*A PARTICIPATIVE MANAGEMENT APPROACH FOR
IMPROVING DIRECT-CARE STAFF PERFORMANCE
IN AN INSTITUTIONAL SETTING*

LOUIS D. BURGIO, THOMAS L. WHITMAN, AND DENNIS H. REID

UNIVERSITY OF NOTRE DAME AND NORTHERN INDIANA
STATE HOSPITAL AND DEVELOPMENTAL DISABILITIES CENTER

The present study evaluated a participative management approach for increasing the frequency of interactions between institutional staff and severely/profoundly retarded residents. The participative management approach involved teaching staff how to use self-monitoring, standard setting, self-evaluation, and self-reinforcement procedures. These procedures were then used by staff with minimal involvement of supervisory personnel. Although supervisors provided feedback and praise to staff for using these self-management behaviors, feedback and praise were never dispensed contingent on staff interactions with residents. Results indicated that during the participative management program there was an increase in staff interactions that were contingent on appropriate resident behavior. The increase in this type of staff interaction was accompanied by an increase in appropriate resident behavior. Follow-up data on both staff and resident behaviors, although showing moderating trends, suggested generally good maintenance of the initial behavior changes. Acceptability data suggested that staff were quite receptive to the program. The advantages of participative management procedures for improving staff performance in residential settings are discussed.

DESCRIPTORS: staff management, self-regulation, staff interaction, maintenance

Considerable attention has been given in applied behavioral research to developing effective programs for managing the work performance of direct care staff in institutional settings for retarded persons. This research focus has developed because of the critical role attendant staff play in determining the welfare of institutional residents (e.g., Ivancic, Reid, Iwata, Faw, & Page, 1981; Iwata, Bailey, Brown, Foshee, & Alpern, 1976) and because of the frequent reports of unsatisfactory work performance (e.g., Brown, Willis, & Reid, 1981; Burg, Reid, & Lattimore, 1979; Iwata et al., 1976).

The research reported herein was supported by a National Research Training Award (5-T32-HD07184-03). The authors thank Deborah Keogh, Tom Thompson, and Karen Sills for their help on this project. Reprints are available from Thomas Whitman, Department of Psychology, University of Notre Dame, Notre Dame, Indiana 46556. Dennis Reid is now at Western Carolina Center, Morganton, North Carolina.

The vast majority of staff management procedures have required intensive involvement by supervisory staff. These programs have usually involved some form of contingent feedback, provided vocally by a supervisor (Brown et al., 1981; Montegar, Reid, Madsen, & Ewell, 1977), in written format (Shoemaker & Reid, 1980; Repp & Deitz, 1979), and/or posted publicly in a work station (Green, Willis, Levy, & Bailey, 1978; Panyan, Boozer, & Morris, 1970). Other procedures have included behavioral lotteries (Iwata et al., 1976; Patterson, Griffin, & Panyan, 1976), group contingencies (Reid, Schuh-Wear, & Brannon, 1978), and punishment regimes (Repp & Deitz, 1979).

Despite the reported success of such heavily supervised programs, these approaches have not escaped criticism. Gladstone and Sherman (1975) maintained that systems that include corrective feedback from management personnel are expensive because of the amount of pro-

fessional time involved in their implementation. Recently, researchers have advocated potential advantages of participative management procedures for enhancing staff performance (Gladstone & Sherman, 1975; Burg *et al.*, 1979). They have pointed out that if staff could acquire skills that would assist them in managing their own work-related behaviors in the absence of supervisory personnel, less professional time and financial investment might be required to affect desired behavior changes (Gladstone & Sherman, 1975). It has further been suggested that staff may be the most effective agents for changing their performance since they have more immediate and continuous access to their own behavior than a supervisory agent and that participative management training may provide an individual with a generic set of skills to facilitate later program implementation (Thorlesen & Mahoney, 1974). Finally, by allowing staff to participate actively in the design and implementation of a management program, there may be a greater likelihood of acceptance of that program. In this latter regard, Skinner (1953) has suggested that the greater the feeling of personal control within a situation, the lower the probability of a person exerting counter-control in that situation.

Despite the possible advantages of participative management programs, such programs have not been used frequently in institutional settings. Typically, when participative management systems have been used, they have also included considerable *direct* and/or *explicit* involvement by supervisory staff, thereby possibly defeating the original purpose of constructing these systems (Burg *et al.*, 1979; Korabek, Reid, & Ivancic, 1981; Patterson *et al.*, 1976; Seys & Duker, 1978). For example, Patterson *et al.* (1976) and Korabek *et al.* (1981) used self-recording as one component of a multifaceted staff management procedure which also included considerable supervisory staff involvement. Similarly, Seys and Duker (1978) incorporated staff involvement in setting goals as one part of a supervisor-directed management program.

The primary purpose of the current project was to develop and evaluate a staff management program that would require more participation by line staff and less participation by supervisory staff than in previous studies. A number of self-management procedures were taught to staff, including self-monitoring, standard setting, self-evaluation, and self-reinforcement, all derived from a social learning theory perspective (Karoly & Kanfer, 1982). The program was directed at increasing the frequency of effective interactions by staff with institutionalized retarded persons during a transition time when few structured activities were explicitly scheduled. Although staff-resident interactions during unprogrammed times provide potential opportunities for teaching residents, data indicate that there is often a low frequency of interactions during such times (Bensberg & Barnett, 1966; Daily, Allen, Chinsky, & Veit, 1977; Warren & Mondy, 1971). Additionally, research indicates that when staff do interact with residents, the interactions are often contingent on inappropriate or unimportant behaviors (Blindert, 1975). The focus in the current project was on increasing the amount of staff attention contingent on appropriate resident behavior. In order to examine both direct and side effects of this program, a wide variety of staff and resident behaviors were monitored and analyzed. Finally, the acceptability (Kazdin, 1980) to staff of participative management procedures relative to other types of programs frequently used in staff management was evaluated.

