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Abstract

Behavior analysts and educators often recommend using praise, particularly descriptive praise, despite mixed empirical findings to support this recommendation. We evaluated the effectiveness of praise as a reinforcer during a reinforcer assessment using known tasks with preschoolers in Study 1. Praise functioned as a reinforcer for 2 of 6 participants; the remaining 4 participants required additional reinforcers (edibles) to show a reinforcement effect. We then compared the effectiveness of descriptive versus general praise for acquisition of unknown tacts and assessed participants' preference for the different types of praise for 4 participants from Study 1. Results showed the efficacy of and preference for general and descriptive praise was idiosyncratic.

Keywords: descriptive praise, general praise, preference, preschool children, reinforcer assessment

An Evaluation of Praise as a Reinforcer for Preschoolers' Behavior

Teachers and caregivers are often trained to provide contingent praise to increase the occurrence of desirable behavior in children (Brophy, 1981; Copple & Bredekamp, 2009; Cossairt, Hall, & Hopkins, 1973; Stormont, Smith, & Lewis, 2007). Although some studies have shown the efficacy of contingent praise for increasing behavior (e.g., Austin & Soeda, 2008; Hübner, Austin, & Miguel, 2008; Sheyab, Pritchard, & Malady, 2014; Sutherland, Wehby, & Copeland, 2000), it may not be effective for all children in all situations. In fact, some researchers have found praise to be ineffective for increasing behavior without the use of pairing procedures (Greer, Singer-Dudek, Longano, & Zrinzo, 2008). Other researchers have shown social attention, including praise, can result in increased problem behavior (Hagopian, Wilson, & Wilder, 2001). Thus, additional research is needed to identify the conditions under which praise functions as a reinforcer in children.

The type of praise delivered is one dimension that may influence its effectiveness. For example, general versus descriptive praise may have differential reinforcing effects. General praise is defined as the delivery of a statement of approval that does not specify a behavior (e.g., "Good job!"), whereas descriptive praise is defined as a statement of approval that specifies the behavior for which praise is delivered (e.g., "Good job picking up the blocks!"; Polick, Carr, & Hanney, 2012). Generally, behavior analysts and educators recommend descriptive praise over general praise (Cooper, Heron, & Heward, 2007; Copple & Bredekamp, 2009; Novak & Peláez, 2004; Woolfolk, 2010), and several group-design studies (e.g. Bernhardt & Forehand, 1975; Bernhardt, Fredericks, & Foreback, 1978; Chalk & Bizo, 2004; Gilboa & Greenbaum, 1978) have shown that descriptive praise is more effective than general praise for increasing behavior.

Although these group-design studies have shown the efficacy of descriptive praise, it is

unknown how the use of praise affected individual participant behavior.

     We identified few single-subject studies comparing descriptive and general praise.

Fueyo, Saudargas, and Bushell (1975) compared the effects of the two types of praise for

facilitating acquisition of swimming skills in children with intellectual disabilities. Although the

authors reported that descriptive praise produced faster acquisition, they provided a remediation

component for skills receiving descriptive praise. They did not provide remediation for skills

designated for general praise, making it unclear whether descriptive praise, remediation, or their

combination facilitated acquisition. Stevens, Sidener, Reeve, and Sidener (2011) compared the

effects of descriptive praise plus tokens and general praise plus tokens on the acquisition of tacts

by two boys with autism. They found little difference in performance for either of these

conditions compared to a baseline of tokens alone. Therefore, it is plausible that acquisition was

a result of the reinforcing value of the tokens rather than praise. A social validity measure, which

showed a slight preference for descriptive praise, was included in their study, but it measured

teacher preference rather than participant preference.

     Polick, Carr, and Hanney (2012) extended Stevens et al. (2011) by removing

supplemental reinforcers from their comparison of the influence of the two types of praise on

acquisition of intraverbals by two boys with autism. Conditions included descriptive praise,

general praise, and a neutral statement (e.g., "Let's see what's next") as a control condition.

Results showed that descriptive praise resulted in faster acquisition of most targets compared to

general praise; however, the difference was marginal. Some limitations of this study should be

noted. First, the effects of the different types of praise were not isolated given that they were

always implemented in conjunction with prompting procedures. Thus, it is possible that

prompting may facilitate acquisition even when isolated from vocal statements. Furthermore, the experimenters did not evaluate which type of praise participants preferred. If descriptive and general praise result in similar efficacy, then it may be beneficial to evaluate individual preference for those experiencing the procedure (Hanley, 2010). Finally, as suggested by Polick et al., a potential limitation of their study, as well as others, is the lack of a reinforcer assessment to determine the reinforcer efficacy of praise prior to comparing the effects of different types of praise.

Therefore, the purpose of our study was to replicate and extend Polick et al. (2012). In Study 1, we conducted a reinforcer assessment to determine whether praise functioned as a reinforcer for a simple, known task in six preschoolers. In Study 2, we had two goals. First, we compared the effects of descriptive and general praise on rates of responding to an unknown task. Second, we evaluated participant preference for descriptive and general praise.

