

EFFECTS OF NEUTRAL AND ENTHUSIASTIC PRAISE ON THE RATE OF DISCRIMINATION ACQUISITION

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Previous research has shown that praise is an effective reinforcer; however, few researchers have evaluated whether qualitative differences in praise affect responding. The purpose of the current study was to compare the effects of neutral, enthusiastic, and no praise on the rate of matching-to-sample acquisition during discrete-trial training with adults diagnosed with autism and an intellectual disability. In addition, we evaluated preference for neutral, enthusiastic, and no praise. All three participants acquired responses slightly faster during the enthusiastic praise condition. Preference assessment results showed that one participant preferred enthusiastic praise, whereas the two other participants showed indiscriminate selections.

Key words: discrimination acquisition, praise, reinforcer quality

Praise, such as a pat on the head (e.g., Schutte & Hopkins, 1970) or a positive statement (e.g., Lerman, Hawkins, Hillman, Shiremen, & Nissen, 2015) is a type of attention that indicates approval. Although teachers and caregivers often provide praise following appropriate behavior, there is limited research on the isolated effects of praise because it is typically implemented as one component of a more complex treatment (e.g., Falcomata et al., 2008; Fisher, Pawich, Dickes, Paden, & Toussaint, 2014; Luczynski & Hanley, 2010). However, some authors have demonstrated that praise alone was effective for increasing behaviors such as studying (Hall, Lund, & Jackson, 1968), math performance (McLaughlin, 1982),

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and simple operant tasks (Dozier, Iwata, Thomason-Sassi, Worsdell, & Wilson, 2012). Although praise may serve as a reinforcer for some individuals, several variables may influence the efficacy of and preference for praise, including praise quality (e.g., volume and intonation), content (e.g., general vs. descriptive praise), duration, and immediacy. For example, Polick, Carr, and Hanney (2012) compared the use of general and descriptive praise on the acquisition of intraverbal skills by two children with autism. General praise was defined as a two-word statement that did not mention the target response (e.g., "Great job"). Descriptive praise was defined as a four-word statement that mentioned the target response (e.g., "Great job saying zebra"). Throughout the evaluation, experimenters delivered all praise with moderate enthusiasm for correct responding and least-to-most prompting for incorrect responding. For one participant, rate of acquisition was similar across praise conditions during the first comparison, faster during the descriptive praise condition in the second comparison, and similar across praise conditions in the third comparison. For the second participant, rate of acquisition was similar across praise conditions during the initial two comparisons. Therefore, the researchers evaluated whether the delivery

of an even lower quality form of praise, neutral statements (e.g., "Let's move on"), contingent on correct responding would affect the rate of acquisition. For this participant, contingent neutral statements also resulted in response acquisition; however, the rate of acquisition was slower relative to both conditions of the first two comparisons. These results suggest that descriptive praise may not be more effective than general praise.

Clausen, Alden-Anderson, Stephenson, Mueller, and Klatt (2007) found similar results when examining the differential effects of praise quality on skill acquisition. The researchers evaluated the effects of enthusiastic praise (i.e., praise delivered with fluctuation in intonation, high voice volume, and a positive facial expression) and neutral praise (i.e., praise delivered with no fluctuation in intonation, normal voice volume, and a neutral facial expression) on skill acquisition with three children with autism. In addition, the experimenters evaluated preferences for enthusiastic and neutral praise with caregivers and professionals with experience working with children with developmental disabilities. Rate of skill acquisition was similar across praise types; however, caregivers and professionals preferred enthusiastic over neutral praise. Interestingly, tangible reinforcement was provided in both conditions, and this may have masked any differential effects of praise quality.

Researchers have also examined how differences in attention content may affect the occurrence of problem behavior. Fisher, Ninness, Piazza, and Owen-DeSchryver (1996) compared the effects of verbal reprimands and unrelated verbal statements on the rate of disruptive behavior in the attention condition of a functional analysis with a young boy with autism and an intellectual disability. The experimenters observed a higher rate of problem behavior in the reprimand condition relative to the unrelated verbal content condition. These results suggest that the content of attention

may affect responding during functional analyses for some individuals with developmental disabilities.

Attention quality may also affect both the reinforcing efficacy of and preference for attention. For example, Gardner, Wacker, and Boelter (2009) conducted a concurrent-operants assessment in which typically developing children who exhibited escape-maintained problem behavior had the opportunity to choose between free play and demand contexts that varied in the quality of attention available. In one arrangement, children chose between free play with high-quality attention (i.e., enthusiastic praise, frequent eye contact, physical contact or close experimenter-child proximity, experimenter orientation toward the child) and demands with low-quality attention (i.e., negative statements delivered in a monotone voice, infrequent eye contact, no physical contact and distant experimenter-child proximity, no experimenter orientation toward child). In the second arrangement, they chose between free play with low-quality or no attention and demands with high-quality attention. Both children exclusively chose free play with high-quality attention in the first arrangement and were more likely to select demands with high-quality attention in the second arrangement. Thus, children chose the condition with high-quality attention, regardless of whether it was presented during play or demands.

