
COMBINING VIDEO MODELING AND LEAST-TO-MOST PROMPTING FOR ESTABLISHING RESPONSE CHAINS

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Video modeling combined with least-to-most intrusive prompting was compared using a parallel-treatments design to least-to-most intrusive prompting alone in teaching daily-living skills in the form of response chains. Two boys with the diagnosis of autism (ages 8 and 9) participated in the study. The results showed that the participants acquired skills taught with video modeling plus least-to-most prompting in fewer trials and with fewer prompts than skills taught with least-to-most prompting alone. Copyright © 2006 John Wiley & Sons, Ltd.

INTRODUCTION

Individuals diagnosed with autism may have difficulty acquiring response chains, including those that have social significance such as vocational skills or daily living activities (MacDuff, Krantz, & McClannahan, 1993). Least-to-most intrusive prompting and video modeling are two methods that have been previously used to establish behavior chains. Horner and Keilitz (1975) demonstrated the effectiveness of least-to-most prompting in training individuals diagnosed with mental retardation how to brush their teeth. Tooth brushing was task analyzed into a sequence of component steps, and results showed that the number of correctly completed steps increased when least-to-most intrusive prompting was used. Charlop-Christy, Le, and Freeman (2000) compared video modeling with *in vivo* modeling for teaching social play and daily living skills to children with autism. Results showed that for four out of five participants, the task was acquired more quickly in the video-modeling condition than in the *in vivo* condition.

Although previous research has shown both least-to-most intrusive prompting and video modeling to be effective methods for establishing behavior chains, the relative supplementary effects of combining these two procedures have not been thoroughly examined. In the present study, video modeling plus least-to-most prompting was

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directly compared to least-to-most prompting alone to determine if the use of a video model would enhance the effects of least-to-most intrusive prompting alone.

METHOD

Participants

Two individuals diagnosed with autism participated in this study. Alex (9-year-old male) and Nathan (8-year-old male) attended a residential school for individuals diagnosed with developmental disabilities. Their primary form of communication was with picture exchange and rudimentary sign language.

Setting and Stimulus Materials

Training sessions were conducted at the participants' residential houses. Videos were viewed in the television room with a 57.2 cm TV/VCR combination unit for Alex and a 114.2 cm TV/VCR combination unit for Nathan. Sessions following the video viewings were conducted in either the kitchen or dining room.

Materials for video-modeling plus least-to-most prompting sessions included a VCR, TV, and videotape of the modeled task. Four tasks were trained in this study. During shirt-folding sessions, a shirt and two laundry baskets were present; during pant-folding sessions, a pair of pants and two laundry baskets were present; during sandwich-making sessions, peanut butter, jelly, bread, a plate, and a knife were present; and during juice-making sessions, a pitcher, a sink, water, powdered juice packet, and a big spoon were present.

Videos were created for each of the skills trained depicting one of the participant's teachers completing the task. The shirt-folding, sandwich-making, pant-folding, and juice-making videos were 18 s, 1 min and 37 s, 21 s, and 1 min and 24 s in duration, respectively. The settings depicted in the videos were the same settings in which the participant was to perform the tasks.

Data Collection and Interobserver Agreement

Each skill trained was segmented into a series of component responses using a task analysis. The skills were selected based on the educational plans of both participants and because juice-making and sandwich-making required the same number of steps and shirt- and pant-folding required the same number of steps. The juice-making and sandwich-making tasks each consisted of 10 steps whereas the shirt- and pant-folding tasks were each 6 steps.

During each trial, the data collector(s) recorded whether or not the step was performed independently or the prompt level required to occasion a correct response if it did not occur independently. A skill was considered mastered when the participant responded independently and accurately on all steps of the chain for five consecutive trials. A secondary observer collected data on 34% of trials. The percentage of interobserver agreement was calculated by dividing the smaller number of correct responses scored by the larger number of correct responses scored by each data collector and multiplying that number by 100. Interobserver agreement ranged from 89 to 98% across both participants and both tasks.