Study 1: Reinforcer-Assessment Method

Participants and Setting

We recruited participants from an inclusive preschool program in which all staff received training in basic behavior-analytic techniques. Participants included seven children ranging in age from 3 to 5 years, including two boys and two girls with typical development, two boys diagnosed with autism, and one boy diagnosed with a developmental delay. We conducted the Verbal Behavior Milestones and Placement Program (VB-MAPP), Brigance Inventory of Early Development III, or both assessments with participants prior to the study. All participants had at minimum a one-word tact repertoire and followed two-step directions. All sessions took place at a table behind a partition in the classroom with no other individuals present in the area. A therapist conducted reinforcer-assessment sessions 1 to 3 times per school day with at least a 5-

min break between sessions. Sessions lasted 5 min and included the presence of three sets of

task materials; the colors of the different task materials and additional discriminative stimuli

were used to enhance discrimination across response options and phases.

Response Measurement and Interobserver Agreement

The therapist video recorded all reinforcer-assessment sessions. The therapist collected

data on the frequency of correct task responding to the three available task options within 10-s

intervals using pencil-and-paper data sheets in vivo or via video. We converted frequency data to

a rate measure for each of the three available tasks. Task responses included simple fine motor

tasks such as placing counting bears in a cup with fingers, placing counting bears in a cup with

child-size tweezers, or stringing beads on a pipe cleaner.

In addition to collecting data on child behavior, the therapist also recorded the type of

praise provided immediately following each instance of participant responding. The therapist

recorded a *praise statement* when she provided either descriptive praise (e.g., "Good job putting

the bear in the cup") or general praise (e.g., "Awesome"). The therapist recorded a *neutral*

statement when she made a statement indicating the participant could continue using the

materials (e.g. "Keep going"). The therapist recorded *no response* when she made no verbal

response to the participant's behavior within 5 s of the participant's response.

A second independent observer collected data via videos for at least 33% of each

participant's sessions. We calculated interobserver agreement (IOA) by dividing the session into

intervals and calculating proportional agreement for participant behavior and therapist behavior.

For each behavior, we divided the smaller frequency by the larger frequency in each interval,

summed the proportions across intervals, divided by the total number of intervals, and multiplied

by 100 to get a percentage of agreement. Mean IOA was 98.6% (range, 84% to 100%) across all participants.

Procedure

A single therapist conducted all sessions for all participants. This was done to help control for voice tone, affect, and variation in voice quality that could arise from using multiple therapists. Prior to the reinforcer assessment, the therapist conducted a task preference assessment (Hagopian, Rush, Lewin, & Long, 2001) to determine known and moderately preferred tasks to include as the target task in the reinforcer assessment. Sessions were 2 min in duration and included the therapist individually presenting several fine-motor tasks (e.g., placing counting bears in a cup, stringing beads, picking up counting bears with child-size tweezers) that were typically available in the preschool classroom. The therapist provided verbal prompts and model prompts on how to engage in the task prior to presenting the task. The therapist did not interact with the participant during the sessions. Observers collected data on the percentage of 5-s intervals in which the participant was engaged in each task. The therapist then selected the task in which the participant engaged in a low-to-moderate percentage of intervals (ranging from 24% to 45%) as the target task in the reinforcer assessment.

Following the task preference assessment, the therapist conducted the reinforcer assessment using a concurrent-operant arrangement to determine whether praise was a reinforcer for responding to a known task. Prior to all sessions, the therapist placed three identical target tasks that differed only in color in front of the participant. The tasks were equidistant apart and their position (left, right, center) was rotated across sessions. Each of the tasks was a different color and was associated with a specific consequence in the praise phase of the reinforcer assessment. Praise statements were associated with yellow task materials, neutral statements

were associated with green task materials, and no response by the therapist was associated with purple task materials.

Baseline. During baseline sessions, the three tasks were concurrently available, and the therapist hung a white curtain next to the table to denote this phase. Prior to the start of each session, the therapist oriented the participant to the curtain and told them the white curtain meant the therapist would not be able to talk to them until the session was finished; however, they could do any of the tasks on the table. Responses made on any of the concurrently available tasks resulted in no programmed consequences.

Praise assessment. Praise-assessment sessions were similar to baseline sessions with a few exceptions. The therapist hung a light blue curtain next to the table to denote this phase, and prior to each session, the therapist oriented the participant's attention to the curtain and told them that this meant something different would happen for responding on each available task. Next, the therapist provided presession exposure to each of the contingencies associated with the three task options by stating a rule (e.g., "If you put the bear in the yellow cup, I'll say 'Good job'"), verbally or physically prompting the participant to engage in a response toward that task, and delivering the corresponding consequence. During sessions, engaging in a correct target response with each task resulted in a different consequence. The therapist delivered praise on a fixed-ratio (FR) 1 schedule for responses made on the yellow task. The therapist delivered both general and descriptive praise statements in a quasi-random order. A list of praise statements was generated prior to the start of the study, which was visible to the therapist during each session. Examples of general praise statements included "Good job," "Awesome," and "Great"; examples of descriptive praise included "Good job putting it in the yellow cup" and "Wow! You got it in the yellow cup." We included both general and descriptive praise to determine overall

preference for praise without knowing whether either type of praise was more or less

reinforcing; each type of statement was provided a similar number of times (i.e., the therapist

alternated general and descriptive praise approximately every other trial). The therapist delivered

a neutral statement on an FR 1 schedule for each response on the green task. This response

option was included to control for the delivery of therapist attention. Examples of neutral

statements included "Keep going," "Carry on," and "There's more." The therapist provided no

reaction for responses made on the purple task, which also served as a control.

