, Set 1, was the first to reach mastery criteria of correct responding of 89% or higher across 3 consecutive sessions. During baseline, mean responding for Set 1 was 25% (range, 0% to 33%). When the intervention was applied to Set 1, there was an immediate increase in responding and average responding for Set 1 was 82% (range, 56% to 100%). The participant reached mastery criteria for Set 1 within 5 sessions. Follow up probe data for set 1 showed an average responding of 67% (range, 33% to 100%). Mean baseline responding was 25% (range, 0% to 67%) for Set 2. During intervention, mean responding was 79% (range, 67% to 100%). Intervention sessions were conducted for Set 2 for 10 sessions, but this set did not reach mastery criteria. Follow up probe data for Set 2 showed average responding was 78% (range, 33% to 100%). The baseline average for Set 3 was 25% correct responding (range, 0% to 33%). During intervention, responding increased to an average of 77% correct responding (range, 33% to 100%) and mastery criteria was met within 10 sessions. Average responding during follow up probes for Set 3 was 89% (range, 67% to 100%).

Sets 4-6 were part of the Tier 2 category and each set was randomly assigned to a specific type of praise or irrelevant statement. Set 4 was assigned to general praise, Set 5 was assigned to irrelevant statements, and Set 6 was assigned to descriptive praise. In Tier 2, the general praise set and descriptive praise set met mastery criteria at the same time. During baseline, mean responding for Set 4, the general praise condition, was 53% (range, 33% to 67%). When the

13

intervention was applied to Set 4, the average responding was 85% (range, 56% to 100%). The participant reached mastery criteria for Set 4 within 5 sessions under the mastery criteria of 89% or higher independent responding across two sessions. Follow up probe sessions had an average response rate of 84% (range, 67% to 100%). The participant did not respond correctly during any baseline probe sessions for Set 5, so mean baseline responding was 0. During intervention, mean responding was 47% (range, 0% to 67%). Intervention sessions were conducted for Set 5 for 5 sessions, but this set did not reach mastery criteria. During follow up probe sessions, the participant's average responding was 67%. The baseline average for Set 6, the descriptive praise condition, was 33% correct responding (range, 0% to 67%). During intervention, responding increased to an average of 85% correct responding (range, 56% to 100%) and mastery criteria was met within 5 sessions. Follow up probe sessions showed an average responding of 84% (range, 67% to 100%) for Set 6.

Sets 7-9 were part of the Tier 3 category and each set was randomly assigned to a specific type of praise or irrelevant statement. Set 7 was assigned to general praise, Set 8 was assigned to irrelevant statements and Set 9 was assigned to descriptive praise. In Tier 3, the descriptive praise set, Set 9, was the first to reach mastery criteria of correct responding of 89% or higher across 2 consecutive sessions. During baseline, mean responding for Set 7 was 40% (range, 0% to 67%). When the intervention was applied to Set 7, average responding was 70% (range, 44% to 89%). Intervention sessions were conducted for Set 7 for 3 sessions, but responding did not reach mastery criteria. Set 7's average responding during follow up probes was 67%. Mean baseline responding was 44% (range, 33% to 67%) for Set 8. During intervention, mean responding was 82% (range, 67% to 89%). Set 8 met mastery criteria next within 3 sessions. The average follow up probe responding was 67%. The baseline average for Set 9 was 56% correct

responding (range, 0% to 100%). During intervention, the participant responded correctly to all

questions in the set, for an average of 100% correct responding and mastery criteria for the

descriptive praise condition was met within 2 sessions. Set 9 follow up probe average responding

was 100%.

