

PROMOTING STIMULUS CONTROL WITH TEXTUAL PROMPTS AND PERFORMANCE FEEDBACK FOR PERSONS WITH MILD DISABILITIES

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We assessed whether written task analyses would serve as textual prompts for performing functional tasks by persons with mild disabilities. Several variables that could influence the effectiveness of textual prompts to promote stimulus control were examined across four groups. A consistent finding was that written specific task analyses combined with end-of-trial performance feedback were effective for promoting the acquisition and generalization of several tasks. Performance transferred immediately to natural discriminative stimuli when the written task analyses and feedback were withdrawn for most tasks and participants. For 2 participants, transfer of stimulus control was accomplished by prompt fading, using individualized written task analyses either with or without performance feedback (Group 1). When feedback was not provided, the effectiveness of written specific task analyses was inconsistent across groups. In contrast to the controlling effects of written specific task analyses, written generic task analyses, which specified only major task outcomes, when combined with performance feedback (Group 1) did not control responding. Overall, this research demonstrated the effectiveness of written specific task analyses and performance feedback to promote stimulus control for persons with mild disabilities.

DESCRIPTORS: textual prompts, performance feedback, stimulus control, mild disabilities, community living skills

Research has shown that persons with mild disabilities have experienced difficulties not only in school but also during their postschool years. The achievement of students certified as educably mentally retarded and returned to regular educational programs has been characterized as marginal at best (Meyers, MacMillan, & Yoshida, cited in MacMillan, Hendrick, & Watkins, 1988). A 2-year postschool follow-up of students with learning disabilities whose IQs ranged from 70 to 85 showed continued problems in independent living (Zetlin & Murtaugh, 1990). Another follow-up study showed that 1 year after completing school, only

6 of 218 persons with mild disabilities met the authors' definition of a successful graduate (i.e., employed, living independently, paying some of their living expenses, and involved in more than three leisure activities; Frank, Sitlington, Cooper, & Cool, 1990). This research suggests that although persons with mild disabilities may have terminated their secondary education, they still may need instruction on community living skills.

There is considerable research on instruction of community living skills for persons with moderate and severe mental retardation (Cuvo & Davis, 1983). Characteristic of that instruction are task analyses used as assessment devices by the trainer, and response-by-response prompting and consequences provided by the trainer. Although these techniques have facilitated the learning of persons with severe disabilities, instruction of community living skills for persons with mild disabilities could capitalize on the larger skill repertoires of this population. For example, with basic reading skills in their repertoires, persons with mild disabilities might be able to use written task analyses as textual prompts, similar to the manner in which persons with severe disabilities use pictorial task analyses

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(Wacker, Berg, Berrie, & Swatta, 1985) and audiotaped instructions (Alberto, Sharpston, Briggs, & Stright, 1986). Furthermore, analogous to the logic of the system of least prompts (a technique for fading prompts based on an intensity hierarchy), a similar attempt could be made with textual prompting. Additional textual stimuli could be provided in a hierarchical sequence as needed until stimulus control occurs. After acquisition, textual prompts could be either faded gradually to transfer stimulus control or withdrawn simultaneously to test whether stimulus control already has been transferred to natural discriminative stimuli.

This study was designed to investigate the conditions under which age-appropriate, minimally intrusive textual prompts could help promote the acquisition, maintenance, and generalization of functional community living skills by persons with mild disabilities. This research was conducted using four groups to answer a series of questions. Initially, Group 1 was used to evaluate whether or not written generic task analyses and performance feedback would be sufficient to promote acquisition or whether it is necessary to employ more specific task analyses with feedback. With Group 2 we systematically replicated the specific task analysis and feedback condition of Group 1, and extended the initial study by testing generalization to similar but untrained exemplars in novel settings. Groups 3 and 4 were used to examine whether or not acquisition would occur using specific textual prompts without consequences or whether it is necessary to supplement the written prompts with response-contingent feedback.

METHOD

Participants

Participants were 11 adults (ranging in age from 18 to 24 years) who were receiving independent living skills training in a rehabilitation facility. All participants had a diagnosis of either borderline mental retardation or learning disability. Their WAIS-R IQs ranged from 69 to 84, and their Wide Range Achievement Test reading grade levels ranged from 3.5 to 8.0.

Settings and Sessions

A stove and a refrigerator were used to teach cleaning skills to Groups 1 through 3. The training setting for Group 1 was the kitchen of the residential unit in the participants' rehabilitation facility. For Groups 2 and 3, training occurred in a simulated apartment at the rehabilitation facility; generalization probes were conducted in other locations in the facility using different brands of appliances. For Group 4, the two laundry settings were in the rehabilitation facility and a community laundromat, and the refrigerator cleaning setting was the same as that for Group 1. For all groups, materials included a pail, several types and brands of cleaning materials (e.g., oven cleaners, dish detergents, sponges), potholders, and rubber gloves. A wash basket, box of powdered detergent, measuring cup, purse containing \$2.00 in coins, and clothing were also employed as materials for Group 4. Training sessions, 50 to 60 min long, generally were conducted 4 days per week.