METHOD

Participants and Setting

The study was conducted in three residential modules of a state developmental disabilities center. Staff and residents in these modules were chosen to participate because of a concern expressed by supervisory personnel when questioned by the experimenter. These personnel indicated that a low frequency of staff-resident interactions occurred during time periods when

few formal training programs or other activities were explicitly scheduled. Ten direct care personnel participated in the study, including two female staff on module 2, and two male and two female staff on both modules 1 and 3. These persons were chosen randomly from all full-time staff persons on the modules. They were typical direct care staff similar in most respects to persons employed in other residential centers (Iwata et al., 1976; Reid et al., 1978). Amount of experience of the staff at the facility was variable, ranging from 28 yr to less than 1 yr. Educational levels ranged from less than a high school degree to 3 yr of college and ages ranged from 19 yr to 60 yr.

Fifteen severely and profoundly retarded children and adolescents also participated. There were three male residents and one female resident on module 1, ranging in age from 11 to 18 yr (mean age 15 yr); three males and three females on module 2, ranging in age from 10 to 18 yr (mean 15); and five male residents on module 3 ranging in age from 10 to 18 yr (mean 15). These residents were selected randomly from a total population of 12 residents on module 1, 11 residents on module 2, and 14 residents on module 3. Staff members were not informed which residents were included in the study. All the residents in modules 1 and 2 were profoundly retarded based on measures of intellectual and adaptive functioning (Grossman, 1977). Most of the residents on Modules 1 and 2 were being trained in toileting skills, dressing and personal hygiene. They could, however, feed themselves with staff monitoring. Module 3 included both profoundly and severely retarded residents (Grossman, 1977), all of whom had been toilet trained, although intermittent toileting accidents still occurred. Module 3 residents could feed themselves with staff monitoring and were receiving training in other self-care skills. Residents on all modules displayed some type of inappropriate behavior, including stereotypy, self-injury, and aggressive/disruptive activities. The residents on all three modules were ambulatory and essentially nonverbal or

minimally verbal, except for one resident on module 3 whose verbal skills were at an approximate 3-yr developmental level.

Staff training took place in a staff development classroom at the facility. The effects of the training and management program on staff-resident interaction were evaluated in the dayrooms of the three modules and in an outdoor playground area. The dayrooms, similar in appearance, contained a number of chairs, couches, tables, and various toys available for use by the residents. The playground area was surrounded by the living unit and a fence; a door located on each unit opened onto the playground. The playground was supplied with typical recreational equipment such as swings and slides.

Apparatus

A wrist response-counter (Behaviordalia, Inc.) was used by staff to record their frequency of interactions with the residents. Also, graph paper was dispensed to the staff for plotting staff-resident interactions. Finally, a self-praise rating form was administered to the staff to assess indirectly the amount of praise the staff person self-administered regarding the amount of interaction with residents. The form contained a 9-point scale for rating the amount of self-praise. Each point on the scale corresponded to a different adjective beginning with "lousy" and progressing through "terrible," "very poor," "poor," "okay," "good," "very good," "fantastic," to the highest rating, "super."

Behavior Definitions

Staff behavior. Six mutually exclusive categories of staff behavior were recorded. These categories were adapted, in part, from systems previously reported (Burg et al., 1979; Montegar et al., 1977). The first target category, *interactions with residents*, was defined as any activity, excluding direct care work, in which the staff member maintained physical contact with, administered an edible to, or talked exclusively to a resident. Examples included tickling a resident, calling a resident's name, and describing

something to a resident. Interactions with residents were further classified as contingent or noncontingent. *Contingent interaction* was defined as interaction by staff that was concurrent with or occurred within 1 sec of the offset of nonaggressive resident-resident interaction or resident toy contact behaviors (see next section). *Noncontingent interaction* was defined as any interaction of staff that was not contingent on resident interaction with another resident or resident toy contact. This type of interaction had to occur before the onset of these appropriate resident behaviors or later than 1 sec after their offset. *Contingent and noncontingent interactions* were further subcategorized into *delivery of edibles*, an interaction constituted by the staff placing food either in the resident's mouth or hand or delivering a potable liquid directly into the resident's mouth; *positive social interaction*, any interaction between staff and resident that involved either physical contact such as pats or hugs or a verbalization toward a resident that expressed approval for the child's behavior such as "good boy/girl" or "you're playing real nice"; *paired edibles and positive social interaction*, delivery of edibles and positive social interaction that occurred simultaneously or within 2 sec of each other; and *negative social interaction*, any interaction between staff and resident that expressed disapproval with the resident's behavior, such as verbal reprimands and physical coercion not included under direct care.

The other five staff behavior categories were defined as follows: *Direct care*, staff helping or controlling interactions with a resident, such as taking a resident to the toilet, providing medical assistance, breaking up a fight, feeding, or dressing; *indirect care*, staff custodial activities that did not involve an interaction with a resident, such as mopping the dayroom or folding clothes; *staff-to-staff interaction*, staff interaction with other staff (e.g., talking to other staff); *no demonstrable work activity*, staff not engaged in any of the previous activities or off unit (e.g., standing or sitting with no apparent activity or

eating a sandwich); *off unit*, staff not present in the dayroom or the playground area (e.g., work breaks).

Resident behavior. Observations were conducted on seven mutually exclusive categories of resident behavior. The first category was *toy contact*, defined as any part of the resident's body contacting a toy (Twardosz & Sajway, 1972). To achieve a finer analysis, the following mutually exclusive subcategories were also defined. These included *appropriate toy play*, holding a toy or playing with it anywhere in the room; and *inappropriate toy play*, flipping a toy in front of the eyes in a stereotypic manner, throwing any toy not designed for this purpose against a wall or onto the floor, or aggressing toward another person with a toy.

The other six categories of resident behavior were defined as follows: *Resident-to-resident interaction*, the resident maintained nonaggressive physical contact with or verbalized toward another child (e.g., patting another child on the back); *resident-to-staff interaction*, the resident maintained physical contact with or verbalized toward a staff member, regardless of who initiated the interaction; *disruptive/aggressive*, the resident was engaged in self-injurious behavior (e.g., hitting oneself), clothes ripping, feces smearing, fighting, hitting, kicking, or furniture-throwing; *self-stimulation*, the resident was engaged in idiosyncratic, stereotypic behavior, such as hand-waving or finger flicking (not involving a toy); *off unit*, the resident was not present in the dayroom or the playground area; and *other behavior*, the resident was not engaged in any behavior that was representative of the other six behavior categories (e.g., sitting quietly, walking across the room, watching television).

