

Assessing Generalization Between Tact and Receptive Verbal

Operants in Young Children Diagnosed with Autism

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Introduction

Children with autism benefit from early and intensive behavioral treatment (Lovaas, 1987; Smith, 1999). Although behavioral treatment is effective for children with autism, research needs to be conducted to identify procedures that facilitate treatment as effectively and efficiently as possible. For example, using procedures to teach skills that results in generalization to untaught skills results in more efficient treatment.

Typically developing children generally master receptive skills before expressive skills (Fraser, Bellugi, & Brown, 1963) and generalize to expressive skills (Dollaghan, 1985).

Children with developmental disabilities also generally acquire receptive skills before expressive skills (Rosenberg & Abbeduto, 1993) but studies examining generalization between receptive and expressive skills found inconsistent results (Guess & Baer, 1973; Goldstein, 1992; Miller, Cuvo, & Borakove, 1977; Wynn & Smith; Keller & Bucher, 1979).

Further research needs to be conducted due to the paucity of studies. The present study examined generalization between tact and receptive skills by teaching picture cards to 3 children diagnosed with autism. Results indicated that teaching one skill (i.e., tact or receptive) generalized to the untaught skill in both conditions.

Method

Participants

- Drew was a 3 year-old boy diagnosed with autism.
- Keith was a 4 year-old boy diagnosed with autism.
- Sean was a 4 year-old boy diagnosed with autism.
- All participants had receptive and tact skills in their repertoire.

Setting & Materials

• The study was conducted in a therapy room in the child's home or at a University-based clinic. Materials included data sheets, timer, video camera and picture cards.

Procedure

Baseline

- Baseline probes were conducted in each modality for a minimum of three sessions prior to acquisition.

Treatment

- A single subject multiple probe design of picture cards across sessions was implemented.
 - Three picture cards were taught in each condition.
 - Drew was taught picture cards of community helpers; Keith was taught picture cards of places; Sean was taught picture cards of community helpers.
 - The tact condition consisted of a visual-motor cue with a vocal response (labeling the picture card) while the receptive condition consisted of a verbal cue with a visual-motor action response (touching the picture card in an array).
 - All trials began with the delivery of a verbal instruction (e.g., "Who is this?" in the tact condition, or "Point to the ___" in the receptive condition).
 - The first session of treatment for a picture card began with 5 consecutively prompted trials. An echoic prompt was used in the tact condition and a point prompt was used in the receptive condition. After the first session the therapist began treatment on a prompt or probe dependent on the last trial of the mastery test probe from the previous session.
 - A 2:1 prompt to probe ratio was implemented if the participant erred during the treatment phase.
 - A correct trial was defined as the participant responding correctly within 3-5 seconds of the instruction. Self corrects and no responses were marked as errors.
 - All correct responses were reinforced with an edible until consumed or access to a toy for 10 seconds.
 - No specific praise was given for correct responses (e.g., "The therapist said 'good job!'" or "that's right!").
 - A 10 minute delay was used between treatment, mastery test probes and generalization test probes.
 - Mastery test probes consisted of 5 non-reinforced trials of the treatment response.
 - Mastery criterion was defined as 100% correct out of 5 trials in the mastery test probe phase across 3 consecutive days.
- #### Generalization and Maintenance Probes
- Generalization to the untaught skill was assessed each session 10 minutes after the mastery test probes of the taught skill for the same picture card.
 - Generalization was defined as 80% correct out of 5 consecutive trials.



Figure 1. Bar graph comparing the percentage of the last three sessions that generalization occurred in the tact and receptive conditions for each participant.

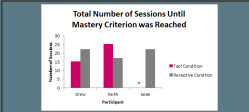


Figure 2. Bar graph comparing the number of sessions to complete the tact condition and receptive condition for each participant.

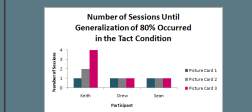


Figure 3. Bar graph comparing the number of sessions until at least 80% generalization occurred for each participant in the tact condition.