Assessment Instruments

For Group 1, three types of task analyses were potentially available: (a) generic, (b) specific, and (c) individualized. The generic task analyses were comprised of only the mandatory outcome steps without a listing of the specific responses to achieve those outcomes. The specific task analyses included the generic task analysis steps plus the specific responses to attain each generic step. An individualized task analysis consisted of the generic steps supplemented with all specific steps for the generic steps on which errors occurred in the written generic task analysis condition. The actual steps of the specific task analysis on which errors occurred were underlined. Groups 2 through 4 used only specific task analyses.

Dependent Variable

The primary dependent variable was the percentage of steps performed correctly on each specific task analysis (i.e., the number of steps performed correctly divided by the number of applicable steps multiplied by 100%). It was not necessary for par-

ticipants to emit the steps in the order specified on the task analysis unless it was essential for the correct task outcome.

Interscorer Agreement

Steps of the specific task analysis were scored independently by a trained secondary observer on 25% of all sessions. Interscorer agreement was computed by dividing the number of agreements by the number of agreements plus disagreements multiplied by 100%. Mean interscorer agreement ranged from 90% to 99% across groups.

Experimental Design

The experimental design was a multiple baseline across tasks with a series of experimental conditions imbedded.

General Conditions

Testing and training occurred individually. Before each trial for the cleaning tasks, appliances were artificially soiled to insure discriminative stimuli for cleaning. Prior to the first trial of all training conditions, participants were instructed to read aloud the designated task analysis. Reading errors that would not change the outcome of the tasks were ignored, and those that would adversely affect performance were corrected. Subsequently, participants read and performed each step and checked it off immediately after it was completed. If participants did not check off steps, corrective feedback was provided at the end of the trial. Training was not provided on how to use the written task analyses as textual prompts. The acquisition criterion to terminate training was three consecutive trials with 100% correct performance, as measured on the specific task analysis under baseline conditions.

Group 1

The purpose of Group 1 was to examine whether stimulus control would occur when participants used written generic task analyses as textual prompts and received end-of-trial performance feedback, or whether it would be necessary for them to use the more controlling specific task analyses as prompts

along with feedback. Transfer of stimulus control to baseline conditions was promoted by fading the textual prompts.

Baseline. Participants were tested on oven and refrigerator cleaning. The experimenter scored responses according to the specific task analysis and did not provide prompts or consequences. When performance stabilized, the written generic task analysis and feedback condition was administered.

Written generic task analysis and feedback. Participants performed the tasks using the written generic task analyses as prompts. The trainer did not provide direct instruction while participants responded, but at the end of each trial, praise and descriptive feedback (corresponding to the wording of each step of the generic task analyses) were provided for the entire task. When performance stabilized at less than 100% correct, the written specific task analysis and feedback condition was administered.

Written specific task analysis and feedback. Participants performed the task using the written specific task analyses as prompts. End-of-trial consequences were provided as described above, except the descriptive feedback corresponded to the steps of the specific task analysis. When performance stabilized at 100% correct, the written generic task analysis condition was administered.

Written generic task analysis. Participants used the written generic task analysis as a textual prompt without feedback as a one-trial fading probe. Participants who scored 100% correct proceeded to the baseline condition. Those who did not score 100% correct proceeded to the written individualized task analysis condition.

Written individualized task analysis. Participants used an individualized task analysis as a prompt without feedback as a one-trial probe. First, the experimenter pointed to the generic task analysis steps on which errors had not occurred in the previous written generic task analysis condition and told participants they performed those steps correctly. Then, the experimenter pointed to the generic task analysis steps with the specific steps underneath, and told participants that errors occurred on the underlined steps. This condition examined

whether performance would improve if the textual cues were individualized based on an error analysis of the written generic task analysis probe. Participants who scored 100% correct on one trial were returned to the written generic task analysis condition. Participants who did not score 100% correct with individualized task analysis training proceeded to the written individualized task analysis and feedback condition.

Written individualized task analysis and feedback. Participants used an individualized task analysis as a written prompt, and feedback (corresponding to the steps of the individualized task analysis) was administered at the end of the trial. The task analysis was individualized on each trial as necessary, based on an error analysis of the previous trial. When participants scored 100% correct on one trial, they were returned to the written generic task analysis condition.

Follow-up. One week and 1 month after training, follow-up testing under baseline conditions was conducted for both tasks.

Group 2

The purpose of Group 2 was to replicate the effectiveness of the written specific task analysis and feedback condition and to examine generalization of cleaning performance across untrained appliances.

Baseline. This condition was identical to that of Group 1, with the addition of generalization probes to untrained appliances.

Written specific task analysis and feedback. The procedures were identical to those in the comparable condition for Group 1. Participants continued in this condition until they performed the task without errors, as measured by the specific task analysis on three consecutive trials. Participants then proceeded to the baseline condition.

Follow-up. Follow-up testing was conducted under baseline conditions on both acquisition and generalization appliances 1 month after the acquisition criterion was met.

Groups 3 and 4

The primary purpose of Groups 3 and 4 was to examine whether or not written specific task anal-

yses would prompt performance in the absence of feedback. For Group 3, generalization probes to untrained appliances were conducted during baseline and written specific task analysis conditions. Group 4 examined the effects of the experimental conditions on novel laundry tasks to extend the external validity of the procedures.

Baseline. This condition was identical to that for Group 2.

Written specific task analysis. Participants used the written specific task analyses as prompts. No contingent prompting, feedback, or other consequences were employed. When performance stabilized, participants returned to the baseline condition.