Observation System

Observers included one experimenter and two practicum students. Observer training consisted of the reading of behavior definitions and examples, question and answer periods with the experimenter, and practice observation with

feedback from the experimenter prior to participation in the study. Prior to observing during the study, observers were required to reach an overall 90% reliability level, assessed through comparison with experimenter ratings, on all categories of behavior (see Reliability for description of reliability calculation procedures). The training period consisted of training sessions on 10 days over a 2-wk period. The practicum students were not informed of the experimental hypotheses although they were informed generally that the project focused on improving staff performance. To assess both staff and resident behavior, a variable time sampling procedure (Bailey & Bostow, 1979) was used, with seven observations conducted per observation day on each module from 3:30 to 5:00 p.m. The time between observations averaged 12 min. This method of observation was conducted to minimize observer reactivity (Powell, Martindale, & Kulp, 1975).

Observation of staff behavior. At each observation time, the observer entered the module and approached the door to the dayroom. The observer could view all of the dayroom from a small window on the door. Verbalizations could also be heard from outside the room through a large vent at the top of the door. The observer noted the first distinguishable behavior of the first staff member seen and repeated this process for other staff members. It was also possible that the staff and residents were in the playground area which was immediately accessible from the dayrooms. If this occurred, the observer walked onto the playground, located the staff person and recorded his or her behavior. The observer's position was as far away from the staff as possible, yet close enough so that verbalizations could be discriminated. Observers were instructed to record the behavior of the staff person within 5 sec of when they first located the staff member.

Observation of resident behavior. Observations of resident behavior occurred after the observer had recorded a sample of staff behavior

on all three modules. Immediately after time samples had been collected on all staff members, the observers scanned the room from left to right, located the first resident in view, and recorded the first distinguishable behavior observed according to the categories described previously. The behavior of the remaining residents was then recorded in order of their relative position in a left-to-right direction, and a similar routine was conducted on the playground if necessary. Observers were again instructed to record the behavior of the resident within 5 sec of when they first located the resident.

Since a noted problem area in staff management research has been the potential reactivity of performance monitoring systems on staff behavior (Greene et al., 1978; Repp & Dietz, 1979), a number of procedures were included in an attempt to minimize reactivity. First, as stated above, the staff members were usually observed through a small window on the door of the dayroom; thus, although the staff could be rather easily observed, it was considerably more difficult for them to detect the observer. Second, the experimenters used a momentary time sampling procedure because it required only a brief glance through the window, which was maintained only until a staff or resident behavior was identified. Third, even if the observer was detected by the staff, it did not constitute a novel event for staff since similar observation systems had been operating on these modules intermittently for the preceding 4 yr for various investigations and performance review systems. Finally, the variable time sampling procedure described earlier prohibited staff from predicting exactly when they would be observed.

Reliability

Reliability checks on observations of staff and resident behavior were conducted by two observers independently and simultaneously observing the same staff member or resident. At a given hand signal or head nod by one designated

observer, an observation began. After the designated observer counted 5 sec, the observers completed their recordings and continued the process with the remaining people to be observed. Interobserver agreement was calculated for each behavior category by dividing the number of agreements as to the occurrence of a behavior by the number of agreements plus disagreements. An occurrence agreement was counted only if both observers scored the same behavior category during the same observation. This formula was used for the reliability calculations for both staff and resident behaviors and to assess occurrence, nonoccurrence, and overall occurrence plus nonoccurrence reliability (Bailey & Bostow, 1979). Reliability observations were conducted three times in each experimental condition for each of the three modules. Mean scores (and ranges) for occurrence, nonoccurrence, and overall interobserver agreements, respectively, for staff behaviors were: interaction 90% (50-100%), 96% (80-100%), 97% (93-100%); contingent interaction 84% (0-100%), 98% (86-100%), 98% (91-100%); noncontingent interaction 87% (50-100%), 98% (88-100%), 99% (93-100%); positive social interaction 82% (0-100%), 95% (71-100%), 96% (80-100%); paired edibles and positive social interaction 33% (0-100%), 98% (83-100%), 99% (93-100%); direct care 72% (0-100%), 98% (90-100%), 98% (90-100%); indirect care 58% (0-100%), 97% (90-100%), 97% (89-100%); staff-staff interaction 78% (0-100%), 96% (78-100%), 97% (86-100%); no demonstrable work activity 79% (33-100%), 94% (82-100%), 95% (86-100%); off unit 99% (91-100%), 99% (90-100%), 99% (99-100%). Negative interaction and delivery of edibles did not occur during reliability assessments. Nonoccurrence interobserver agreement for both of these behaviors was 100%.

Mean scores (and ranges) for occurrence, nonoccurrence, and overall interobserver agreements, respectively, for resident behaviors were as follows: toy contact 80% (0-100%), 98% (86-100%), 98% (90-100%); appropriate toy

play 84% (50-100%), 97% (86-100%), 97% (90-100%); inappropriate toy play 75% (0-100%), 98% (94-100%), 98% (95-100%); resident-resident interaction 33% (0-50%), 99% (98-100%), 99% (98-100%); resident-to-staff interaction 82% (50-100%), 98% (92-100%), 99% (93-100%); disruptive/aggressive 25% (0-50%), 99% (98-100%), 99% (95-100%); self-stimulation 79% (33-100%), 95% (88-100%), 96% (90-100%); off-unit 100%, 100%, 100%; other 89% (71-100%), 92% (81-100%), 95% (89-100%). Occurrence reliabilities dropped below 80% for both staff and resident behavior only for assessments conducted during sessions when a behavior was at a very low frequency (1-3 occurrences across all staff or residents).