Edible assessment. If low or decreasing levels of responding occurred across response

options in the praise assessment, we introduced therapist delivery of high-preferred edibles (as

determined by a multiple stimulus without replacement preference assessment prior to each

session; DeLeon & Iwata, 1996) for correct responding. That is, the therapist presented three

concurrently available tasks; however, now each task was associated with praise on an FR 1

schedule, edibles on an FR 1 schedule, or no therapist response. The task colors associated with

praise and no therapist response were the same, and the task associated with edibles was green.

Furthermore, the therapist hung an orange curtain to denote this phase. All other procedures

were similar to those conducted in the praise assessment, including presession exposure to each

contingency. The therapist conducted this additional assessment for Clark, Samuel, Penny, and

Meredith in an attempt to determine whether low responding in the attention assessment was

due to the lack of reinforcing efficacy of praise. For Penny, the therapist provided stickers,

rather than an edible, during the third, fourth, and sixth session because she reported her

preference for stickers over edibles.

Study 1: Reinforcer-Assessment Results

In the reinforcer assessment, all participants engaged in low or decreasing levels of responding in baseline. During the praise-assessment phase, two participants (Henry and Derek; Figure 1) allocated more responding toward tasks associated with praise as compared to neutral statements and no therapist response suggesting that praise functioned as a reinforcer. Praise-assessment results for the other four participants (Clark, Samuel, Penny, and Meredith; Figure 2) showed that praise was not a reinforcer. Clark and Penny engaged in low levels of responding across response options. Initially, Samuel engaged in more responding for praise; however, over time his responding decreased to low levels. Meredith initially engaged in elevated levels of responding across response options, but her responding also decreased over time. When edibles (or stickers during some sessions for Penny) were added as one of the outcomes of responding across concurrently available tasks, all four participants' responding occurred at higher levels toward the task associated with the edibles and stickers. These data suggest that praise was not a reinforcer but other stimuli (edibles and stickers) did function as reinforcers for the target responses. Overall, these results suggest the importance for determining the efficacy of praise as a reinforcer prior to relying on it as a reinforcer for young children, at least under conditions in which it is used to increase engagement with known tasks.

Study 2: Descriptive versus General Praise Evaluation Method

The purpose of Study 2 was to determine whether praise would function as a reinforcer for acquisition of an unknown task and whether there were differential effects with descriptive versus general praise. We conducted this evaluation with participants for whom the reinforcer assessment in Study 1 showed that praise was a reinforcer for known tasks (Henry and Derek) and participants for whom the reinforcer assessment in Study 1 showed that praise was not a

reinforcer for known tasks (Clark and Meredith). Finally, we determined each participants'

preference for general versus descriptive praise using procedures similar to those suggested by

Hanley (2010).

Participants and Setting

Four participants from Study 1 (Henry, Derek, Clark, and Meredith) participated in

Study 2. Penny did not participate because she no longer attended preschool at the time Study 2

began, and Samuel did not participate because he engaged in high rates of problem behavior

during sessions in Study 1. The therapist conducted sessions 2 to 5 days per week with 1 to 5

sessions conducted per school day and with a least a 1-min break between sessions. As in Study

1, different colored task materials and additional discriminative stimuli were used to enhance

discrimination across response conditions.

Response Measurement and Interobserver Agreement

The therapist video recorded all sessions in Study 2, and observers collected data using

pencil-and-paper data sheets either in vivo or via video. The therapist served as the primary data

collector and scored whether the participant engaged in a correct or incorrect tact response on

each trial. We converted these data to a percentage of correct responses across trials. Correct

tacts included correctly saying the Spanish name of an animal depicted in a picture that the

therapist presented to the participant. For a tact to be correct, the participant needed to say the

animal name or a close approximation (judged according to their typical speech patterns) within

5 s of card presentation. A tact was considered incorrect if the participant stated the wrong tact

or said nothing within 5 s of card presentation. Self-corrections made by the participant before

the therapist began error correction and use of either the masculine or feminine form of a word

(e.g., perro vs. perra) were considered correct. A correct response for Henry occurred if he

independently performed the correct ASL sign, a close approximation, or self-correction within 5 s of presentation. Although Henry was nonvocal, he regularly responded to vocal instruction from others within the classroom setting. Therefore, all communication from the therapist to Henry was vocal, including the programmed responses associated with each condition.

In addition to collecting data on child behavior, the data collectors scored whether the therapist engaged in a correct or incorrect consequence associated with each tact set within 5 s of child responding. A correct response was scored if the therapist delivered a neutral statement (e.g., "Let's keep going") following responding to the stimuli with a white background, prompts only following responding to stimuli with a pink background, prompts plus a neutral statement following responding to stimuli with a green background, prompts plus general praise (e.g., "Good job") following responding to stimuli with a blue background, prompts plus descriptive praise (e.g., "Good job saying pato") following responding to stimuli with a red background, and prompts plus an edible following responding to stimuli with an orange background. A response was scored as incorrect if the therapist did not provide the correct consequence associated with each background color or did not provide a consequence within 5 s of child responding.