Design

A parallel-treatment design (Gast & Wolery, 1988) was used to compare the relative effectiveness of least-to-most prompting plus video modeling and least-to-most prompting alone in establishing behavior chains. A multiple-baseline design across responses and participants was used to compare the effects of a no-prompting baseline to that of both treatments. Following baseline, one of the two treatments was used to teach each skill. Experimental sessions were held 1–2 days per week for 60–90 min. During this time, three to five sets of trials were conducted. A set of trials consisted of one trial of the task trained with video-modeling plus least-to-most prompting and one trial of the task trained with least-to-most prompting alone. The tasks taught with each training method were counterbalanced across participants. The first set trained for Alex was shirt-folding using video modeling plus least-to-most prompting and pant-folding using least-to-most prompting alone. The second set trained for Alex was sandwich-making using video modeling plus least-to-most prompting and juice-making using least-to-most prompting alone. The first set trained for Nathan was pant-folding using video modeling plus least-to-most prompting and shirt-folding using least-to-most prompting alone. The second set trained for Nathan was juice-making using video modeling plus least-to-most prompting and sandwich-making using least-to-most prompting alone.

Procedure

All trials were conducted by an instructor familiar to the participants. During baseline trials, the instructor delivered the initial vocal prompt for the given task being trained (e.g., “It’s time to fold the shirt”) and waited for the participant to perform the task. At this time, each step of the task-analyzed skill was scored as being completed independently or not completed. No prompting or reinforcement was delivered during baseline.

During the least-to-most intrusive prompting condition, the prompt sequence consisted of vocal, gesture, physical guidance at the forearm, and hand-over-hand physical guidance. For example, the instructor delivered an initial vocal prompt “It’s time to make juice” and the participant was given 5 s to initiate the task. If the first response in the chain did not occur, the instructor delivered a gesture prompt. If the subject did not complete the step after a 2-s delay, the instructor delivered the next restrictive prompt, physical guidance at the forearm. If the response did not occur within 2 s following this prompt, the response was manually guided. If the participant performed a step incorrectly, or skipped a step, the instructor reset the materials and initiated the least-to-most prompting sequence.

During the video-modeling plus least-to-most intrusive prompting condition, trials were similar to the least-to-most prompting alone trials with the addition of the use of a video. Before the participant viewed the video, the instructor vocally prompted the participant to attend to the video. At the conclusion of the video, the instructor delivered task specific praise, for example, “Nice job watching the video of someone folding a shirt.” The participant was then taken to either the dining room or kitchen, depending on the task, and the least-to-most prompting sequence was used, as described above, for each step. In both training conditions, reinforcement was delivered in the form of praise and a preferred edible after completion of each trial regardless of the participant’s independent responding.

RESULTS AND DISCUSSION

The number of steps performed independently in the appropriate order for all skills and participants are depicted in Figure 1. The data for Alex are presented in the top two panels of Figure 1. During baseline, Alex completed one out of six steps independently for both the shirt- and pant-folding tasks (top panel). During training, Alex met the mastery criterion in the video modeling plus least-to-most prompting task (shirt-folding) in 26 trials and for the least-to-most prompting alone task (pant-folding) in 54 trials. During baseline for Set 2 (second panel), Alex performed three out of 10 steps independently for sandwich-making and one out of 10 steps for juice-making. During training, Alex met the mastery criterion in the video modeling plus least-to-most prompting task (sandwich-making) in 13 trials and in the least-to-most prompting alone task (juice-making) in 30 trials.

During baseline, Nathan performed none of the six steps independently for both shirt- and pant-folding tasks (third panel). During training, Nathan mastered the video modeling plus least-to-most prompting task (pant-folding) in 13 trials and in the least-to-most prompting alone task (shirt-folding) in 23 trials. During baseline for Set 2 (fourth panel), data were not as stable as was observed for other tasks. Nathan