Percentage of correct responses during baseline, intervention and follow up conditions
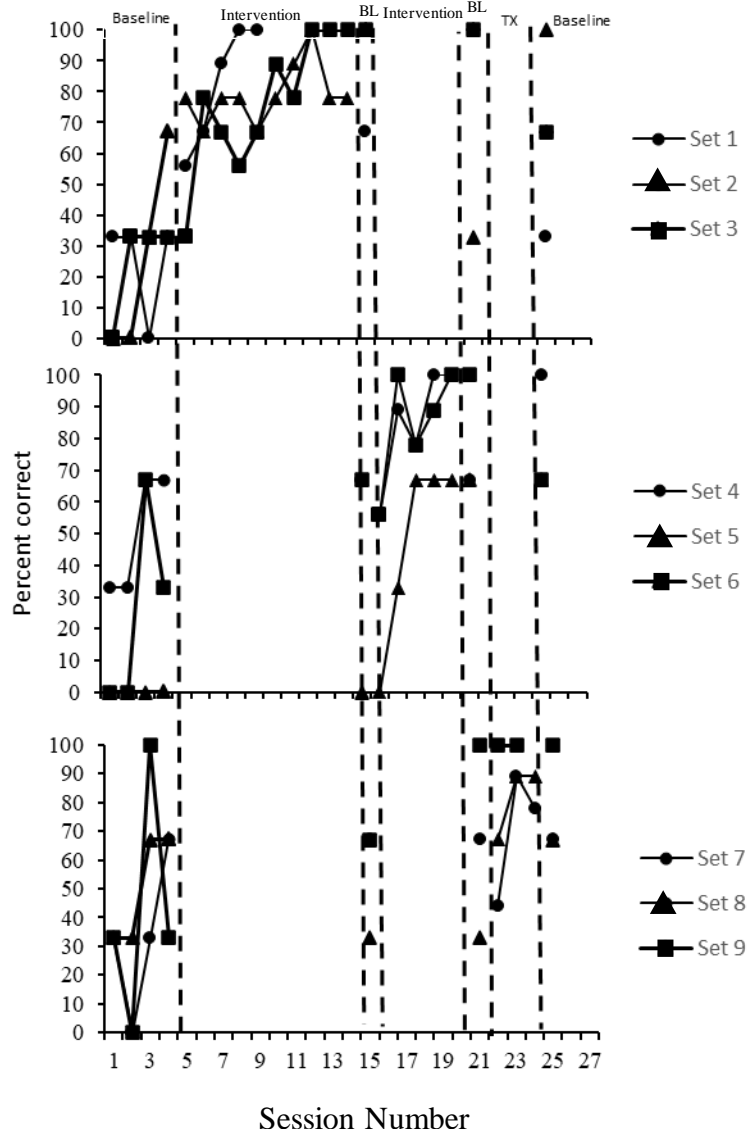

Figure 2:Data respresenting number of sessions versus percentage correct per se

DISCUSSION

The purpose of this study was to determine if a certain type of statement would be more effective in teaching a child with ASD intraverbal behaviors, more specifically answering simple what questions. Another purpose of the study was to see if different types of statements impacted how quickly a child with ASD learned these new skills. In all three tiers, the sets assigned to the descriptive praise condition met mastery criteria first, except for Tier 2, where the sets in the descriptive and general praise conditions met mastery criteria at the same time. Results of this study are consistent with previous research (Cortes and Wiskow, 2022; Polick et al. 2012; Stevens et al., 2010), which have demonstrated low differences in acquisitions of mastering sets assigned to descriptive praise versus sets assigned to general praise. Although descriptive praise did lead to faster acquisition of intraverbal skills compared to general praise and irrelevant statements for this participant, mixed results were demonstrated in follow up probe sessions. The sets assigned to the descriptive praise condition did not maintain at consistent levels when compared to intervention sessions in two out of three tiers. There are also outside variables that may have contributed to these results, which limit the ability to draw conclusions regarding the results of the study.

Although several pre-baseline sessions were conducted to determine questions the participant did not know the correct answers to, the participant demonstrated variable responding across baseline and probe sessions, which indicate teaching may not have been necessary for some questions and sets. Across Tiers, the participant mastered the ability to answer WH questions faster in the descriptive praise condition, which took 5 sessions in Tiers 1 and 2 and only 2 sessions in Tier 3. Although the mastery criteria was met within 2 sessions for Tier 3, the participant achieved 100% responding during the probe session immediately prior to

implementation of the intervention and maintained responding at 100% during the teaching

sessions, making it difficult to draw conclusions regarding the impact of the descriptive praise

statements on responding. Despite this limitation, across tiers, the descriptive praise condition

was only conducted for a maximum of 5 sessions. This is in contrast to the general praise

condition, which met mastery criteria within 5 sessions for Tier 2, but not at all for Tiers 1 and 3.

The irrelevant statement condition, which met mastery criteria in 10 sessions for Tier 1, was not

met in Tier 2, and was met within 3 sessions for Tier 3.

Another potential confound for this study was that changes were made to mastery criteria

after Tier 1 had already received the intervention due to time constraints. During Tier 1, mastery

criteria was set at 89% correct responding across 3 consecutive sessions, which was the same

criterion Polick and colleagues (2012) used in their study. However, given the length of time it

took participants to reach the mastery criteria across sets, this was reduced to 89% correct

responding after 2 sessions for Tiers 2 and 3. However, had the mastery criterion been set to 89%

across two sessions in Tier 1, the participant would have mastered Set 2, the general praise

condition, within 8 sessions instead of never reaching mastery. During the remaining 2 teaching

sessions, the participant was observed to scroll through possible responses, despite having full

attending prior to delivering the question. It is possible that setting the mastery criteria to 89% or

higher correct responding across three consecutive sessions may have led to over teaching and

scrolling. In addition, instead of waiting until all sets reached mastery criteria before moving on

to the next tier, the researcher moved on to the next tier once two sets achieved mastery criteria,

which limited the ability the draw conclusions regarding the efficiency of the intervention.