Baseline. This was identical to the original baseline condition. When scores stabilized at less than 100% correct, the written specific task analysis and feedback condition was introduced.

Written specific task analysis and feedback. This was identical to the comparable condition for Groups 1 and 2. Textual prompts and feedback were provided for the training but not for the generalization appliances. Participants continued until they completed the task 100% correctly on three consecutive trials, and then they proceeded to the baseline condition.

Baseline. This was identical to the original baseline. When participants scored 100% correct on three consecutive trials, training was terminated.

Follow-up. Follow-up testing under baseline conditions took place 1 week after training. For Group 4, naturalistic observations were also conducted for 3 weeks in the rehabilitation facility laundry room when participants were doing their personal laundry. The experimenter unobtrusively observed while talking to a confederate.

RESULTS

Figures 1 and 2 show low stable baselines for Group 1 on both tasks. Subcriterion gains occurred on some tasks when the written generic task analysis was used as a prompt and end-of-trial feedback was provided. This condition, therefore, was inadequate to promote complete stimulus control over the target behaviors.

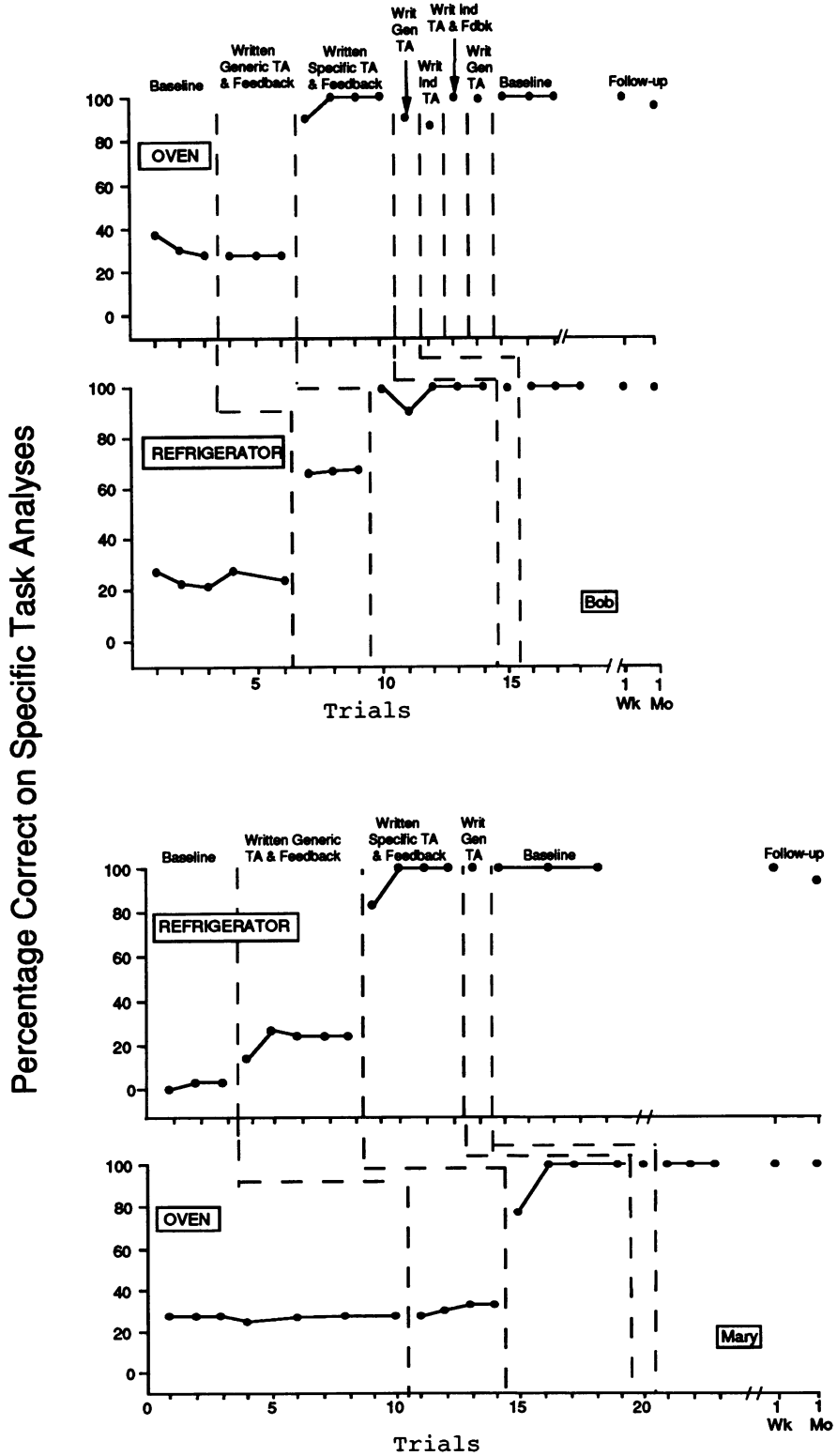


Figure 1. Percentage correct on specific task analyses in baseline and experimental conditions for Bob and Mary in Group 1.