Given that some behavioral therapists are trained to deliver enthusiastic praise during teaching (e.g., Lerman et al., 2015), and some training manuals suggest delivering enthusiastic praise for appropriate behavior (e.g., Anderson, Taras, & Cannon, 1996; Tarbox & Tarbox, 2017), it is important to verify that this type of praise is differentially effective and preferred. The purpose of the current study was to compare the effects of neutral praise, enthusiastic praise, and no praise on the rate of discrimination acquisition with adults diagnosed with autism and an intellectual disability during discrete-trial training. In addition, we

evaluated participant preference for the different types of praise.

METHOD

Participants and Setting

Three individuals diagnosed with autism and an intellectual disability, who had been admitted to an inpatient facility specializing in the assessment and treatment of severe problem behavior, participated in this study. Participants who engaged in a high rate of problem behavior (i.e., 10 or more aggressive or disruptive responses per min or five or more self-injurious responses per min) were excluded from this study. Ophelia was a 22-year-old woman diagnosed with a severe intellectual impairment who communicated via vocal and written sentences. Carmen was a 20-year-old woman diagnosed with autism and a severe intellectual disability who communicated by pointing to different letters on a paper keyboard to spell out words and sentences. Mason was a 19-year-old man diagnosed with autism and a moderate intellectual disability who communicated via one-word vocal responses and written sentences.

All sessions were conducted in a 3 m x 3 m padded session room equipped with a one-way window located within an inpatient facility. This location was selected because it was available and it prevented participants from receiving attention (e.g., eye contact, smiles) outside of the experimental context.

Materials and Target Tasks

Session materials included two chairs, a table, a video camera, conditional discrimination tasks, and five colored cards. We selected the conditional discrimination tasks on an individual basis, and they were not targeted outside of experimental sessions. Target skills were judged by the first author to be slightly more difficult than tasks targeted within participants' current educational programming. A match-to-sample preparation was used for each

participant. The targets for Ophelia involved matching state names, which were printed in 110-point font on index cards, to their capital names, which were also printed in 110-point font on index cards. All capitals were between six and eight letters. The skill targets for Carmen and Mason involved matching animal names to pictures (approximately 6 x 6 cm). All animal names were five or six letters and printed in 110-point font on index cards. For Ophelia and Mason, we randomly divided nine targets of matched difficulty into three groups and assigned each group to one of three conditions (i.e., neutral praise, enthusiastic praise, no praise). For Carmen, we randomly divided six targets into three groups and assigned each group to one of the conditions.

Measurement, Interobserver Agreement, and Procedural Integrity

We videotaped all sessions, and trained observers collected data in-vivo or by watching the videotapes. During the praise evaluation, data were collected on participant behavior (i.e., incorrect responses, independent responses, vocally prompted responses, responses that occurred after a model prompt, and physically prompted responses) and therapist behavior (i.e., neutral praise, enthusiastic praise, and no praise). An incorrect response was defined as placing a non-matching comparison stimulus on the sample stimulus or not responding within 5 s of task presentation during the baseline phase. An independent response was defined as placing the matching comparison stimulus on the sample stimulus within 5 s of task presentation. A vocally prompted response was defined as placing the matching comparison stimulus on the sample stimulus within 5 s of the delivery of a vocal instruction (i.e., "match"). A response following a model prompt was defined as placing the matching comparison stimulus on the sample stimulus within 5 s of the demonstration of the response. A physically prompted response was defined as

materials, neutral descriptive praise was delivered for approximately 3 s. If the participant responded incorrectly or did not respond within 5 s of materials presentation, the experimenter provided a verbal prompt (i.e., “match”). If the participant responded correctly within 5 s of the verbal prompt, neutral descriptive praise was delivered for approximately 3 s. If the participant responded incorrectly or did not respond within 5 s of the verbal prompt, the experimenter provided a model prompt. If the participant responded correctly within 5 s of the model prompt, neutral descriptive praise was delivered for approximately 3 s. If the participant responded incorrectly or did not respond within 5 s of the model prompt, the experimenter provided a full physical prompt, but did not deliver praise. This condition continued until a participant independently responded during 80% of trials across three consecutive sessions.