Future research may need to consider the most appropriate mastery criteria based on the

participant.

Another variable that may have contributed to the results of the study, which was also found in Polick and colleagues (2012), was the possible differences in difficulty of the questions and answers across sets. During baseline sessions, some sets were on the higher end of responding while others had no correct responses at all. Although all questions and answers were reviewed by a committee of BCBAs to check for consistency in the wording of the questions and equal difficult across sets, it is possible that the client had strengths and weaknesses in regard to particular categories of sets. For the purpose of the study, each question only had one possible correct answer, even though some questions could have had more than one correct response. This may have limited the participant's ability to respond correctly to some questions. It is also possible that some answers were harder to say for the participant. Answers for the questions ranged from one to four syllables and consisted of either one or two words. Because of this, it may have been easier for the participant to respond with answers that were shorter in syllables and words. For example, the participant never responded correctly to the question, "What does a mailperson do?" with the correct answer being "deliver mail." This is in contrast to the question "What animal swims?" with the correct answer being "fish," which the participant was able to master much quicker. Future research should look into how to measure difficulty in set questions and consider limiting answers to ones with similar number of words and syllables and whether more than one correct answer should be accepted.

It is also possible that the praise statements may not have acted as a reinforcer during the study. During some of the sessions, the researcher would ask the question and the participant would engage in behaviors of concern, such as screaming, crying, eloping, property destruction and flopping on the floor. The participant's BCBA informed the researcher that this was occurring in order to escape from the work. Also, the participant's reinforcers that were typically

used during treatment did not typically include social reinforcement, such as tickles or high fives, because tangible reinforcers were more highly preferred by the participant. Since the participant did not have any strong social reinforcers, it is possible that praise, which is a social reinforcer, was not valuable to the participant during the study. Consistent with Polick and colleagues (2012), the participant had access to moderate reinforcers during breaks between sets and after a session. However, as a result of the participant displaying behaviors of concerns during sessions, the decision was made to allow the participant access a highly preferred reinforcer during breaks. It is possible that the participant had higher motivation to correctly answer questions to access the tangible reinforcers and not because of the praise statements. Future research should investigate how to implement reinforcement for the study.

The purpose of the irrelevant statement condition was to see if the praise statement itself functioned as a reinforcer or if the length of the statement had an impact on responding. During the irrelevant statement condition, the statement consisted of 4 words, which was the same number of words as the descriptive praise condition, but in the irrelevant condition, the words were not related to the question that was asked. In contrast, during the general praise condition, the length of the statement was only 2 words and relevant to answering the question correctly. The results showed that across 2 out of the 3 Tiers, irrelevant statement sets met mastery criteria quicker than general praise sets. During follow up probes, irrelevant statement sets and general praise sets maintained at similar rates across tiers, with no significant difference between conditions that indicate one was more effective than the other. Based on these results, it is possible that longer statements may be more reinforcing to participants when compared to shorter statements, which may lead to faster acquisition of the skill being taught. However, more research is needed to fully understand whether the length of praise statements has any reinforcing

value and if there is any relevance of the statement to the skill being taught for children with ASD.

Results of this study are consistent with previous research, which has demonstrated that descriptive praise may lead to slightly faster acquisition of skills. Previously, Polick and colleagues (2012) found that descriptive praise met mastery criteria first for four out of five tiers across all participants. However, the range of mastering the general praise sets after the descriptive sets was between two and eight sessions, which was not a significant difference in mastery between the general and descriptive praise conditions. For this present study, the range of mastering the other sets after the descriptive praise sets was between zero and five sessions. These results are similar to the Polick et al. study, where most of the descriptive praise sets met mastery criteria first, but with only small differences compared to how quickly the other sets were mastered under different praise conditions. The present study extended the results of Polick and colleagues (2012) by replacing the prompting plus neutral statement condition with the irrelevant statement condition to see if the length of the statement was reinforcing or if what was said was reinforcing. The results of the present study showed 2 out of 3 instances where sets assigned to irrelevant statements met mastery criteria before sets assigned to general praise, however, more research is needed to see if praise itself functions as a reinforcer and increases skill acquisition for children with ASD and if they understand what they are being told.