A second independent observer collected data via videos for at least 36% of sessions for each participant. Experimenters calculated IOA on participant and therapist behavior using a trial-by-trial method (Cooper et al., 2007). Experimenters divided the number of trials during each session in which both observers recorded exact agreement by the total number of trials in the session and then multiplied by 100 to obtain percentage of IOA. Mean IOA was 99.2% (range, 89% to 100%) across all participants.

Procedure

All sessions for all participants were conducted by a single therapist, the same therapist as Study 1, to control for variations in quality of praise. Prior to the study, the experimenters selected six different sets of Spanish (ASL for Henry) tact targets (i.e., pictures of animals) with three targets in each set. Spanish targets were the same across all participants (except Henry), and all participants' parents reported they had no previous history with Spanish. Experimenters chose targets for which the Spanish word did not resemble the English word for the animal (e.g., vaca for cow, perro for dog, gato for cat) and each set of targets was assigned to one of the experimental conditions. Henry had some ASL tacts for animals prior to our study; therefore, some animal targets were different from those used with the other participants. All sessions included nine trials in which pictures of three different tact targets were presented three times each on 3" x 5" index cards. Each set of index cards was a different background color that was associated with the different conditions. Experimenters used a multielement design with a baseline for experimental control. The therapist determined order of sessions by blindly drawing colored beads corresponding with condition colors from a cup. The therapist did not place drawn beads back in the cup until she had conducted each condition. The therapist stopped conducting sessions for a condition when participants met the mastery criterion, which was responding correctly on at least 89% of trials for three consecutive sessions.

Prior to each session, the therapist shuffled the set of cards to be presented in that session. Next, she oriented the participant to the colored curtain and color of the index card background for that session and provided a corresponding rule regarding the consequence programmed for that condition (e.g., "This is the orange curtain and the orange cards. If you name the animal correctly, then you get a treat."). During each session, the therapist presented each index card to the participant and said, "What is it?" If the participant responded correctly,

the therapist provided the programmed consequence for that condition and presented the next

target. If the participant responded incorrectly, the therapist used error correction procedures

similar to those used by Polick et al. (2012) during all conditions except baseline. That is, the

therapist provided a partial-word prompt (e.g., "el per…" for el perro). If the participant

responded correctly, the therapist provided the programmed consequence and presented the next

target. If the participant responded incorrectly, the therapist then provided a full-word prompt. If

the participant responded correctly, the therapist did not respond and presented the next target. If

the participant responded incorrectly, the entire error-correction procedure was repeated once

before presenting the next target. This procedure was modified slightly for Henry. Partial-word

prompts were replaced with a model of the ASL sign and full-word prompts were replaced with

hand-over-hand completion of the ASL sign. Although both independent and partial-prompted

responses resulted in the corresponding consequence for all participants, only independent

responses were considered for mastery and graphed in the figures.

   Baseline. The therapist signaled the baseline condition with a white curtain and white

index cards. The therapist completed separate baseline sessions using targets for each condition.

Before each session, the therapist oriented the participant's attention to the white stimuli and

told them that this meant the therapist was not able to help them say the word for each animal

but would say, "Let's keep going" after each card. During the session, regardless of the

participant's response on each trial, the therapist delivered the neutral statement, "Let's keep

going" after 5 s and presented the next target. This condition was similar to the baseline

condition conducted by Polick et al. (2012) and served to demonstrate participants did not have

the target responses in their repertoire prior to the experimental conditions. The therapist

conducted one baseline session for each condition (each set of tacts). If the participant

responded correctly to any of the targets during baseline, then that target was removed. The

removed target was replaced with a new target and a new baseline was conducted. These targets

were replaced to ensure correct responding would only be acquired after a participant underwent

our study procedures. After baseline, the background color of the index cards for five sets of

targets from baseline were changed to the color corresponding with the condition in which they

were assigned. For participants for whom a prompt plus edibles condition was conducted, an

additional baseline was conducted for a sixth set of targets and those targets were assigned to the

color corresponding with the prompt plus edibles condition. One set of targets remained in

baseline throughout the study to serve as a control condition.

     Prompt only. The therapist signaled this condition with a pink curtain and index cards

with a pink background. Sessions were similar to baseline; however, before each session, the

therapist told the participant that pink meant she would help them if they did not know the

Spanish (or ASL) word. Furthermore, during the session, the therapist implemented the error

correction procedure described above for incorrect or no responses. In addition, correct or

incorrect responding resulted in no other response from the therapist.

     Prompt plus neutral statement (NS). The therapist signaled this condition with a green

curtain and index cards with a green background. Sessions were similar to prompt only;

however, before each session, the therapist told the participant that green meant she would help

them if they did not know the Spanish (or ASL) word and if they got the word right, she would

say, "Let's keep going." During the session, the therapist stated, "Let's keep going" for

independent correct responses or correct responses following a partial-word prompt.