Enthusiastic praise. The enthusiastic praise condition was identical to the neutral praise condition except the experimenter delivered enthusiastic descriptive praise for approximately 3 s contingent on independent correct responding or correct responding after the verbal or model prompt.

No praise. This condition served as a control condition and was used to isolate the effects of the prompting procedure on the rate of discrimination acquisition. This condition was identical to the neutral and enthusiastic praise conditions except the experimenter did not deliver praise following correct responses. Instead, the experimenter simply removed the task materials and presented the next task.

Maintenance. The purpose of the maintenance phase was to evaluate the effects of neutral praise, enthusiastic praise, and no praise on target responding 6 weeks after mastery criteria had been met. The procedures in each condition were identical to those in the initial evaluation. Maintenance data were collected for only two participants, and data are shown for only

the first trial of each skill target. This was done because prompts and praise were provided during maintenance sessions, and we wished to assess performance prior to any additional learning opportunities.

Praise preference assessment. In the first step of the praise preference assessment, we conducted a color preference assessment to identify moderately preferred colors to use as initial-link stimuli (Luczynski & Hanley, 2010). That is, we conducted multiple-stimulus-without-replacement preference assessments (DeLeón & Iwata, 1996) to evaluate preference between five different colored 5 cm x 5 cm paper cards. Prior to the start of each session, pre-session exposure trials were conducted for all five options. After the pre-session exposure trials, the session began. At the start of each session, the experimenter asked the participant to “Hand me a card.” After a selection, the experimenter moved the remaining cards approximately 30 cm away from the participant, but kept them in the same order, and left the selected card on the table in front of the participant for approximately 3 s. At the end of each trial, the selected card was removed and not replaced, and the remaining cards were rearranged. At the start of the next trial, the remaining colored cards were placed back in front of the participant. Each session consisted of five trials, and three sessions were conducted with each participant. During each trial, observers collected data on which colored card was selected. A second observer simultaneously, but independently, recorded card selection during 33% of sessions for each participant, and IOA was 100%. Results from this assessment were used to identify two moderately preferred colors for Ophelia and three moderately preferred colors for Car-men and Mason (i.e., colors selected between 30% and 70% of opportunities).

The praise preference assessment was conducted after all components of the praise evaluation, except for the maintenance assessment, had been completed. Each session consisted of five

1 trials, and each trial consisted of choices between
2 two (i.e., enthusiastic praise and neutral praise)
3 or three (i.e., neutral praise, enthusiastic praise,
4 and no praise) options. Ophelia chose between
5 neutral and enthusiastic praise. Following her
6 completion of the study, a no praise option was
7 added as a control choice for Carmen and
8 Mason. Problem behavior was ignored through-
9 out the praise preference assessment.

10 Prior to each session, each participant was
11 exposed to each of the terminal links once. For
12 Carmen, the number of pre-session exposure tri-
13 als was increased to two after the third session
14 to facilitate discrimination between the condi-
15 tions. During pre-session exposure, the experi-
16 menter placed three colored cards on the table
17 approximately 15 cm apart, each approximately
18 15 cm from the participant, prompted the
19 selection of one of the colored cards, and pre-
20 sented the corresponding terminal link
21 (e.g., "Good job handing over the _____
22 card" in a monotone voice with low-pitch tone,
23 fluctuation, and volume). The experimenter
24 then prompted the participant to select the
25 other colored cards using similar procedures.

26 During each trial of the praise preference
27 assessment, the experimenter told the partici-
28 pant, "Hand me a card." If the participant
29 handed the experimenter one of the cards
30 within 5 s, he or she experienced the corre-
31 sponding terminal link (i.e., enthusiastic praise,
32 neutral praise, or no praise) for approximately
33 3 s, and the card selected was recorded. If the
34 participant did not respond within 5 s of the
35 instruction, no selection was recorded and a
36 new trial began. The experimenter alternated
37 the placement of the colored cards before each
38 subsequent trial. This evaluation continued
39 until a participant chose one colored card at
40 least 80% of the trials (i.e., four out of five tri-
41 als) during 3 consecutive sessions or 10 sessions
42 passed without meeting this criterion. A second
43 observer collected data on card selection for at
44 least 40% of sessions for all participants. Inter-
45 observer agreement was 100%.

RESULTS

The percentage of independent responses emit-
ted by Ophelia, Carmen, and Mason during the
praise evaluation is shown in Figure 1. During the
initial evaluation, Carmen did not acquire skills
during neutral and enthusiastic praise conditions;
therefore, new baseline and reinforcement evalua-
tions were conducted and only two (new) skills
were assigned to each condition. For Carmen, data
from only this second evaluation are presented.