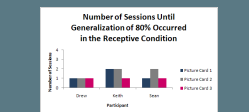
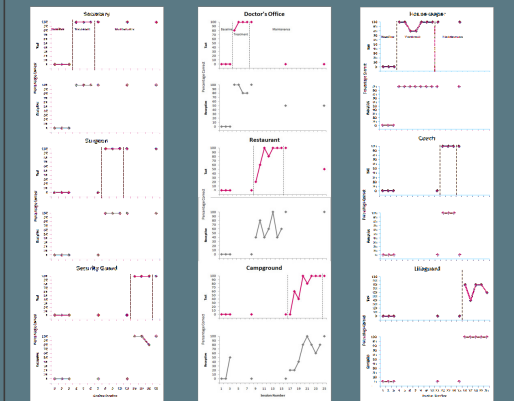
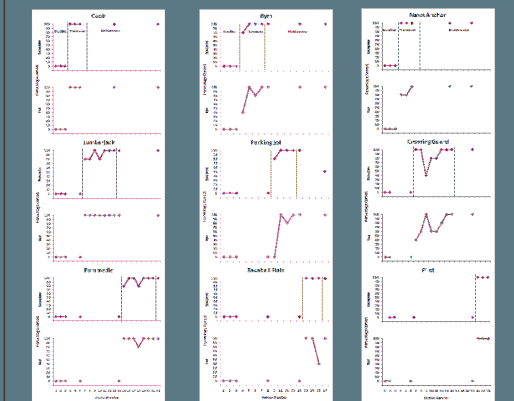


Figure 4. Bar graph comparing the number of sessions until at least 80% generalization occurred for each participant in the receptive condition.



Figures 4, 5 & 6. Multiple probe design of pictures cards across sessions in the tact condition with generalization to the receptive skill for Drew, Keith and Sean respectively.



Figures 7, 8 & 9. Multiple probe design of pictures cards across sessions in the receptive condition with generalization to the tact skill for Drew, Keith and Sean respectively.

Results

Figure 1 depicts the percentage of the last three sessions that generalization of at least 80% occurred for pictures cards 1, 2 and 3 for each participant in the tact condition and receptive condition. * Sean did not meet mastery criterion for picture card 3 in the tact condition.

Figure 2 depicts the total number of sessions to complete the tact condition and receptive condition for each participant. * Sean did not complete the tact condition.

Figure 3 depicts the number of sessions until generalization of at least 80% occurred in the tact condition for picture cards 1, 2 and 3 for each participant.

Figure 4 depicts the number of sessions until generalization of at least 80% occurred in the receptive condition for picture cards 1, 2 and 3 for each participant.

Figure 5 depicts the multiple probe design across picture cards for Drew in the tact condition. Drew reached mastery criterion in 3 sessions for picture cards 1, 2 and 3. Drew generalized to the receptive skill.

Figure 6 depicts the multiple probe design across picture cards for Keith in the tact condition. Keith reached mastery criterion in 4 sessions for picture card 1, in 7 sessions for picture card 2 and in 8 sessions for picture card 3. Keith generalized to the receptive skill.

Figure 7 depicts the multiple probe design across picture cards for Sean in the tact condition. Sean reached mastery criterion in 7 sessions for each picture card 1, in 3 sessions for picture card 2 and did not complete picture card 3. Sean generalized to the receptive skill.

Figure 8 depicts the multiple probe design across picture cards for Drew in the receptive condition. Drew reached mastery criterion in 3 sessions for picture card 1 and in 7 sessions for picture card 2 and 3. Drew generalized to the tact skill.

Figure 9 depicts the multiple probe design across picture cards for Keith in the receptive condition. Keith reached mastery criterion in 4 sessions for picture card 1 and 2 and in 3 sessions for picture card 3. Keith generalized to the tact skill.

Figure 10 depicts the multiple probe design across picture cards for Sean in the receptive condition. Sean reached mastery criterion in 3 sessions for picture cards 1 and 3 and in 8 sessions for picture card 3. Sean generalized to the tact skill.

Inter-observer Agreement and Treatment Integrity

Inter-observer agreement was conducted at least 52% of the sessions and was 99.2%.

Treatment integrity was conducted at least 52% of the sessions and was 98.4%.

Discussion

Results from the current study indicate that teaching tact or receptive skills of pictures cards generalized to the untaught skill for each participant in both conditions. Treatment in both conditions were equally effective however varied in efficiency. Drew completed the tact condition in fewer sessions (15) than the receptive condition (22) while Keith completed the receptive condition in fewer sessions (17) than the tact condition (25). Sean completed the receptive condition in 22 sessions and is still in treatment for the tact condition. These results may suggest that teaching a skill in which the participant has a stronger repertoire in will be a more efficient treatment. Generalization should be regularly assessed to ensure the treatment is maintaining efficiency for skill acquisition.

A limitation of the current study is that mastery test probes and generalization test probes were not reinforced which potentially weakened the motivational operation for correct responding. A weaker motivational operation may have extended the number of sessions required to reach the mastery criterion.

Future research could examine generalization between receptive and tact skills for other programs (e.g., prepositions, body parts). Future research could also examine if children with weaker receptive and /or tact skill repertoires are able to generalize in both directions. In addition, future research could examine a third skill to test for a transitive relationship.

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