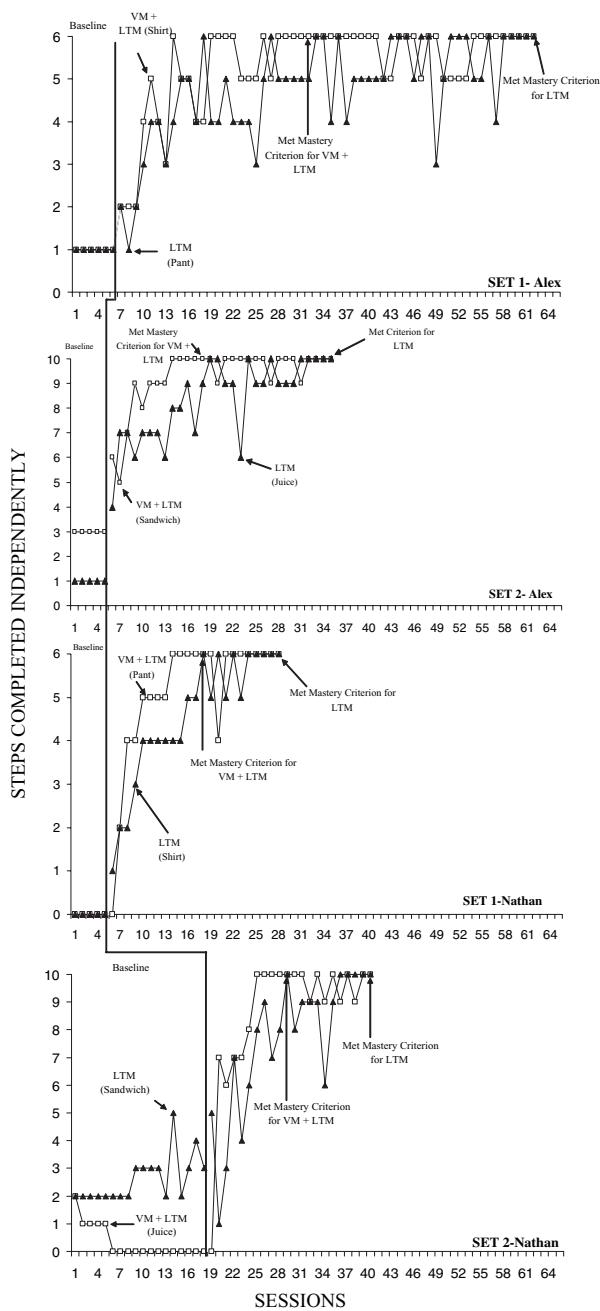


Figure 1. Number of steps completed independently for chains trained using video-modeling plus least-to-most prompting (VM + LTM) and chains trained using least-to-most prompting alone (LTM).

performed between 2 and 5 out of 10 steps independently with a slight upward trend for sandwich-making and an average of one out of 10 steps independent during baseline for juice-making. During training, Nathan mastered the task trained with video-modeling plus least-to-most prompting (juice-making) in 10 trials and the task trained with least-to-most prompting alone (sandwich-making) in 22 trials.

The results showed that both participants acquired behavior chains during the video modeling plus least-to-most prompting condition in fewer trials than during the least-to-most prompting alone condition. In addition, results showed that video modeling required fewer prompted steps for both participants. For Alex, only 42 (shirt-folding) and 22 (sandwich-making) prompted steps were required when video modeling plus least-to-most prompting was used, whereas 71 (pant-folding) and 60 (juice-making) prompted steps were required when least-to-most prompting alone was used. For Nathan, only 20 (pant-folding) and 19 (juice-making) prompted steps were required when video modeling plus least-to-most prompting was used, whereas 32 (shirt-folding) and 47 (sandwich-making) prompted steps were required when least-to-most prompting alone was used.

While previous research showed that least-to-most intrusive prompting can be effective when used singly, our findings suggest that the efficiency of training can be enhanced with the use of a video model. One limitation of the study was that video modeling alone was not tested; however, the purpose of this study was to compare least-to-most prompting alone with video modeling plus least-to-most prompting. Future research could address how video modeling alone compares to other prompting techniques and determine whether the use of a systematic prompting procedure in conjunction with video modeling will enhance the rate of acquisition of a skill compared to the use of a video model alone. It might also be helpful to examine the degree to which responding, trained using a video model, will maintain in the absence of the model.

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