     Prompt plus general praise (GP). The therapist signaled this condition with a blue

curtain and index cards with a blue background. Sessions were similar to prompt plus NS;

however, before each session, the therapist told the participant that blue meant she would help them if they did not know the Spanish (or ASL) word and if they got the word right, she would say something like "Good job." During the session, the therapist delivered rotating general praise statements from the same list used in Study 1 for independent correct responses and correct responses following a partial-word prompt.

Prompt plus descriptive praise (DP). The therapist signaled this condition with a red curtain and index cards with a red background. Sessions were similar to prompt plus NS; however, before session, the therapist told the participant that red meant she would help them if they did not know the Spanish (or ASL) word and if they got the word right, she would tell them why they got it right by saying something like, "Great job saying pato!" During the session, the therapist delivered rotating descriptive praise statements from the same list used in Study 1 for independent correct responses and correct responses following a partial-word prompt.

Prompt plus edibles. The therapist exposed participants for whom praise did not function as a reinforcer in Study 1 (Clark and Meredith) to a prompt plus edibles condition. The therapist signaled this condition with an orange curtain and index cards with an orange background. Sessions were similar to prompt plus NS; however, before session, the therapist told the participant that orange meant she would help them if they did not know the Spanish (or ASL) word and if they got the word right, she would give them a treat. During the session, the therapist delivered an edible chosen via an MSWO preference assessment (DeLeon & Iwata, 1996) conducted before each session for independent correct responses and correct responses following a partial-word prompt.

Preference for Descriptive versus General Praise

In addition to aiding in participant discrimination across conditions, the therapist paired colored stimuli with each condition in Study 2 to provide participants with a history of association between certain colors and associated consequences to aid in determining preference for these different consequences. Preference-assessment sessions included eight trials and were implemented using a multiple-stimulus-with-replacement format (Windsor, Piche, & Locke, 1994). Prior to each session, the four colored cards associated with general praise (blue), descriptive praise (red), neutral statements (green), and no therapist response (white) were presented in front of the participant, equidistant from each other. Before each session, the therapist provided presession exposure to the consequence associated with each card by guiding the participant to select each card and then delivering the consequence associated with that card (e.g., The therapist guided the participant to touch the red card and said, "Great job touching the red card"). On each trial, the therapist changed the order of the cards and the participant was then instructed to choose their favorite consequence by touching a card. Once the participant made their selection, the therapist provided the consequence associated with that card. Sessions continued until each participant demonstrated a clear preference.

During the preference assessment, the therapist recorded which color card, associated with one of the consequences described above, the participant pointed to or touched during each trial. A second independent observer also collected data for at least 36% of sessions for each participant. Experimenters calculated IOA using the trial-by-trial method (Cooper et al., 2007); mean IOA was 100% across all participants.

Study 2: Descriptive versus General Praise Results

Results of Study 2 are depicted in Figures 3-5. All participants displayed no correct responding in the initial baseline phase in which the different target sets were presented across

sessions. Furthermore, when baseline sessions were rapidly alternated with other sessions in the

reinforcer evaluation phase, participants continued to display no correct responding. However,

across participants, different outcomes occurred in the reinforcer evaluation phase. Results for

the two participants (Henry and Derek) for whom praise was found to be a reinforcer in the

reinforcer assessment in Study 1 are depicted in Figure 3. During the reinforcer evaluation

phase, Henry acquired tacts in all conditions; however, quicker and similar acquisition occurred

under prompt only, prompt plus descriptive praise, and prompt plus general praise conditions.

Acquisition was slower in the prompt plus neutral statements condition. Overall, these data

suggest that prompts were likely the important variable for acquisition. Furthermore, the

delivery of praise did not interfere with acquisition; however, the delivery of neutral statements

may have done so. Derek's data are depicted in the bottom panel of Figure 3. During the

reinforcer evaluation phase, he also acquired tacts in all conditions; however, acquisition was

much quicker in the prompts only phase suggesting that prompts were also the important

variable for his acquisition of tacts. Furthermore, it is possible that the delivery of vocal stimuli

interfered with the acquisition of tacts.

Results for participants in Study 1 for whom praise did not function as a reinforcer but

contingent edibles did function as a reinforcer (Clark and Meredith) are depicted in Figure 4.

During the reinforcer evaluation phase, Clark initially displayed a steady increasing trend of

correct responding in the prompt only and prompt plus neutral statements conditions while

displaying low and more variable responding in the prompt plus descriptive praise and prompt

plus general praise conditions. In session 46, we conducted a baseline probe for a new set of

stimuli, then introduced a prompt plus edibles condition. From this point, results show Clark

acquired tacts in the prompt only, prompt plus neutral statement, prompt plus descriptive praise,

and prompt plus edibles conditions at a similar rate. However, acquisition of tacts was slower in

the prompts plus general praise condition. These results indicate that (a) Clark's rate of

acquisition was quicker in the prompts plus edibles condition, (b) prompts may have been an

important variable influencing acquisition given that prompts were common across all

conditions in which quicker acquisition occurred, and (c) the delivery of general praise may

have hindered the rate of acquisition for Clark.