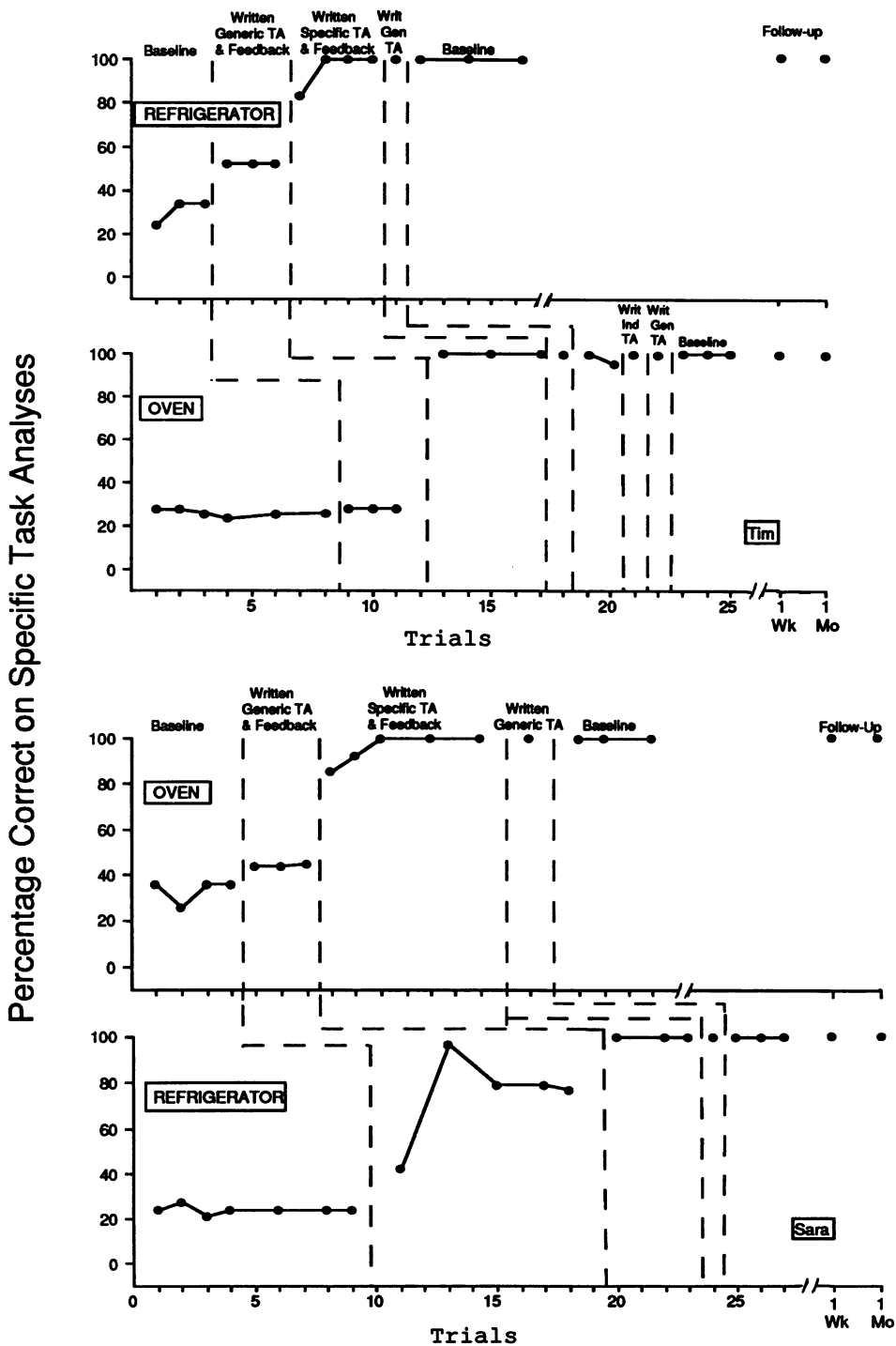


Figure 2. Percentage correct on specific task analyses in baseline and experimental conditions for Tim and Sara in Group 1.

When the written specific task analysis and feedback condition was introduced, all participants rapidly improved their performance on both tasks to the criterion level in only three to five trials. Subsequently, Sam, Bob, and Mary maintained 100% correct performance on tasks during the written generic task analysis condition when the specific task analysis steps and feedback were withdrawn. Although Ann maintained her performance on the refrigerator task, she failed to achieve 100% correct on oven cleaning. She then received one trial each in the written individualized task analysis and written individualized task analysis and feedback conditions. Only Bob required a written individualized task analysis (oven cleaning task) when the baseline condition was reinstated. All participants met the terminal objective for each task by scoring 100% correct on three consecutive baseline trials, and they maintained high-level performance during follow-up.

Figure 3 shows that Group 2 participants achieved low stable baselines on both tasks across training and generalization appliances. Participants rapidly reached the acquisition criterion and generalized to untrained appliances when given written specific task analyses and end-of-trial feedback. This training condition was highly effective even when it was not preceded by the written generic task analysis and feedback condition, as for Group 1. When instructional procedures were withdrawn, cleaning skills were maintained on all training and generalization appliances.

Figure 4 shows that Group 3 participants had low baselines in training and generalization settings. When the written specific task analyses were used as textual prompts without performance feedback, responding improved moderately and stabilized below the criterion level. After the written prompts were withdrawn and participants returned to the baseline condition, the partial acquisition that had occurred with the textual prompts was substantially maintained. When the written specific task analyses were reinstated and supplemented with performance feedback, both participants rapidly achieved 100% correct performance for both training tasks.

