SELF-MONITORING AND WORK PRODUCTIVITY WITH MENTALLY RETARDED ADULTS

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We examined the use of self-monitoring to increase the productivity of five mentally retarded adults in a sheltered workshop. Data were collected daily during a 30-minute intervention and 30-minute generalization period. Following baseline, verbal praise, prompts, and physical encouragement were administered contingent on productive behavior on a specific task during the intervention period. In the next phase, self-monitoring was trained during the intervention period. During both phases, baseline conditions prevailed in the generalization periods. In the final phase, self-monitoring was extended across the intervention and generalization periods. Results showed that increased productivity levels, evident when praise and prompting were being administered, maintained with self-monitoring alone. Minimal generalization across time was observed until self-monitoring was begun in the generalization period.

DESCRIPTORS: mental retardation, self-monitoring, generalization

The improvement of work behaviors among the mentally retarded has frequently been identified as a critical variable to achieve community integration (Schutz, Vogelsberg, & Rusch, 1980). A particularly important aspect of work behavior that is frequently lacking in the mentally retarded is their ability to perform at a consistently high rate without direct supervision. One means for possibly teaching mentally retarded individuals to work independently might be self-monitoring, which can offer a form of performance feedback without intervention on the part of the instructor.

Investigators of the use of self-monitoring with the mentally retarded have found mixed effects. Although some researchers have successfully demonstrated the use of self-monitoring with the mentally retarded for achieving response maintenance (Hanel & Martin, 1980; Robertson, Simon, Pachman, & Drabman, 1979; Shapiro & Klein, 1980), others have not consistently showed self-monitoring to result in behavior change.

Shapiro and Ackerman (1983) recently reported the failure of self-monitoring to be reactive in in-

creasing work productivity for mentally retarded adults in a workshop setting. The lack of reactivity was found across all subjects in two different settings. When self-monitoring was extended to an untreated control group, reactivity again failed to appear. Others have reported similar findings (Nelson, Lipinski, & Black, 1976; Zohn & Bornstein, 1980).

The purpose of our study was to examine whether work productivity, which was initially increased with contingent prompts and praise, would be maintained with self-monitoring. In addition, the effects of these procedures on behavior at another time period were examined.

METHOD

Clients and Setting

Clients were drawn from a group of mentally retarded adults from the work activities area of a community-based sheltered workshop. The work activities area was an open-space, factory-type building divided into sections of similarly skilled clients.

All 12 clients from one section of the workshop were assessed for inclusion in the study. Selection was based on the client's demonstration of productivity rates that were less than 50% of the com-

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munity work rates. In addition, clients had to be able to count to at least 50.

Five clients (three males, two females; mean age = 33 years) were selected for the study. Their productivity averaged less than 25% of the community work rate (range = 20% to 40%). The mean reported IQ of the clients was 48 (range = 36 to 63). Although adaptive behavior ratings were not available on the clients, all displayed various degrees of independent living skills. Two lived with their families, two lived in supervised community housing, and one lived independently.

Assessment and Tasks

Clients were required to complete packaging of six Smurf party hats. The task involved a 4-step process wherein the clients placed a cardboard header piece on top of the bag opening of a stack of six hats and stapled the header onto the bag with two staples, one on either end of the cardboard. They were then required to toss the finished product into their collection box. The number of packages completed per minute served as the measure of work productivity for the study.

Procedure

A multiple-baseline design across subjects was used. The program was conducted for 1 hour each day for 8 work weeks (41 days). Each daily session was divided into two, 30-minute periods: an intervention period followed by a generalization period. Intervention and assessment were conducted by the first author, a graduate student in psychology.

Phase 1—baseline. No interventions were implemented during either 30-minute period. Clients were given their assigned work and told to work until time was up.

Phase 2—praise and prompting during intervention period. During the intervention period (first 30 minutes), a combination of verbal praise, verbal prompting, and physical encouragement (patting on the back) was delivered contingent on work performance. This intervention procedure was administered on a variable schedule (20 consequences per client per training period).

Baseline continued during the 30-minute generalization period. Throughout this period, the trainer sat in a chair approximately 10 m from the clients and ignored any requests or attempts to initiate interaction by clients. The only interaction between the trainer and the clients during this period occurred when the trainer occasionally provided more work materials.

Phase 3—self-monitoring during intervention period. Clients were trained in self-monitoring over a 3-day period. Each client was taught to press a standard grocery store counter each time he or she completed a package. At the end of the first 30 minutes, the clients recorded their work rate by circling the number of pieces they had completed on a daily production chart. Prior to beginning the first day of training, the self-monitoring techniques were demonstrated to each client. The trainer modeled the desired behavior by completing a package and then pushing the hand counter. Clients were then prompted to perform the identical behaviors. This procedure was repeated until clients exhibited one unprompted self-monitored response. Once the intervention period began, additional verbal and physical prompts to self-monitor were given for the first 25 minutes on the first day of self-monitoring and for the first 10 minutes on the second day. For the subsequent time remaining in each 30-minute intervention period, clients were afforded the opportunity to self-monitor but were not prompted. Thus, clients engaged in 5 minutes of unprompted self-monitoring on the first day of training and 20 minutes on the second day. Beginning on the third day and for the remainder of the study, clients were not prompted or verbally praised for accurate self-monitoring. Throughout this phase, verbal praise and encouragement were not given for productive work.