During the reinforcer evaluation phase, Meredith initially displayed low levels of correct

responding across all conditions. In Session 35, we conducted a baseline probe for a new set of

tacts that were then associated with a prompt plus edibles condition. Results showed Meredith

acquired tacts relatively quickly in the prompt plus edibles condition, whereas acquisition did

not occur in any of the other conditions.

Results from the preference assessments are displayed in Figure 5. Derek and Henry

preferred descriptive praise over general praise, neutral statements, and no response. Clark

showed somewhat more selections of general and descriptive praise suggesting they were more

preferred than neutral statements and no response. Meredith preferred no response over either

type of praise or neutral statements.

Discussion

In Study 1, we conducted a reinforcer assessment to determine whether praise

(descriptive and general) functioned as a reinforcer for a simple, known task. We found that

praise functioned as a reinforcer for only 2 of the 6 participants. In fact, the use of tangible items

(i.e., edibles and stickers) was necessary to increase responding in the other four participants.

Overall, the outcomes of Study 1 suggest that some individuals may not allocate responding

toward known tasks that result in praise, which may suggest that praise may not be an effective

reinforcer for these individuals. Regardless, the reinforcer-assessment methodology used in Study 1 may be of value for predicting the reinforcing efficacy of praise to be used in programming or therapeutic environments.

In Study 2, we sought to determine whether descriptive or general praise better facilitated learning of a new task with participants for whom praise functioned as a reinforcer for known tasks and those for whom praise did not function as a reinforcer for known tasks in the reinforcer assessment in Study 1. We included both participants for whom praised did and did not function as a reinforcer for known tasks in an attempt to validate our reinforcer assessment and to determine whether the context under which praise is delivered (i.e., for known or unknown tasks) could influence its effectiveness. For example, descriptive praise may be more effective for increasing an individual's responding to unknown tasks because the behavior-specifying aspect of it may serve as a rule for future responding (Michael, 2004). For participants for whom praise was a reinforcer in Study 1 (Henry and Derek), the prompt-only condition was more or equally effective as compared to prompt plus praise conditions for acquisition of unknown tasks in Study 2. For Henry, the delivery of praise statements in addition to prompts did not hinder acquisition; however, acquisition was slower when neutral statements were delivered possibly because the neutral statements were aversive. For Derek, the prompt-only condition produced faster acquisition than conditions that included therapist vocal statements, which may be because correct responding produced a shorter delay to the next trial and thus shortened overall time in session. Future studies may control for this by equating intertrial intervals across conditions.

For participants in Study 1 for whom praise did not function as a reinforcer but edibles did (Clark and Meredith), the edibles condition resulted in quicker acquisition in Study 2. For

Clark, the use of general praise statements resulted in the greatest number of trials to mastery, which suggests an inhibited rate of skill acquisition. Meredith failed to reach mastery in any condition other than the prompt plus edibles condition demonstrating that the use of praise had no greater effect than those of prompt only and neutral statement conditions.

In Study 2, we also assessed participants' preference for general and descriptive praise. Results showed that Derek and Henry preferred descriptive praise, even though this type of praise did not enhance acquisition for either participant. Clark similarly preferred descriptive and general praise, even though general praise resulted in somewhat slower acquisition in Study 2. Meredith preferred no therapist response as a consequence, which is not surprising given that none of the praise conditions were effective for acquisition in Study 2. Hanley (2010) argues for facilitating self-determination in clients by assessing their treatment preferences. For example, because the conditions of prompt only, prompt plus general praise, and prompt plus descriptive praise were similarly effective for Henry, it is advisable for a therapist to use the consequence he preferred (descriptive praise) when implementing behavior-change procedures. Similarly, even though praise conditions produced somewhat slower acquisition than prompt only for Derek, because he preferred descriptive praise, a clinician may be advised to include descriptive praise in behavior-change procedures to increase the overall reinforcing value of treatment for the client, thus mitigating possible problem behavior.

Although edibles resulted in faster acquisition for Clark, conditions with praise resulted in similar levels of acquisition. Thus, given he preferred both general and descriptive praise, a clinician might evaluate whether praise added to an effective reinforcer (edibles) would further increase the speed of acquisition. Finally, Meredith's preference for no response from the therapist should also be taken into account when designing programming. One reason that praise

is so widely recommended may be that it is often assumed that even if it doesn't function as a reinforcer, there's no harm in providing praise to all learners (Brophy, 1981). Meredith's results indicate that this may not be true for all individuals and providing praise or other teacher comments may add an aversive component to the procedure. The varying preference results from all of our participants reiterates the need for measuring client preferences and taking them into account when designing treatment (Hanley, 2010).

