

*TEACHING JOB INDEPENDENCE AND FLEXIBILITY TO  
MENTALLY RETARDED STUDENTS THROUGH THE  
USE OF A SELF-CONTROL PACKAGE*

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We examined mentally retarded individuals' use of picture cues and self-monitoring to initiate a series of tasks of varying type and order. Four severely to moderately retarded high school students participating in a vocational training program were trained to use a picture-cue system. The system consisted of photographs of vocational tasks that were inserted in the assigned order in a photoalbum sheet; self-management was accomplished by marking off each photo after its corresponding task was completed. Students were assigned seven tasks from a pool of 13 each day. Results indicated that the students quickly learned to use the picture-cue system to change tasks throughout their workday without trainer prompts and that performance was maintained as trainer feedback and presence were decreased. At the end of the study, two students who were exposed to novel photographs were able to initiate independently after only minimal training, suggesting that the use of the picture-cue system had become a generalized skill.

DESCRIPTORS: retarded adolescents, self-control, vocational behavior

Most employees are expected to work independently, with little supervision (i.e., maintenance); and, in most jobs, they must be flexible to changing environmental conditions, such as daily work loads and staffing patterns (i.e., generalization). Although progress has been made in the competitive employment training technology for mentally retarded individuals, maintenance and generalization continue to be problems (Gifford, Rusch, Martin, & White, 1984).

One promising approach to enhancing vocational independence is the use of self-control strategies, particularly self-monitoring and antecedent cue regulation in the form of picture cues. Wacker and Berg (1983) used picture cues in training mentally retarded students to acquire complex benchwork tasks in a sheltered work setting. Sowers, Rusch, Connis, and Cummings (1980) trained mentally retarded adults in a competitive employment preparation program to use clock face representations as time management cues. In that same setting, Connis (1979) trained mentally retarded adults to

use picture cues and to self-monitor task completion so they could change tasks independently.

Our study continues the examination of the effectiveness of the self-control package of picture cues and self-monitoring in increasing the independence of mentally retarded persons in employment situations. However, our primary goal was to investigate the extent to which this strategy could also contribute to the work flexibility of these individuals. In contrast to prior research that used the same tasks and task sequence throughout the study, we varied the tasks and order of task presentation daily.

## METHOD

### *Students and Setting*

Four male students (18-21 years old) from classes for severely and moderately retarded persons participated. Full Scale WAIS-R IQ scores for Bob and Harry were 47 and 50, respectively. Stanford-Binet IQ scores for Mike and Tom were 30 and 43, respectively. None of them could read. At the time of the study, seven handicapped students were assigned to the study site—a university cafeteria—for work training. The four students in the study were selected arbitrarily.

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### *Dependent Variable and Observation Procedures*

Independent task change during baseline and maintenance phases was defined as beginning and designated task in the assigned sequence without a supervisory prompt or directive. During the picture-cue training phase, students were required to complete four self-management steps independently to receive credit for an independent task change: (a) return to the picture-cues after completing a task; (b) mark off the picture corresponding to that task; (c) touch the picture of the next task; and (d) begin that task.

There were two pools of tasks, each consisting of 12 tasks, (e.g., sweeping a storage room, wiping counters, and cleaning a restroom) and a break. One task pool was assigned to Mike and Tom, the other to Bob and Harry. Daily schedules of six tasks and a break were randomly determined for each student from the task pools.

When a student finished a task during baseline, the trainer waited for 2 min for the student to begin the next correct task. If it was not begun by the end of the 2-min period, or if an incorrect task was started, a directive was given. During picture-cue training, each student was given 2 min to return to the picture-cues and 2 min more to complete the self-management steps. During maintenance, no trainer directives were given unless a student did not begin the next assigned task within approximately 4 min after completing the previous task.

The first author served as trainer/observer for Bob and Mike; the second author for Tom and Harry. These trainers/observers served as reliability checkers for each other (i.e., collected data simultaneously but independently) with the exception of 3 days, when another trainer (who was not an author) did so. Before a new phase was started for any of the students, the observers reviewed and practiced to an established agreement criterion the training and data collection protocols. Agreement checks were conducted at least twice during each major phase of the study (baseline, picture-cue system training, and maintenance). Agreement checks were obtained for Bob, Mike, Tom, and Harry,

10, 10, 9, and 7 times, respectively. Reliability was calculated by dividing the number of agreements by agreements plus disagreements  $\times 100$ . Agreement percentages were 100% on all occasions but two, when one task change was recorded differently by the two observers.