A return to baseline showed 100% correct performance for the training appliances and performance at or near 100% for the generalization appliances. At a 1-week follow-up for both sets of appliances, performance was comparable to that in the final baseline condition.

Figures 5 through 7 show that when the written specific task analysis condition was in effect for Group 4, partial acquisition occurred for the two laundry tasks and complete acquisition occurred for the refrigerator task. When end-of-trial feedback supplemented the written prompts, participants met the acquisition criterion for the two laundry tasks. In four of the nine legs of the experiment, transfer of stimulus control occurred immediately when the written specific task analyses and feedback were removed. In the other legs, transfer of control was almost complete; however, the treatment condition was reinstated briefly to promote complete transfer. Without additional practice, there was some reduction in performance during the follow-up tests. Naturalistic probes were conducted when participants did their own laundry. Results showed moderate performance.

DISCUSSION

The purpose of this research was to examine whether written task analyses would serve as textual prompts to help promote the acquisition and transfer of stimulus control for adults with mild disabilities. For Group 1, a hierarchy of textual prompts, sequenced from least to most assistance, was available across phases. Because performance improved only minimally in the written generic task analysis and feedback condition, the written specific task analysis and feedback condition was administered. This condition occasioned complete stimulus control, as shown by all participants attaining the acquisition criterion. To transfer stimulus control to natural discriminative stimuli, the specific textual prompts and feedback were faded. Initially, a one-trial probe occurred for all participants using only the written generic task analyses as textual prompts. In addition, it was necessary on two oc-

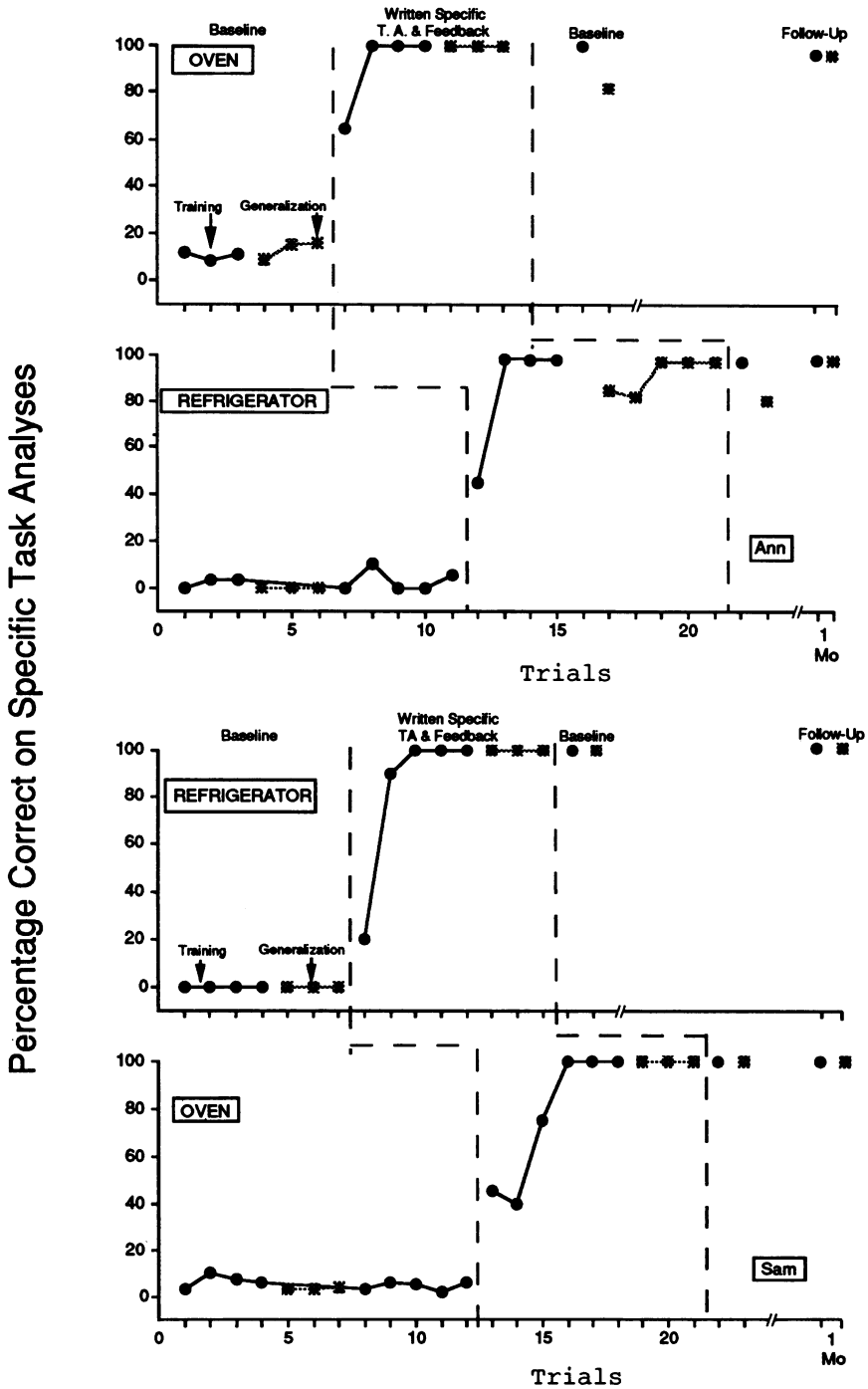


Figure 3. Percentage correct on specific task analyses in baseline and experimental conditions for Group 2.