There are several potential limitations to our study worth noting. First, all of our participants attended a preschool that used behavioral principles and included training for teachers to deliver frequent praise. Thus, it is possible that responding did not occur at high levels to access praise in our assessment because participants were provided with high levels of praise throughout the day. Therefore, future researchers should evaluate the reinforcing efficacy of praise following brief programmed periods of deprivation. For example, a therapist may choose to complete teaching trials following a period of play with other children, in which adult praise was not frequently delivered. Second, despite some of our participants having developmental disabilities, all participants had a well-established tact and listener repertoire prior to our study. Given that each participant had demonstrated the ability to learn new tacts and to follow directions similar to those presented prior to sessions, it is unclear whether these procedures and results would generalize to individuals who have difficulty in acquiring tacts or listener responding. Therefore, future research might involve a comparison of performance with participants with a wide range of verbal skills.

Third, there are methodological limitations that may have influenced our results. That is, we did not perform a color preference assessment prior to assigning different color stimuli to aid in discrimination between different stimuli in our studies. Therefore, it is possible some

participants' responding may have been influenced by a color bias (Galloway, 1967). In

addition, during Study 1, we did not collect data on the type of praise statement (i.e., general or

descriptive) delivered by the therapist, and participants did not receive presession exposure to

the contingencies in baseline. Future researchers should include these procedural modifications

to ensure accurate implementation of procedures and to rule out the effects of exposure on

session responding. Furthermore, we did not control for therapist behavior across sessions and

conditions beyond using the same therapist for all sessions. That is, the number of words in

therapist responses across conditions or the specific words used across praise conditions (e.g.,

ensuring that "Good job," or "Great," etc. was included in both) were not specifically

programmed. It is possible that variations in statement length and content may have influenced

participant responding. In addition, we did not collect data on therapist nonverbal behavior (e.g.,

eye contact, body position, facial expressions) or voice tone in an attempt to measure any

potential differences across conditions. Although the same therapist conducted all sessions in an

effort to account for these variations, future research might include collecting treatment integrity

data on both verbal and nonverbal therapist behaviors in an attempt to ensure similar delivery of

statements across conditions. Finally, the prompting procedure we used in Study 2 allowed for

the delivery of the same consequence following both independent and partially prompted

answers. However, only independent correct answers were used to evaluate mastery of a target

set. It is possible that this resulted in prompt dependency because participants could access the

same consequences following less effortful responses. Also with respect to consequences, many

therapists intersperse or simultaneously present tangibles with praise statements in clinical

practice. Although our study did not contain such a condition, we recommend that future studies

include conditions to compare the delivery of praise and tangibles separately and combined in order to determine which, if any, would enhance the efficacy of praise delivery.

Fourth, the way in which we delivered praise to Henry may have influenced his results. We chose to deliver descriptive praise statements to him vocally because he had a well-established listener repertoire in response to adult vocal statements. However, this resulted in Henry not experiencing the additional model prompt for his target ASL responses that is embedded within a descriptive praise statement. Even without the additional model, Henry responded at higher levels to the materials associated with praise in Study 1. However, Henry's responding was not facilitated by descriptive praise in Study 2. Thus, delivery of descriptive praise in which a model of the correct ASL tact may have produced different results. Future research might involve considering the modality of responding when delivering descriptive praise. For example, if an individual communicates through sign language, then the researcher may want to consider using sign language when providing praise as a consequence.

Fifth, it is possible that the use of a multielement design to evaluate our conditions in Study 2 may have served as an additional limitation. As part of this design, each participant had 12 to 15 targets in acquisition at once, which may have interfered with acquisition. However, this number of targets is typical in clinical practice and was comparable to programming conditions for all current participants. It is also a limitation that we did not equate syllables and other variables related to difficulty of targets across conditions, other than ensuring they were not similar to English words for the same animal, or counterbalance the targets associated with each condition across participants. Likewise, we did not equate difficulty of the signs Henry used across conditions. Finally, follow-up probes of acquisition targets with individuals who participated in Study 2 were not included due to time restraints. Thus, we were unable to

determine whether any of the programmed consequences facilitated better maintenance of responding over time.

  Sixth, a limitation of our preference assessment was that the participants were not required to engage in a task following a stimulus selection. Therefore, it's unclear if participants would have chosen to work to receive one consequence over another. A more robust measure of preference may have been obtained from having the participant complete the condition associated with the consequence. The absence of task presentation also prevented the evaluation of preference of the prompt-only condition. Therefore, future research might involve conducting the preference assessment using a concurrent-chains arrangement (Hanley, Iwata, & Lindberg, 1997) to assess whether brief access to the teaching procedure (e.g., prompts plus descriptive praise) produces different outcomes.

  Praise is one of the most easily delivered and socially accepted forms of reinforcement (Brophy, 1981; Kazdin, 2013). For this reason, most teachers and other professionals working with children receive some training on its use as a means of influencing behavior. Due to its widely recommended use, it is important to continue to evaluate the sensitivity of children's behavior to praise and the factors that make praise a valuable reinforcer. It is clear from our results that although the use of praise can be beneficial, the use of praise as a reinforcer and the type of praise delivered must be carefully considered on an individual basis.