### *Design and Procedures*

A multiple baseline across students design was used to demonstrate the effects of the picture-cue system training package. Two phases were also included to assess maintenance and generalization to novel pictures.

*Prebaseline.* The trainer verbally presented one of the 13 task cues. If the correct task was not initiated within 2 min, the student was escorted to the task and the verbal cue was repeated. Praise followed correct responses. At the end of the workday, massed trials were conducted for verbal cues responded to incorrectly. Phase-change criterion was 100% responding for 3 consecutive days. However, after 10 days of training, all students continued to vary between 5 and 7. With no evidence of improvement, and due to time constraints, baseline conditions were begun.

*Baseline.* This phase was designed to simulate how a competitive employment supervisor would present daily task assignments. At the beginning of each day the trainer told the student which tasks he was to perform, in the assigned order. Feedback was provided in the same manner as in prebaseline.

*Picture-cue system training.* In this condition three training phases (A, B, and C) were used to teach students to use the picture-cue system. The system had two major components: a picture-cue apparatus and the four self-management steps. The picture-cue apparatus consisted of a photo album sheet, a clipboard on which the sheet was affixed, and a water-based pen. Pictures representing the day's tasks were inserted into the sheet in their assigned order. The picture-cue apparatus was placed in a location easily accessible to the students.

Phase A occurred for 1 day and no data were collected. The trainer presented each of the 13 pictures to the student, named the task (e.g., wash