Experimental Procedures

Prebaseline. Two to three weeks prior to the initiation of baseline observations, the staff on all modules were brought together before the beginning of their shift for an hour-long remedial training session with the experimenter and the module supervisor. The purpose of the session was to refamiliarize the staff with appropriate procedures for interacting with residents. The staff had previously been exposed to this information through in-service training and various workshops offered by the staff development department in the facility. The training session included verbal instruction, modeling of the appropriate behaviors by the experimenter, and role playing of these same behaviors by the staff with feedback from the experimenter. It was also explained to staff that this training session should help them interact more easily and productively with the residents. It was indicated that staff-resident interactions were especially important during unstructured time periods when few formal activities were explicitly scheduled. The experimenter emphasized that it was not only important to interact more frequently with the residents, but that it was also important that these interactions be of a positive nature and that they occur contingent on appropriate resi-

dent behaviors. The staff were also reminded how to dispense paired edibles using reinforcer aprons and to provide praise statements to the residents contingent on appropriate resident behavior. Appropriate resident behavior was described as involving either toy contact or non-aggressive interaction with peers. Instructions were given to use edibles chosen for their nutritional quality (raisins, roasted soybeans, pure apple juice) as well as to pair an edible with a praise statement and, when possible, with tactile stimulation. The importance of gradually decreasing the number of edibles dispensed while maintaining praise statements and tactile stimulation as residents engaged in more appropriate behavior was also discussed. Finally, staff were instructed to ignore inappropriate behavior when possible.

Baseline. Staff members from all three modules were informed during a weekly meeting at the beginning of baseline that program observations would be made in the dayroom between 3:30 p.m. and 5:00 p.m. Due to the low amount of programming scheduled during this unstructured time period, the staff's main responsibility was to interact with the residents in a positive manner and generally to maintain order in the dayroom. Supervisors were instructed to continue normal interactions with the direct care staff, which generally included giving intermittent reminders of job responsibilities, requesting special jobs such as taking a resident to the physician's office, and discussing work schedules.

Participative management program. In order to increase staff contingent interactions with residents on the module, a participative management program was implemented that included several components. These components paralleled those used in effective supervisory managed programs (see Panyan et al., 1970; Quilitch, 1978), but were designed to be implemented by the direct care staff. More specifically, four self-management components were introduced. First, the daily *goal* for the number of interactions desired was decided on by each module's direct care staff as a group, as opposed to

the goal being determined exclusively by the supervisor (e.g., Burg et al., 1979). Second, staff were instructed how to use the *self-monitoring* apparatus, as opposed to having their behavior monitored only by a supervisor (e.g., Montegar et al., 1977). Third, staff were instructed how to *graph their data*, instead of having their data graphed and displayed for them by a supervisor (e.g., Reid et al., 1978). Fourth, staff were encouraged to administer *self-praise* for meeting or exceeding their daily goal, as opposed to praise being provided by the supervisor (e.g., Brown et al., 1981).

This program was sequentially introduced to the staff on each module during an hour-long meeting with the experimenter and the module supervisor, before the beginning of the work shift. Staff were reminded of the importance of interacting with the residents during unstructured time periods, and were informed that a new procedure would be instituted in the dayroom for the purpose of helping them to increase their interactions. The experimenter informed the staff that most of the responsibility for running this program would be theirs. He indicated he would help them choose a reasonable number of staff-resident interactions as a *goal*, but stressed that the choice was ultimately theirs. Such a practice of an external agent supplying guidelines for the target population as part of a goal setting program is common (Baling, 1980; Brownell, Colletti, Eisner-Hershfield, Hershfield, & Wilson, 1977). The guidelines presented by the supervisor were established based on the frequency of staff-resident interactions displayed during baseline in each module. The suggested range represented a 30-50% increase in frequency. The staff on all three modules chose a goal of 50 interactions for the period between 3:30 and 5:00 p.m.

The *self-monitoring* and *graphing* instruments were then distributed to the staff along with a rationale and instructions for their use. It was noted that the staff's self-monitoring would preclude the necessity for supervisor monitoring. The experimenter modeled the correct use of the

instruments and then asked the staff to demonstrate those behaviors. The staff were instructed to self-record only interactions that were contingent on nonaggressive resident interaction and/or toy contact. The experimenter did not differentiate between the types of toy play during the training sessions because it was feared that a request to make this discrimination in the initial stages of the project might present undue difficulty for staff and discourage their acceptance and implementation of the participative management system. It was assumed that a discrimination would be formed by the staff, to some extent, without direct discrimination training. Furthermore, it was believed that the initial goal should be to increase toy contact per se, regardless of its appropriateness. With this goal achieved, staff could then differentially reinforce the more appropriate toy play behaviors.

Staff were informed that they would be given the response recorder at the beginning of the targeted afternoon time period, and were asked to return it to the supervisor's office at the end of this period for safekeeping. When the self-recording instrument was handed in, the supervisor and/or experimenter thanked the staff for using the apparatus. Special care was taken to ensure that the praise was contingent on using the instrument and *not* on the number of interactions with residents. Hence, the praise statements were made regardless of how many interactions were indicated on the recorder, as long as at least one response was recorded for that day.

The graphs on which the staff entered their data were kept in the supervisor's office. After handing in the response counter, the staff then entered their daily frequency of interactions on the graph. The supervisor or experimenter thanked them for using the graph, although once again, care was taken not to praise staff for the frequency of interaction, but merely for entering data on the graph.

Finally, the experimenter stressed the importance of *self-praise* in a self-management program. A number of examples were presented

that showed how people regularly dispense self-praise and self-punishment to regulate their own behavior. It was suggested to the staff that they covertly praise themselves for meeting their goal for staff-resident interactions. They were cautioned, however, that at times, events (e.g., resident disruptions, staff shortages on the modules) might prevent them from reaching their goal. Therefore, they were further instructed to evaluate their performance in relation to the conditions on the module for that day and to self-praise accordingly. Thus, self-praise could be dispensed when the formal goal had *not* been reached, although it was stressed that they should strive for goal attainment. After self-praise was administered, staff were asked to indicate on the self-praise form the amount of praise they gave themselves.