Baseline continued during the generalization period. Clients were given work to perform but did not have access to any self-monitoring devices.

Phase 4—self-monitoring in intervention and generalization periods. In this phase, self-monitoring continued during the intervention period, and it was extended to the generalization period

as well. No praise or prompting for self-monitoring was provided. Clients were not required to record their productivity at the end of the generalization period due to time constraints of the workshop staff.

Reliability

Interobserver agreement for the number of completed packages was established between the trainer and an independent observer (the workshop section instructor), who also recorded the production rate twice weekly. Agreement was calculated by dividing the two observers' results by each other (smaller by the larger) and multiplying by 100. Interobserver agreement was found to be 100% across all 15 sessions in which it was assessed for all clients.

RESULTS

Figure 1 shows the number of packages completed per minute by each client during the intervention and generalization periods. All clients had low and stable rates of productive behavior during the baseline phase. Mean productivity rate across clients during the intervention baseline period and generalization baseline period were 1.1 and 1.2 bags per minute, respectively. When the verbal praise and encouragement procedure was implemented in the intervention period, all clients showed a substantial increase in their productivity with a mean rate across clients of 1.7 bags per minute. During the generalization period, the clients displayed levels of performance similar to their baseline (mean rate across clients was 1.1 bags per minute). Mary did show an increasing trend in her productivity during this phase. However, her level of behavior was still below that achieved during the intervention period.

When self-monitoring was implemented, four of the five clients displayed maintenance of their behavior at levels present when verbal praise and encouragement was in effect. Mark showed an increase in his behavior throughout this phase. Mean productivity rate across clients during the intervention period of this phase was 1.8 bags per minute.

During the generalization period, Phil, Mary, Steve, and Sara continued to perform at or near baseline performance (mean rate across these four clients was 1.3 bags per minute). Mark showed a slight increase (mean = 1.3) in productivity above levels evident in the first two phases. However, his level of behavior during the generalization period was substantially below that of the intervention period when he was engaged in self-monitoring.

During the final phase, self-monitoring was implemented in both intervention and generalization time periods. All clients continued to maintain or improve their levels of productivity achieved in the intervention period of the previous self-monitoring condition (mean rate across clients was 1.9 bags per minute). In addition, the use of self-monitoring during the generalization period increased the productive behavior of all clients at or near the levels of behavior evident during the preceding intervention period. Mean rates of productivity across clients during the generalization period of this phase was 1.7 bags per minute.

Accuracy of self-monitoring was calculated by dividing the client's self-monitored work performance (as noted on the counter) by the actual performance (as determined by the trainer's count of the number of packages completed) and multiplying by 100. Clients were found to be highly accurate in the recording of their behavior. Percent accuracy was found to range from 90.7% to 97.8% (mean = 93%) across all clients.

DISCUSSION

Results showed that giving verbal praise and encouragement contingent on work production significantly improved productivity. In addition, levels of behavior attained under these contingencies were maintained during the intervention period when clients were trained to self-monitor. These findings may point to a valuable method for reducing the need for supervision in the work environment and aid the process of integrating the mentally retarded into competitive employment.

Generalization effects of the verbal praise and self-monitoring strategies were evaluated by ex-

Figure 1. Number of packages completed per minute by each client during 30-minute intervention and generalization periods.

aming performance during a time period when baseline conditions were still in effect. Results showed no generalization of productivity. Clients continued to perform at the same levels noted during the initial baseline phase.

The failure of self-monitoring procedures to result in generalization across time may have simply been due to the unavailability of the self-monitoring device during the generalization period. Support for this was evident in the final phase in which the availability of the counters for self-monitoring during the generalization period resulted in an immediate increase in work behavior.

These findings suggest that although procedures such as contingent verbal praise or self-monitoring do not initially result in generalization across time, it is possible that after these procedures have been in place, self-monitoring in alternative time periods may be quite reactive. Unfortunately, we cannot answer the question of whether previous periods of intervention are *necessary* for self-monitoring to be reactive across time. Although Shapiro and Ackerman (1983) showed that self-monitoring implemented without any prior intervention failed to produce reactive effects, further studies are needed to examine this issue specifically.

The results of this study show that self-monitoring may be an effective procedure for achieving response maintenance. Further, self-monitoring may be quite reactive at other time periods once self-monitoring has begun in the original intervention period. Although questions of interrelationships between previous periods of intervention and reactivity of self-monitoring remain, we have demonstrated the ability of mentally retarded adults to learn accurate self-monitoring. The ease with which

this procedure was implemented and acquired by the clients makes it appealing for use in settings such as sheltered workshops or classrooms where instructor resources are strained. Future studies should aid in continuing to discover methods by which self-control strategies can be useful in achieving generalization.

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