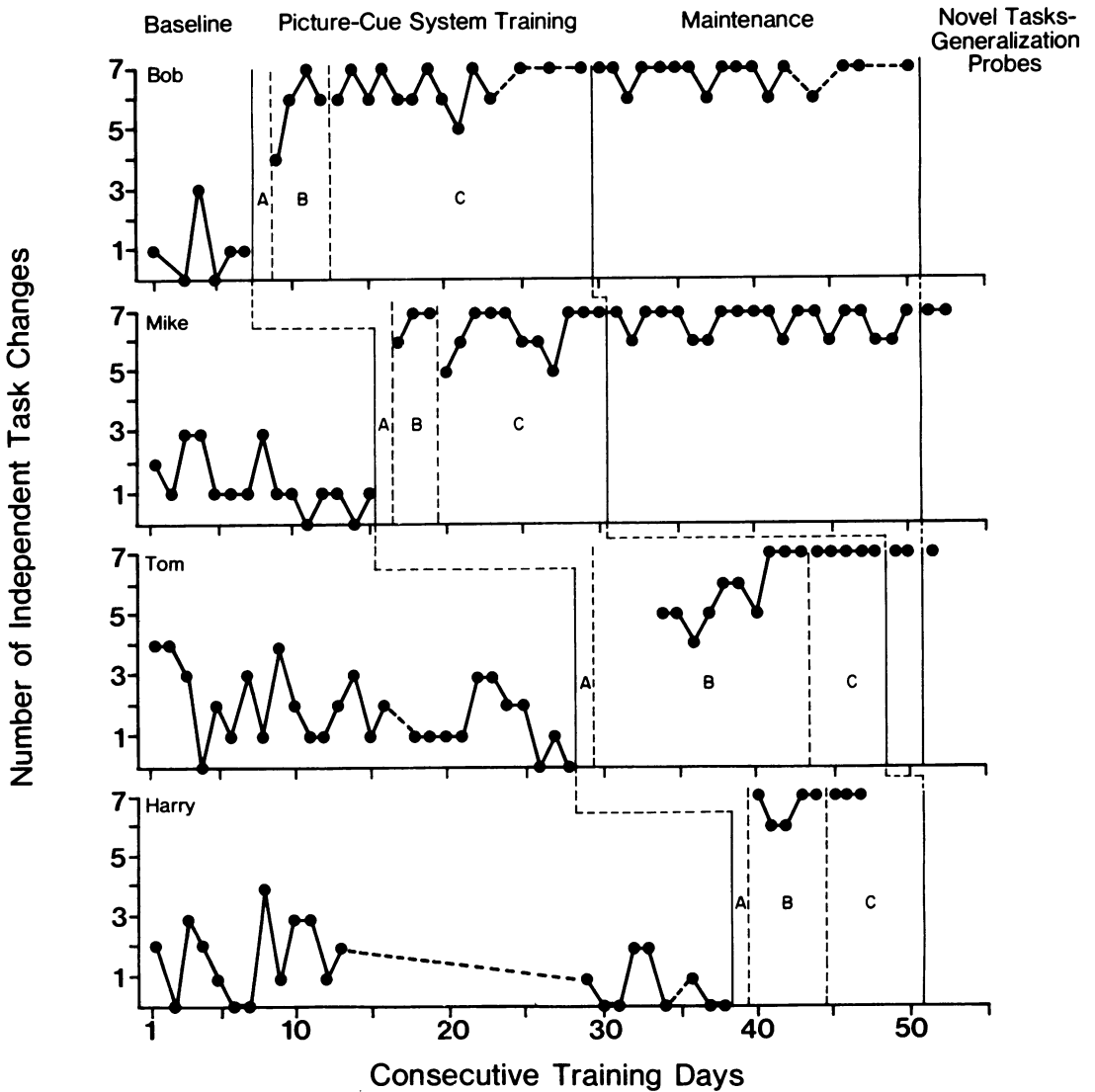


Figure 1. Number of independent task changes. Broken lines indicate that the student was unavailable for participation on the day(s) between data points.

soup pots, bring in garbage cans, clean refrigerator), and escorted him to the task. Next, the trainer required the student to go to the corresponding task when shown each picture. Praise and corrective feedback were given contingently after each step. The trainer then described and modeled the four self-management steps. Finally, the student was given the picture-cue apparatus with seven pictures inserted, and he was prompted through the self-management steps for each task during the workday.

Phase B procedures were the same as in Phase A, except that students were not prompted through each self-management step. Phase B was continued until a student achieved 2 consecutive days of 100% independent task change. Phase B was inadvertently terminated prematurely for Bob. Also, Tom either left out a step or confused the order for several days. Thus, on Days 38 to 41, he was prompted through each self-management step for three tasks before the work session began.

During Phase C, students were given their pic-

tures and reminded to do each of the self-management steps. Praise was given only after the successful completion of the four steps. Corrective feedback was provided after an error on any step.

*Maintenance.* This condition simulated the amount of supervision in a competitive job situation. Students were given their pictures with no instructions or reminders. After completion of a task, the trainer waited approximately 4 min and then walked through or near the next task area. If the student was engaged in the assigned task, the trainer left and recorded an independent task change. If the student was not in the area, the trainer located him and prompted him to check his pictures. At day's end the trainer praised the student if all tasks were independently initiated. If an error had occurred, he was reminded to use his pictures.

*Introduction of novel pictures: generalization probes.* To determine the extent to which picture-cue use had become a generalized skill, this condition was used for Tom and Mike, the two students remaining at the site. On the first day of this condition, two unfamiliar pictures were introduced. The trainer showed them to each student and instructed him how to perform the tasks. The trainer then required the student to initiate the tasks when shown the pictures for two consecutive trials. Tom and Mike were then given five familiar pictures and the two novel ones as that day's assignment. The procedures followed during the workday were identical to the maintenance condition. On the second day, Mike was presented with an additional novel picture, along with four familiar tasks. The same procedures used on the previous day were followed.

## RESULTS

Data depicting the number of independent task changes are presented for each student in Figure 1. During baseline the number of independent task changes was generally low and widely varied.

Once students had completed Phase A of picture-cue system training and entered Phase B, the number of independent task changes increased im-

mediately and substantially. In Phase C, in which praise was provided only after the successful completion of the entire self-management chain, all students continued to perform at high levels. Only Bob and Mike spent sufficient time (21 and 20 days, respectively) in the maintenance phase to obtain an adequate measure of the extent to which students would continue to perform at high levels when little supervision was provided. Neither made more than one task-change error on any day. Tom obtained 100% on his 2 days in this condition. In addition, Mike and Tom independently initiated all task changes when novel tasks were introduced.

## DISCUSSION

The results of our study demonstrate the effectiveness of picture cues and self-monitoring in increasing and maintaining the independent initiation of work tasks by mentally retarded students, even when the tasks and their order of introduction were routinely varied. Probably the most exciting findings of all occurred in the generalization condition wherein students responded correctly to novel pictures that were inserted into their boards. These data indicate that the training resulted in generalized use of the system, and thus support and extend the findings of Connis (1979) and Wacker and Berg (1983). Moreover, this self-control package appears to be effective, efficient, and practical for use in competitive employment settings. In such environments the package could allow retarded workers to supersede situational requirements that frequently preempt consistent task assignment and often result in dismissal.

Questions still remain concerning what might have occurred if data had been collected for all students over several months' time during the maintenance phase. Also, the extent to which students' responding was under the stimulus control of the trainers and the experimental setting was not ascertained.

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