When the program had been initiated on all three modules, a number of staff on each module inquired about the effects of the program on the residents' behavior. In response to the staff's request, graphs of the appropriate and inappropriate resident behavior were made available to the staff. The graphs displayed only average performances across all residents observed in order to prevent revealing the identity of the individual residents included in the study. These graphs were provided beginning with session 31 for module 1, session 41 for module 2, and session 59 for module 3. These graphs were kept in the supervisor's office, and were updated daily by the experimenter. After having recorded their data and completed the self-reinforcement rating form at the end of a session, the staff were reminded by the supervisor or experimenter that the resident graphs were available for inspection. However, the staff were not required to look at the resident graphs.

Maintenance and follow-up. The maintenance procedure was identical to that used during the participative management program except that during maintenance the resident behavior graphs were not available for inspection by the staff. This has recently been termed a partial-withdrawal design (Rusch & Kazdin, 1981).

Follow-up data were collected seven times in modules 1 and 3, and five times in module 2 over a period of 6 wk. Staff members were not told when follow-up observations would occur. Follow-up data were not collected after 6 wk due to a change in module conditions at that time. Specifically, there was a change in the school program that most of the residents attended during the day that prohibited all residents from returning to the unit at 3:30 p.m. Also, several recreational and formal training programs were subsequently rescheduled, causing a change in the unit conditions between 3:30 and 5:00 p.m.

Experimental Design

A multiple baseline design across groups of staff in the three modules was used. Within each module the participative management system was instituted simultaneously for all staff. After the program was in effect across modules, the maintenance and follow-up procedure was introduced simultaneously to the three modules.

Staff Acceptability Measures

A staff management appraisal form was administered to the staff in order to assess their views on the acceptability and effectiveness of the participative program as well as a number of commonly used staff management programs (see Kazdin, 1980). The staff had been exposed to many of these programs in the past. Five to six weeks after termination of the project the experimenter handed the form out to the staff persons who were involved in the project, as well as six staff persons who were not included in the study. These untrained staff persons were selected randomly from the same modules as the trained staff, with two staff selected from each of the three modules. Trained and untrained staff members were included in order to assess for possible differential effects related to having been exposed to the participative management program. After being given a verbal description of each management system (see Table 4) the staff were asked to rate each sys-

tem on a scale from 1-10 (1 = "not at all;" 10 = "extremely") on two different dimensions. First, they were asked to rate the procedures in terms of how effective they thought they would be in increasing staff-resident interactions. Second, they were asked to rate the procedures in terms of their general acceptability as a management approach.

RESULTS

Staff Behaviors

Table 1 shows the group mean percentages of staff behaviors during baseline, the participative management program, and follow-up phases for each of the three modules. During baseline, the staff on all modules generally displayed a low frequency of overall staff-resident interaction (mean 19% for the three modules). Although there was noticeable variability across the modules, two of the modules were similar in their frequency of contingent and noncontingent interaction, while the third had a higher frequency of noncontingent interaction. During the participative management program, the percentage of overall interaction increased on all three modules to a mean of 40%. Most of the staff interaction at this point was contingent on appropriate resident behavior. Specifically, contingent interaction increased from 5% to 25% on module 1, from 4% to 22% on module 2, and from 13% to 48% on module 3. Noncontingent interaction decreased on modules 1 and 3 and increased slightly on module 2 during the program. Virtually all interaction, contingent and noncontingent, involved social interactions as opposed to the delivery of edibles.

Table 1 also indicates that there was little consistent change in the mean level of direct and indirect care by staff during the intervention. Staff-staff interaction declined on all modules with an average reduction of eight percentage points across modules, with 9 out of 10 staff persons displaying this decrease. Nonwork behavior also displayed a consistent postintervention

Table 1

Mean percent occurrence of staff behaviors for all staff persons in modules 1, 2, and 3 during baseline (B'line), the participative management program (P-M) and follow-up (F-U).

<i>Behavior Category</i>	<i>Module 1</i>			<i>Module 2</i>			<i>Module 3</i>		
	<i>B'line</i>	<i>P-M</i>	<i>F-U</i>	<i>B'line</i>	<i>P-M</i>	<i>F-U</i>	<i>B'line</i>	<i>P-M</i>	<i>F-U</i>
Overall Interaction	19	30	38	11	31	28	26	58	55
Contingent Interaction	5	25	26	4	22	23	13	48	54
Noncontingent Interaction	14	4	13	7	9	6	14	9	1
Negative Interaction	0	0	0	0	0	0	0	0	0
Delivery of Edibles	0	0	0	0	0	0	0	0	0
Positive Social Interaction	19	30	38	11	31	28	25	56	51
Paired Edibles & Positive Social Interaction	0	0	0	0	0	0	0	2	4
Direct Care	13	16	7	21	19	19	10	8	7
Indirect Care	8	16	18	15	10	14	10	10	12
Staff-Staff Interaction	38	28	25	17	14	15	28	16	17
Nonwork	24	11	13	37	26	24	27	10	10

tion average decrease of 14 percentage points across modules with all 10 staff members displaying this trend.

Individual staff contingent interaction data during baseline, intervention, and follow-up phases are shown in Figure 1. These data indicate that for the most part the group changes in contingent interaction were representative of individual changes. Although Figure 1 displays a considerable amount of intrasubject variance during the intervention and intercondition data overlap, all staff on each of the modules displayed an increase in their level of contingent interaction with the residents.

Follow-up data, as summarized in Table 1, indicate that the level of contingent interaction was comparable to that achieved during the treatment phases. However, an examination of Figure 1 shows that in contrast to the treatment phase, during which all the staff members increased their levels of contingent interactions, during the follow-up observations there were considerable inter-individual differences in the direction of change in percent occurrence of interactions. More specifically, four staff persons

increased their contingent interaction from 7 to 16%, three persons maintained the levels achieved during intervention (i.e., within a range of $\pm 3\%$), and three staff persons decreased at amounts from 15% to 23%. Finally, Table 1 indicates that the decreases in mean level of staff-staff interaction and nonwork behavior manifested during the intervention phase remained at approximate intervention levels during follow-up observations.