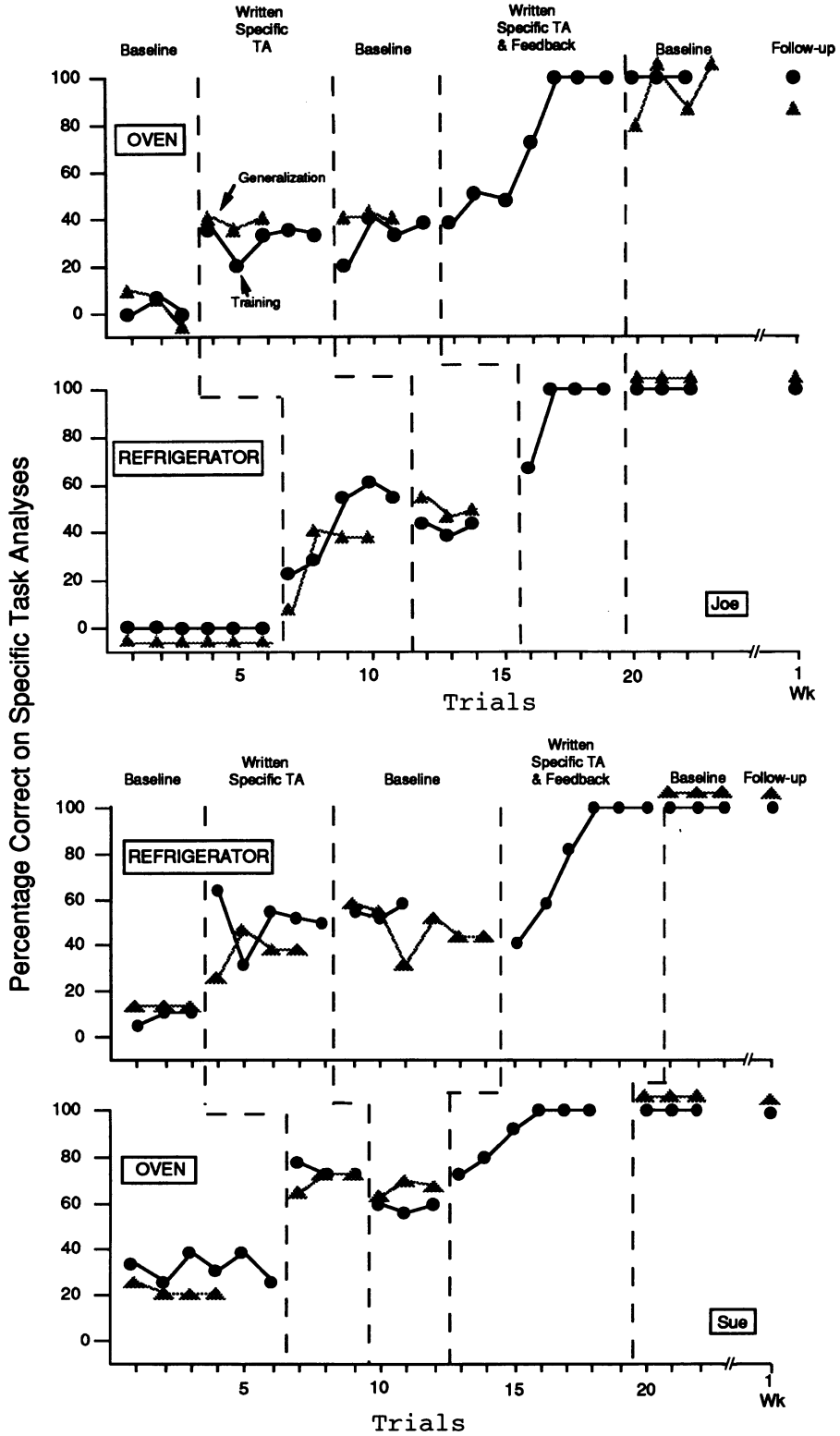


Figure 4. Percentage correct on specific task analyses in baseline and experimental conditions for Group 3.