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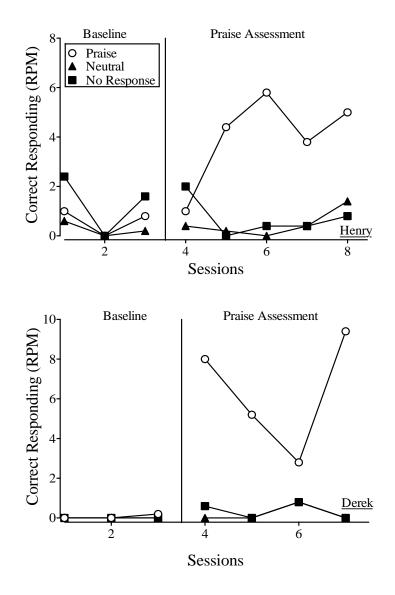
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Figure 1. Results of reinforcer assessments for Henry and Derek. Both participants demonstrated increased responding to materials associated with praise statements indicating that praise functioned as a reinforcer.
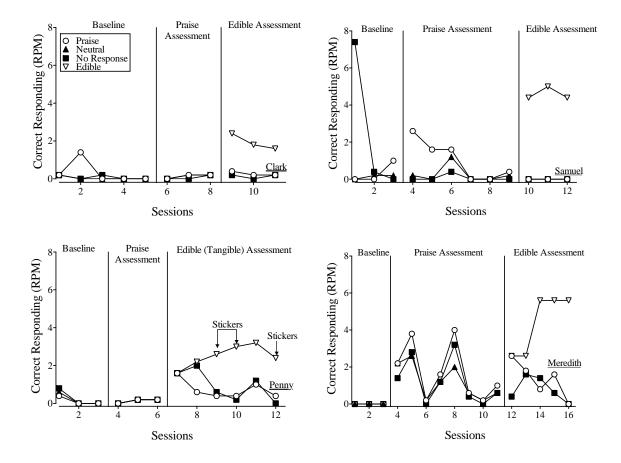
Figure 2. Results of reinforcer assessments for Clark, Samuel, Penny, and Meredith. Praise did not function as a reinforcer for any of these participants. With the introduction of edibles (and stickers for Penny), all participants demonstrated an increase in responding.
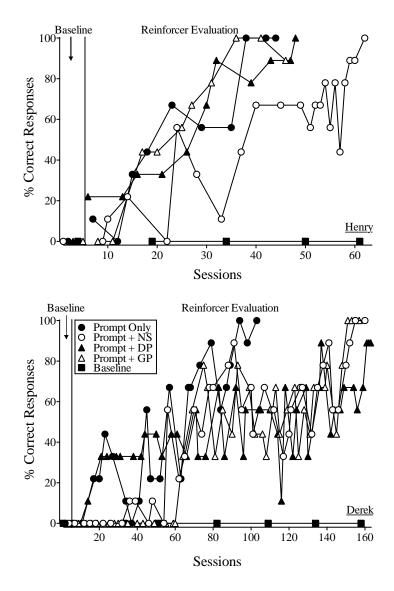
Figure 3. Percentage of correct responses per session during the reinforcer assessment for Henry (top panel) and Derek (bottom panel) in Study 2.
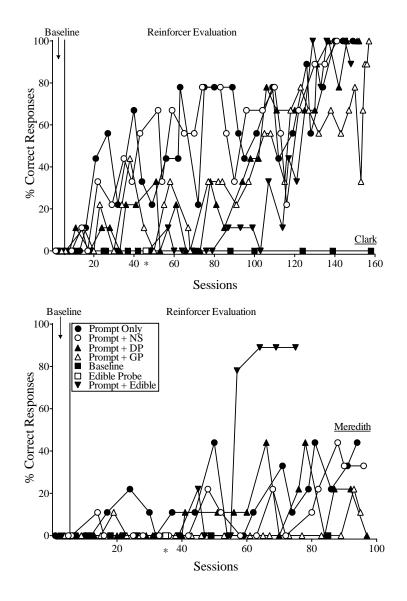
Figure 4. Percentage of correct responses per session during the reinforcer assessment for Clark (top panel) and Meredith (bottom panel) in Study 2. The baseline probe for the edibles occurred in Session 46 for Clark and Session 35 for Meredith.
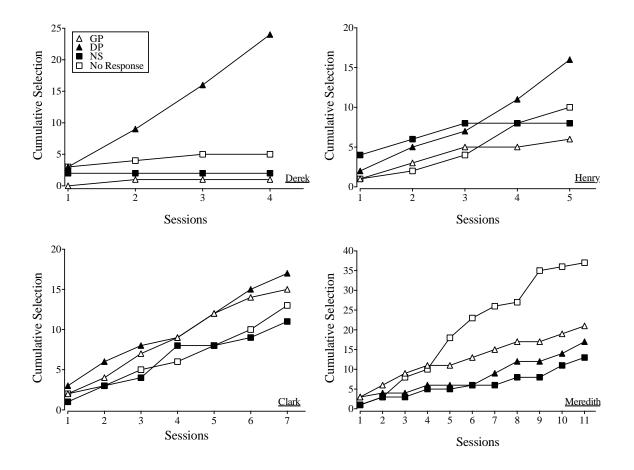
Figure 5. Cumulative display of preference assessment results for Derek, Henry, Clark, and Meredith. Derek and Henry displayed preference for descriptive praise. Clark displayed similar preference for general praise and descriptive praise. Meredith preferred the control (no comment from the therapist).