Resident Behaviors

Table 2 shows the overall mean levels of resident behaviors in the three modules during each experimental condition. A mean increase in level of toy contact occurred during the participative management program for each module: from 9 to 38% in module 1, from 24 to 34% in module 2, and from 22 to 43% in module 3. Moreover Table 3 indicates these changes were consistent across individual residents. All four residents increased their contact with toys during intervention on module 1, four of six residents increased on module 2, and four of the five residents on module 3 showed an increase.

Fig. 1. Percentage of observation samples in which contingent interaction occurred per session for each staff member during each experimental condition. Sessions occurred once per day although each staff member was not observed each session because of varying work schedules. Asterisks indicate when the resident graphs were posted.

Further examination of Table 2 indicates that appropriate toy play, which averaged 15% across modules during baseline, increased to 28% during intervention. However, Table 2 shows that inappropriate toy play, which averaged 4% across modules during baseline, also

Table 2

Mean percent of resident behaviors during baseline (B'line), the participative management program (P-M) and follow-up (F-U) for modules 1, 2 and 3.

Behavior Category	Module 1			Module 2			Module 3		
	B'line	P-M	F-U	B'line	P-M	F-U	B'line	P-M	F-U
Toy Contact	9	38	28	24	34	23	22	43	54
Appropriate Toy	7	25	18	19	22	16	18	36	48
Inappropriate Toy	2	12	10	5	11	7	4	7	5
Resident-Resident Interaction	1	0	0	0	1	0	0	0	0
Disruptive/Aggressive	1	0	0	1	0	0	0	0	0
Self-Stimulation	22	19	23	21	27	37	28	19	17
Resident/Staff Interaction	13	8	12	5	6	6	12	4	3
Other	53	34	37	49	34	34	37	34	27

increased, albeit to a lesser extent, to 10% during the participative management program. The only other behavioral category which displayed any consistent pattern of change was "other behavior," which included child inactivity and non-productive behavior. More specifically, Table 2 shows a mean decrease in level from 53% in

baseline to 34% during intervention in module 1, with all four residents manifesting this decrease; from 49% to 34% in module 2, with all six residents showing a decrease; and from 37% to 34% in module 3, with three of the five residents displaying a decrease.

With the exception of three residents in module 2, follow-up data suggest that treatment gains for toy contact maintained above baseline levels (Table 3). The decrease in other behavior also was maintained (See Table 2).

Table 3

Mean percent of toy contact for individual residents during baseline, the participative management program, and follow-up in modules 1, 2, and 3.

Residents	Baseline	Participatory Management	Follow-Up
Module 1			
Carrie	1	26	11
Lou	14	55	48
Joe	9	30	26
Jason	12	42	37
Module 2			
Ron	6	36	25
Vickie	42	18	4
Louis	47	66	32
Laura	23	11	9
Mary	14	47	37
Jim	11	28	33
Module 3			
L. D.	11	30	48
Tom	24	50	63
Fred	31	61	54
Al	23	19	39
Sam	19	52	61

Correlations

Pearson product-moment correlations were calculated to examine the relationships between the frequency of individual staff contingent interaction as graphed by staff members with the amount of self-praise administered by the staff for this performance (as assessed by the self-praise rating forms); and between the frequency of individual staff contingent interaction as graphed by staff members with the objective observer's rating of the same behavior. Results showed that staff self-graphing of contingent interaction correlated significantly with both their ratings of self praise, $r = .64, p < .0001$, and with the amount of contingent interaction reported by the external observers, $r = .54, p < .0001$.

Table 4

Means and ranking of staff ratings of effectiveness and acceptability of nine staff management procedures.

Ranking	Effectiveness		Acceptability	
	Procedure	Rating ^a	Procedure	Rating
1	Self-Management	7.8	Increased Lunch-Hour	
			Contingency	7.9
2	Contingency Money	7.3	Contingent Money	7.6
3	Increased Lunch-Hour			
	Contingency	6.9	Self-Management	7.1
4	Contingent Loss of Comp Time	6.5	Performance-Based Lottery	6.3
5	Performance-Based Lottery	6.4	Contingent Supervisor Praise	6.3
6	Contingent Supervisor Praise	5.3	Contingent Preferential Duties	4.6
7	Contingent Loss of Money	5.1	Publicly Posted Feedback	3.8
8	Contingent Preferential Duties	5.0	Contingent Loss of Comp Time	1.8
9	Publicly Posted Feedback	4.5	Contingent Loss of Money	1.4

^aRatings were conducted with a Likert-type scale with values ranging from 10 (most effective/acceptable) to 1 (least effective/acceptable).

Staff Management Appraisal Ratings

Table 4 shows the mean ratings by the staff concerning their perceptions of the effectiveness and acceptability of nine staff management procedures or consequences. Since there were no differences in the ratings between the trained ($n = 6$) and untrained ($n = 6$) staff persons, the data for the two groups were combined. These results indicate that the participative (self-) management system was rated by the staff as being the most effective of the nine systems presented. The participative management system was also rated as highly acceptable to the staff members, although increased lunch-hour and money contingencies were rated as being more acceptable.

DISCUSSION

The results of this study suggest that changes in direct care staff, and consequently resident behaviors, can be obtained through the use of a participative management system that does not require intensive supervisory involvement. Increases in the frequency of staff-resident interactions occurred for all 10 staff persons after

staff were taught to *set performance standards*, *monitor* and *graph* their behavior, and *self-praise* after personally evaluating their performance. Correlational data suggested that staff were able to monitor and praise their own behavior accurately. It was also found that staff attended more to residents' appropriate behavior during the participative management program as opposed to during baseline. The changes in staff and resident behaviors assume greater significance when considering that participative management approaches are likely to be more cost efficient than programs requiring more supervisory involvement because of the higher cost of supervisory/professional time.

Comparing the amount of change in staff-resident interactions in this study relative to that in previous investigations is difficult because of procedural differences as well as lack of precise data analyses in earlier work. For example, the exact amounts of changes in individual staff frequencies of interaction often have not been presented in past studies; only the number of staff whose interaction frequencies increased were noted (e.g., Brown et al., 1981; Iwata et al., 1976; Montegar et al., 1977). Also, in a

number of cases, no individual staff data were presented (e.g., Seys & Duker, 1978; Sneed & Bible, 1979). Comparing the results of this study to studies in which the number of staff showing change was reported, the current results are equal or superior in all instances. *All* staff in the participative management program increased their frequencies of interaction. The current results support those reported by Burg *et al.*, (1979) who also found that an increased frequency of interaction by the staff appeared to supplant nonproductive behaviors without interfering with traditional caretaking responsibilities. In the present study nonwork-related behavior of staff decreased while direct and indirect care behaviors were maintained at baseline levels.