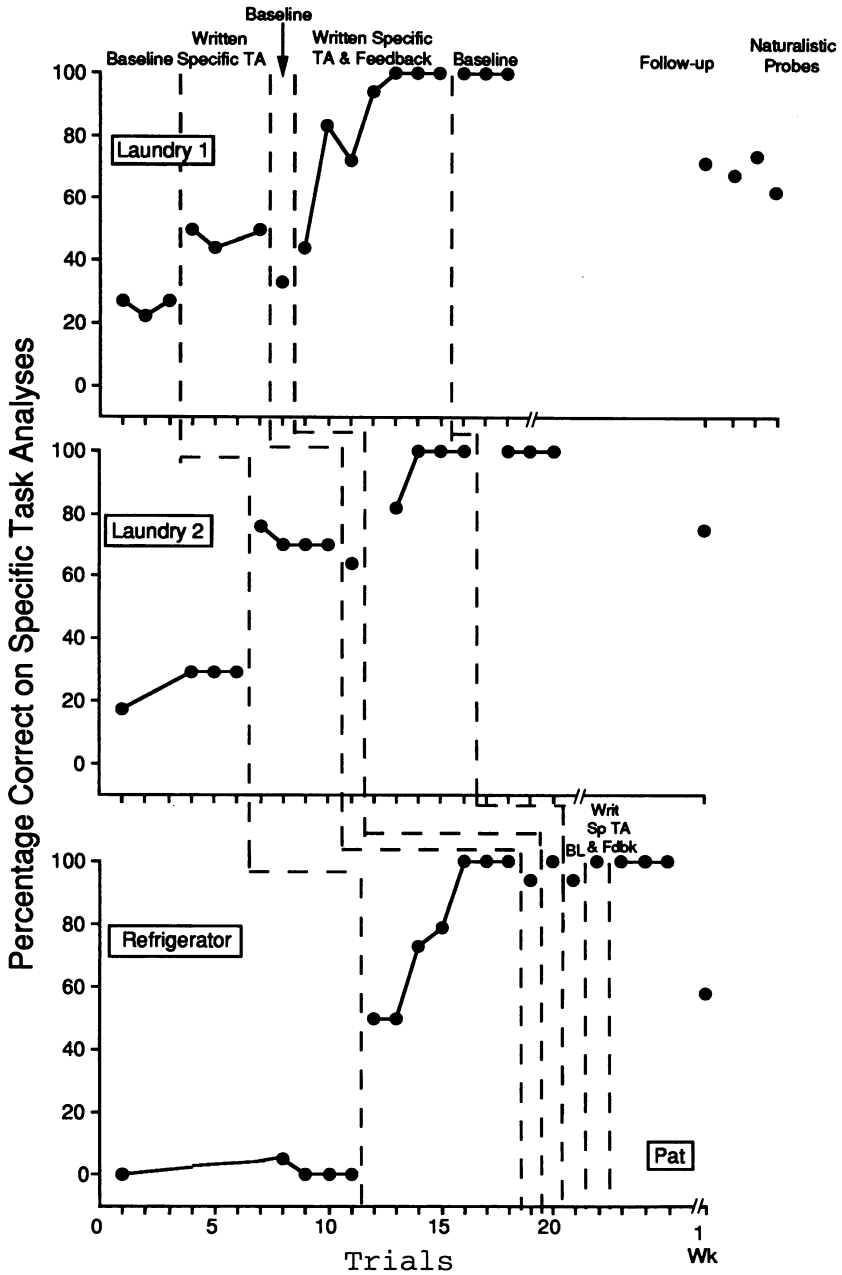


Figure 5. Percentage correct on specific task analyses in baseline and experimental conditions for Pat in Group 4.

casions to individualize textual cues in a prescriptive manner based on an error analysis of participants' performance on the previous trial. This approach replicates the prescriptive administration of response prompts described by Steege, Wacker, and

McMahon (1987), and extends the utility of the prescriptive approach to textual prompts.

It should be noted that the specific task analyses were the dependent measures for all phases for Group 1, including the generic task analysis and

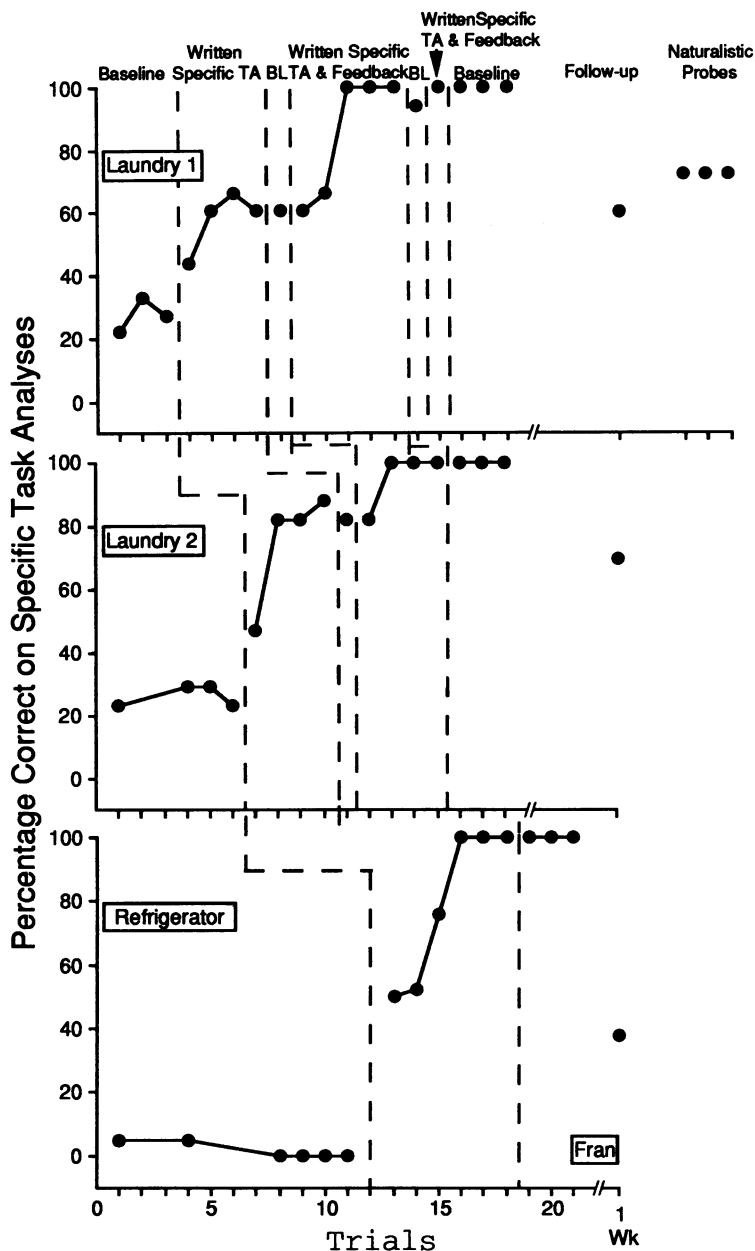


Figure 6. Percentage correct on specific task analyses in baseline and experimental conditions for Fran in Group 4.