All participants responded at or below
chance levels during baseline. During treat-
ment, Ophelia met mastery criteria in 9, 11,
and 11 sessions during the enthusiastic praise,
neutral praise, and no praise conditions, respec-
tively. Carmen and Mason met mastery criteria
in 4, 5, and 6 sessions during the enthusiastic
praise, neutral praise, and no praise conditions,
respectively. Across all participants, the rate of
acquisition was slightly faster during the enthu-
siastic praise condition relative to the other
conditions; however, differences between con-
ditions were minimal. During the maintenance
evaluation, Ophelia emitted the highest per-
centage of independent responses when pre-
sented with targets previously presented during
the no praise condition (66%), relative to when
she was presented with targets previously pre-
sented during the enthusiastic praise (33%) and
neutral praise (0%) conditions. Mason emitted
a greater percentage of independent responses
when presented with targets previously pre-
sented during the enthusiastic praise (100%)
and no praise conditions (100%), relative to
when he was presented with targets previously
presented during the neutral praise condition
(66%). Although participants did not contact
the contingency (i.e., receive enthusiastic praise,
neutral praise, or no praise) until after respond-
ing in the maintenance evaluation, stimuli tar-
geted in each condition may have signaled
what type of consequence was in effect. Collec-
tively, maintenance results suggest that, once a
skill was mastered, cues of praise type did not
affect the probability of maintenance.

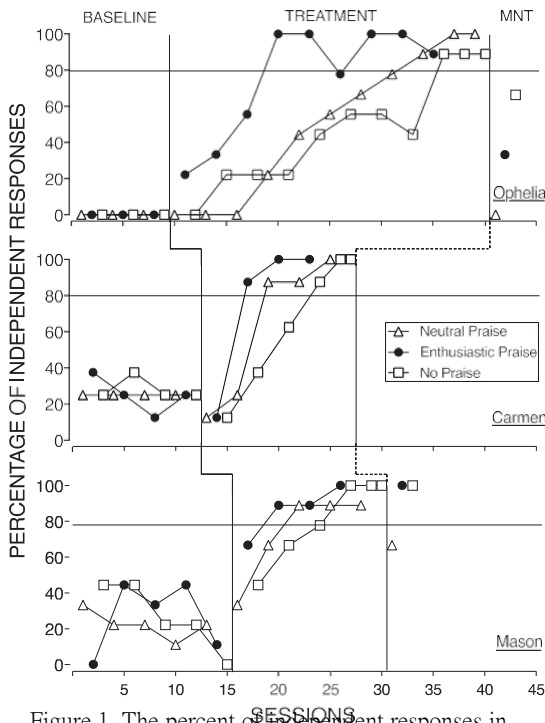


Figure 1. The percent of independent responses in

DISCUSSION

The results of the present study extend previous research on whether qualitative differences in praise affect levels of appropriate behavior of individuals diagnosed with autism and an intellectual disability. In general, treatment effects were similar across conditions for all participants: Slightly faster acquisition was observed during the enthusiastic praise condition relative to the neutral praise and no praise conditions. These results suggest that, for some individuals, there may be a slight advantage to using enthusiastic praise relative to neutral praise and no praise during discrete-trial training. Furthermore, for the two participants with whom we evaluated maintenance, higher levels of maintenance occurred with enthusiastic praise and no praise, as compared to neutral praise. However, percentage correct was only above 80% during the maintenance evaluation for one participant and these effects were not replicated. Finally, only one of three participants, Ophelia, demonstrated preference for

the neutral praise, enthusiastic praise, and no praise conditions across baseline, treatment, and maintenance (MNT) for Ophelia, Carmen, and Mason during the praise evaluation. The maintenance phase was conducted 6 weeks after mastery criteria had been met during the treatment phase. The dashed horizontal line indicates the 80% acquisition criterion.

The percentage of trials in which neutral praise, enthusiastic praise, and no praise were selected during the praise preference assessment is depicted in Figure 2. Ophelia was most likely to select enthusiastic praise, suggesting preference for this praise type. Carmen and Mason selected the three options during similar percentages of opportunities, suggesting a lack of preference between praise types or entirely indiscriminate responding. Across the praise evaluation and praise preference assessment, problem behavior occurred in fewer than two trials for each participant and did not correlate with any condition (data available from the first author upon request).

any type of praise assessed.