While the present results seem to be at least as, if not more, significant than previous studies that focused on increasing staff-resident interactions, there was considerable intra-subject variance for interactions. Although this variability renders the visual analysis of these data more difficult, there are several explanations for this pattern of results. First, throughout the study, a multitude of extraneous variables typical of those routinely occurring in institutional settings (see Burg *et al.*, 1979; Seys & Duker, 1978), were probably affecting staff behavior, including staff shortages and differential caretaking responsibilities. For example, although three or four staff were scheduled to be working on a module, frequently only one or two staff were actually present to supervise between 11 and 14 severely and profoundly retarded persons. During periods when such shortages occurred, a larger proportion of staff time was taken up by direct and indirect care responsibilities with corresponding decreases in overall and contingent interaction. Although specific data are not presented, a comparison was performed between assessments taken on short staff days ($n = 1$) and normal staff days ($n = 2$ or more). These data showed that there were fewer overall and contingent interactions, and more direct and indirect care interactions on short staff

days than on days when normal staff/resident ratios occurred. Such staff shortages were less of a problem on module 3 than in the other modules. A second explanation of the variability is suggested by Karoly and Kanfer (1982) who point out the differential responsiveness of individuals to programs that include self-management components.

In addition to changes in staff behavior, 12 of the 15 residents displayed increases in frequency of toy contact during the participative management program. As during baseline, toy contact during intervention consisted of predominantly appropriate toy play behaviors. It should be noted, however, that after intervention, in addition to an increase in appropriate toy play behavior, inappropriate toy play increased slightly on all modules. These small increases in inappropriate toy play behaviors may have been due to the experimenter's decision, previously discussed, not to define inappropriate and appropriate toy play clearly for the staff. The decision to target resident contact with toys irrespective of the appropriateness of the toy play behaviors was based on several factors. First, as discussed earlier, it was feared that requiring the staff to discriminate between appropriate and inappropriate toy play may have been an excessive requirement, adding unneeded complexity to the program. Second, as acknowledged by Twardosz and Sajway (1972), appropriate toy play is a complex skill which may require extensive shaping procedures when it is being taught to severely/profoundly retarded children. Thus, toy contact was considered to be a logical initial and developmentally appropriate step in training this skill. Also, the significance of the increases in resident toy contact is enhanced because of the accompanying decrease in "other behavior," a behavioral category that included both resident inactivity and what were considered to be nonproductive behaviors. Thus, after intervention, the residents were spending more time interacting with toys when "normally" (i.e., in baseline) they would have been inactive. However, resident-resident

interaction, although considered an appropriate behavior, remained at a very low frequency throughout the project. The failure to modify resident-resident interaction is probably due to its infrequent occurrence (less than 1% in all phases) and the nature of the modification procedure used. Because this behavior seldom occurred and subsequently could not often be reinforced, the use of prompting and shaping procedures would have been more appropriate.

At first glance, results in Tables 1 and 2 appear to contradict each other regarding interactions between staff and residents during the participative management program. Specifically, results in Table 2 with resident behavior suggest that there was no change or a slight decrease in interactions during the program. However, such results can be explained by examining the staff-resident ratios and the observation system used. Staff were expected to interact with *all* residents (target and nontarget) and were unaware which residents were targeted for the study. Because of these expectations, it was more likely that staff would be rated as interacting with a resident than it would be for a targeted resident to be interacting with a staff member. For example, when staff on Module 1 were observed, they had the opportunity of interacting with a large number of residents (target and nontarget), specifically 12. In contrast the four target residents on Module 1 had to compete with eight nontargeted residents for the attention of the staff person. Thus, in this sense the staff member had a greater opportunity to be observed interacting with a resident (target and nontarget) than a targeted resident had to be interacting with the staff member.

Although changes in both staff and resident behavior suggest that the present participative management procedure was effective, the follow-up data require that this conclusion be somewhat modified. Interstaff comparisons indicated that staff behavior was variable during maintenance, with seven staff either increasing or maintaining their treatment levels of contingent interaction and three staff decreasing their

levels of contingent interaction. The follow-up data for resident toy contact also shows a moderating trend. However, the mean levels of toy contact for 12 of the 15 residents were still considerably above baseline levels. In general unprogrammed changes in environmental conditions occurring during this phase on the modules may have contributed to these results. At approximately the third follow-up assessment, there was a marked change in the activities on all modules due to changes in school and other program schedules that resulted in an adjustment of staff duties.

The participative management approach used in this study involves a multifaceted treatment package with a number of potentially active variables. It is, of course, impossible to separate these variables and isolate which accounted for the observed behavior change. There are a number of possible explanations for the overall effectiveness of the program. One explanation is suggested by Rachlin (1974) and Nelson and Hayes (1981) who contend that self-management behaviors serve as cues to "remind" the person of the ultimate environmental consequences that control response frequency. In relation to the current project, this could mean that the main incentive for engaging in the self-management and interactional behaviors was their ultimate effect on the children's appropriate and inappropriate behavior. That is, the higher the rate of contingent staff-resident interaction, the higher the rate of resident appropriate behaviors, resulting in turn, in a more reinforcing environment for both staff and residents.

As with all programs that include self-management components, the possibility that demand characteristics are operating must be acknowledged, such as perceived supervisor approval for increases in contingent interaction and/or assumed negative contingencies for failure to modify the frequency of these interactions (see Jones, Nelson, & Kazdin, 1977, for a more detailed discussion of external influences in self-management programs). However, in this project, numerous measures relating to the method

of data collection and instructions to staff (see Procedure section) were introduced to reduce the influence of these types of variables on staff interactional behaviors. These measures served both to reduce external influences and to make this program considerably more participative for staff than previous programs that involved numerous external/supervisory procedures and/or only one self-management component (Burg *et al.*, 1979; Korabek *et al.*, 1981; Patterson *et al.*, 1976; Seys & Duker, 1978).