feedback condition. It is possible that performance in that condition may have been underestimated by requiring the steps of the specific task analyses to be performed. To address this concern, a social validation of task outcome would be appropriate in future research.

Group 2 replicated the efficacy of the written specific task analysis and feedback condition evidenced in Group 1, and showed this condition to be highly effective, even when it was not preceded by the written generic task analysis and feedback condition (Group 1). Group 2 also showed that

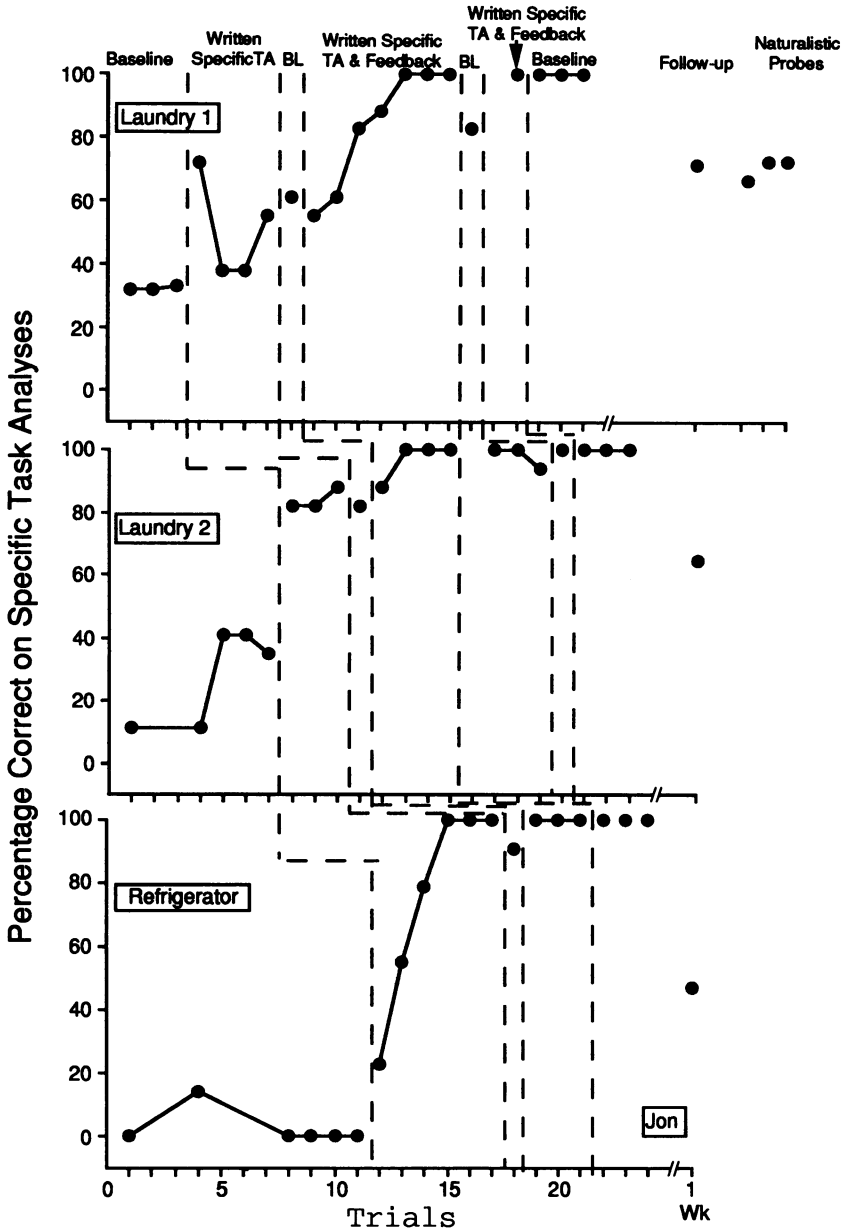


Figure 7. Percentage correct on specific task analyses in baseline and experimental conditions for Jon in Group 4.

participants generalized to cleaning novel appliances without the use of any prompts and consequences.

Groups 3 and 4 showed that specific textual prompts without feedback occasioned partial to complete stimulus control. For both tasks for Group 3 and for the two laundry tasks for Group 4, specific

textual prompts alone produced partial control. Complete control occurred only after the written prompts were supplemented with end-of-trial performance feedback. For the refrigerator cleaning task for Group 4, complete control was obtained with the written prompts alone without performance feedback, perhaps because the refrigerator

task was always preceded by the two laundry tasks. Participants may have generalized the use of written task analyses as self-administered textual prompts to a novel task with different task analyses. Future research should explore variables that would permit persons with mild disabilities to use textual prompts as a self-management strategy.

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