Results from the current evaluation could be used to inform parent or teacher training. If enthusiastic praise is found to result in faster acquisition for a particular individual, parents and teachers should be trained to provide this type of praise if they are not already doing so. However, if praise quality is not found to impact the rate of acquisition, time and resources might be better spent addressing aspects of treatment integrity. Although praise quality may not impact skill acquisition for some individuals, enthusiastic praise can, and perhaps should, continue to be delivered in educational and clinical settings. Results from this study suggest that praise is not aversive, and Clausen et al. (2007) found that both caregivers and professionals prefer that therapists who work with children with autism use enthusiastic praise relative to neutral praise. Thus, parents and teachers who already deliver enthusiastic praise should continue to do so. Future

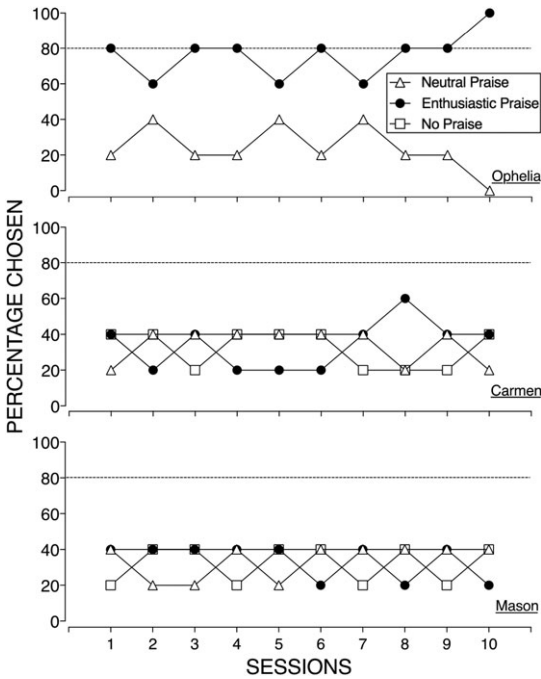


Figure 2. The percent of opportunities neutral praise, enthusiastic praise, and no praise were chosen by Ophelia, Carmen, and Mason during the praise preference assessment. The dashed horizontal line indicates the 80% selection criterion.

researchers may wish to examine how this might impact acceptance and compliance with educational and intervention services.

It is interesting to note that discrimination acquisition occurred at similar rates in the no praise condition as compared to the praise conditions for all three participants. These results suggest that prompting alone was effective in teaching these new skills to the current participants. Least-to-most prompting includes a prompting sequence and the delivery of reinforcement for correct responding (Miltnerberger, 2001). However, some research suggests that prompts may have more control over responding than reinforcement. For example, Tarbox, Wallace, Penrod, and Tarbox (2007) observed a sharp increase in compliance with parent requests immediately following the implementation of least-to-most prompting and before

participants had extended exposure to contingent praise, suggesting that prompting may have functioned as a discriminative stimulus, an establishing operation, or both. It is possible that similar effects occurred in the current study. Future research could be conducted to examine the effects of praise quality when a prompting procedure is not in place. For example, researchers could implement discrimination training procedures similar to those described by Sy and Vollmer (2012), in which receptive identification tasks are targeted, multiple response options are presented, correct responses are differentially reinforced, and prompts are not delivered following incorrect responses. Under this arrangement, participants may respond correctly by chance and prompting is not necessary. Alternatively, researchers could program prompts during both baseline and reinforcement conditions, thereby isolating the effects of reinforcement (e.g., Boussein, Roane, & Harper, 2011).

Several factors limit the generality of our findings. First, differences observed across conditions may have been due to differences in the difficulty of conditional discrimination tasks assigned to each condition, rather than praise quality. Within-subject replications with new tasks would increase the generality of, as well as the confidence in the findings in regard to the differential effects of enthusiastic praise. Second, only one experimenter provided all of the praise throughout the experiment. It is unclear if similar results would be obtained with different experimenters. Previous research suggests that different therapists (i.e., caregivers and inpatient staff members) may evoke different rates of problem behavior during a functional analysis (Ringdahl & Sellers, 2000). In the context of the current study, the effects of neutral praise, enthusiastic praise, and no praise may have been different if novel experimenters delivered praise.

An additional limitation of the study is that the methodology of the praise preference

assessment may have limited the degree to which we obtained differential responding across conditions for two of the three participants. If we had conducted our assessment similarly to other concurrent-chains preference assessments (e.g., Hanley, Piazza, Fisher, & Maglieri, 2005; Lucynski & Hanley, 2010), we may have obtained clearer results. For example, we might have (a) associated the different colored cards with the different conditions from the start of the study; (b) had the participant choose the card associated with the different conditions across trials (initial link); and then (c) conducted the terminal link (condition chosen) in the same way we had conducted that condition in the praise evaluation. Nevertheless, findings from these analyses of praise still suggest there may be some, albeit minimal, advantage to using enthusiastic praise during discrete-trial training.

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