The present study had two main limitations. First, there was limited time to collect data, which did not allow for all sets to meet mastery criteria, affecting the comparisons of number of sessions until mastery across conditions. Limited time for data collection occurred due to frequent absences from the participant, which limited the number of sessions conducted per week, as well as the client occasionally taking naps during the treatment day. The participant

20

also frequently engaged in behaviors of concern after sets and in between session breaks with difficulty getting back on task, and because of this, the start of the next session would take longer to begin. During a typical treatment day, the participant was used to earning tokens during discrete trial training sessions; However, since the purpose of this study was to investigate praise as a reinforcer, tokens were not provided for correct responses during the study. Future research may need to consider how many days are needed for data collection, how many sessions per day should be conducted, and the time between sessions. In addition, future research should consider using procedures that are in line with the participant's typical treatment and may need to plan for differences that may occur as a result of using different procedures.

Although there is limited published research to support the use of descriptive praise over general praise for teaching new skills, it is typically recommended for people who work with children with ASD to use descriptive praise to reinforce desired behaviors. The result of this present study are consistent with previous research, by demonstrating that descriptive praise may lead to faster acquisition of skills for children with ASD. Despite these findings, more conclusive research is needed to determine if descriptive praise truly leads to faster acquisition of skills for children with ASD and to determine why descriptive praise may be more reinforcing. Future research should also investigate if praise truly acts as a reinforcer for children with ASD.

TABLES

TABLE 1: PARTICIPANT SETS

Set 1	Set 2	Set 3
1. What do you cut paper with? Scissors 2. What do you use to paint with? Paint brush 3. What do you use to tell time? Clock	1. What do you smell with? Nose 2. What do you hear with? Ears 3. What do you taste with? Mouth	1. What do you do with a straw? Sip 2. What do you do with a knife? Cut food 3. What do you do with a napkin? Clean face

Set 4	Set 5	Set 6
1. What room do you take a bath in? Bathroom 2. What do you sweep the floor with? Broom 3. What room do you cook in? Kitchen	1. What does a pilot do? Fly planes 2. What does a teacher do? Teach kids 3. What does a mailperson do? Deliver mail	1. What animal roars? Lion 2. What animal do you get milk from? Cow 3. What animal swims? Fish

Set 7	Set 8	Set 9
1. What do apples grow on? Trees 2. What bug does honey come from? Bees 3. What type of food is orange? Fruit	1. What do you use to call people? Phone 2. What do you turn on a door? Door knob 3. What do you open for fresh air? Window	1. What do you slide down? Slide 2. What do you climb up? Ladder 3. What do you dig in the sand with? Shovel

TABLE 2: IRRELEVANT STATEMENTS

Tier 1 statements	Tier 2 statements	Tier 3 statements
It is cold outside	The sky is blue	The sun is out
The chair is brown	Our friends are here	The sink has dishes
The lights are on	The door is shut	The fan is on

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APPENDIX A: INTERVENTION PROCEDURAL FIDELITY CHECKLIST

+ = Implemented correctly, - = Implemented incorrectly, N/A = Not applicable

Trial number ➡	1	2	3	4	5	6	7	8	9
Steps ⬇									
1.Obtains attending									
2.Delivers question clearly									
3.Delivers correct question based on randomization									
4.Wait 5 seconds for response									
5.Delivers prompt when needed									
6.Delivers prompt correctly									
7.Delivers correct type of praise assigned to the set									
8.Enthusiasm of praise is moderate									
9.Provides moderate reinforcer after 9 trials									

Total : ___ / 73 = ___%

APPENDIX B: BASELINE PROCEDURAL FIDELITY CHECKLIST

Baseline PI checklist	+ = Implemented correctly - = Implemented incorrectly
Steps	
1. Obtains attending	
2.Delivers question clearly	
3.Delivers correct question based on randomization	
4.Wait 5 seconds for response	
5.Gives neutral statement after participant answers or after 5 seconds	
6.Enthusiasm of neutral statement is low	
7.Moderate reinforcer is provided after 9 trials	

Total:__ / 7 = ___%

APPENDIX C: DATASHEETS

Set # : ___

Condition: _____

Question 1: _____

Order #:____

Question 2: _____

Question 3: _____

Trial #	1	2	3	4	5	6	7	8	9
Question #									
Data									

Set # : ___

Condition: _____

Question 1: _____

Order #:____

Question 2: _____

Question 3: _____

Trial #	1	2	3	4	5	6	7	8	9
Question #									
Data									

Set # :___

Condition: _____

Question 1: _____

Order #:____

Question 2: _____

Question 3: _____

Trial #	1	2	3	4	5	6	7	8	9
Question #									
Data									