Regarding the staff's views of the participative management program, the ratings suggested that staff considered the present system to be the most effective of the nine systems described as well as being personally acceptable to them. The effectiveness ratings suggest that the system conveyed an adequate amount of face validity, while the acceptability rating seems to support the hypothesis that participative management interventions will be met with more approval. The survey also revealed that supervisor praise, a frequently used contingency for staff performance, was rated as being only moderately effective and acceptable. This contradicts previous findings (Greene *et al.*, 1978; Korabek *et al.*, 1981). Additionally, public posting of staff performance, another frequently used procedure, was rated as being the least effective and was not considered very acceptable by staff. However, the program described to the staff entailed individual public performance posting. Group public performance posting or posting of client performance (Greene *et al.*, 1978) was not evaluated. These results point out the importance of including social acceptance measures in staff-management research and the need for further comparative evaluations regarding the acceptability of different types of staff management programs.

In summary, the participatory management program in this study was considered to be an easily applied procedure for effecting positive change in staff behaviors. Direct care staff appropriately used self-management behaviors to modify their frequency of contingent interac-

tions with residents and these changes were accompanied by positive changes in resident behavior. Thus, the present findings are promising and present a compelling case for continued research into participatory management procedures.

REFERENCES

- Bailey, J. S., & Bostow, D. E. *Research Methods in Applied Behavior Analysis*. Tallahassee, Fla.: Copy Grafix, 1979.
- Baling, J. Performance standards and reinforcement effects on children's academic performance: A test of social learning theory. *Cognitive Therapy and Research*, 1980, 4, 409-418.
- Bensberg, G. J., & Barnett, C. D. *Attendant training in southern residential facilities for the mentally retarded*. Atlanta, Ga.: Southern Regional Education Board, 1966.
- Blindert, H. D. Interactions between resident and staff: A qualitative investigation of an institutional setting for retarded children. *Mental Retardation*, 1975, 13, 38-40.
- Brown, K. M., Willis, B. S., & Reid, D. H. Differential effects of supervisory verbal feedback and feedback plus approval on institutional staff performance. *Journal of Organizational Behavior Management*, 1981, 3, 57-68.
- Brownell, K. D., Colletti, G., Eisner-Hershfield, R., Hershfield, S. M., & Wilson, G. T. Self-control in school children: Stringency and leniency in self-determined and externally imposed performance standards. *Behavior Therapy*, 1977, 8, 442-455.
- Burg, M. M., Reid, D. H., & Lattimore, J. Use of a self-recording and supervision program to change institutional staff behavior. *Journal of Applied Behavior Analysis*, 1979, 12, 363-375.
- Dailey, W. F., Allen, G. H., Chinsky, J. M., & Veit, S. W. Attendant behavior and attitudes toward institutionalized retarded children. *American Journal of Mental Deficiency*, 1977, 78, 586-591.
- Gladstone, B. W., & Sherman, J. A. Developing generalized behavior-modification skills in high-school students working with retarded children. *Journal of Applied Behavior Analysis*, 1975, 8, 169-180.
- Greene, B. F., Willis, B. S., Levy, R., & Bailey, J. S. Measuring client gains from staff implemented programs. *Journal of Applied Behavior Analysis*, 1978, 10, 75-84.
- Grossman, J. H. (Ed.). *Manual on terminology and classification in mental retardation*. Washington, D.C.: American Association on Mental Deficiency, 1977.

- Ivancic, M. T., Reid, D. H., Iwata, B. A., Faw, G. D., & Page, T. J. Evaluating a supervision program for developing and maintaining therapeutic staff-resident interactions during institutional care routines. *Journal of Applied Behavior Analysis*, 1981, 14, 95-107.
- Iwata, B. A., Bailey, J. S., Brown, K. M., Foshee, T. J., & Alpern, M. A performance-based lottery to improve residential care and training by institutional staff. *Journal of Applied Behavior Analysis*, 1976, 9, 417-431.
- Jones, R. T., Nelson, R. E., & Kazdin, A. E. The role of external variables in self-reinforcement: A review. *Behavior Modification*, 1977, 1, 147-178.
- Karoly, P., & Kanfer, F. H. *Self-management and behavior change: From theory to practice*. New York: Pergamon Press, 1982.
- Kazdin, A. E. Acceptability of alternative treatments for deviant child behavior. *Journal of Applied Behavior Analysis*, 1980, 13, 259-273.
- Korabek, C. A., Reid, D. H., & Ivancic, M. T. Improving needed food intake of profoundly handicapped children through effective supervision of institutional staff. *Applied Research in Mental Retardation*, 1981, 2, 69-88.
- Montegar, C. A., Reid, D. H., Madsen, C. H., Jr., & Ewell, M. D. Increasing institutional staff to resident interactions through in-service training and supervisor approval. *Behavior Therapy*, 1977, 2, 533-540.
- Nelson, R. O., & Hayes, S. C. Theoretical explanations for reactivity in self-monitoring. *Behavior Modification*, 1981, 5, 3-14.
- Panyan, M., Boozer, H., & Morris, M. Feedback to attendants as a reinforcer for applying operant techniques. *Journal of Applied Behavior Analysis*, 1970, 3, 1-4.
- Patterson, F. T., Griffin, J. C., & Panyan, M. C. Incentive maintenance of self-help skill training program for non-professional personnel. *Journal of Behavior Therapy and Experimental Psychiatry*, 1976, 7, 249-253.
- Powell, J., Martindale, A., & Kulp, S. An evaluation of time-sample measures of behavior. *Journal of Applied Behavior Analysis*, 1975, 8, 463-469.
- Quilitch, H. R. Using a simple feedback procedure to reinforce the submission of written suggestions by mental health employees. *Journal of Organizational Behavior Management*, 1978, 1, 155-163.
- Rachlin, H. Self-control. *Behaviorism*, 1974, 2, 94-107.
- Reid, D. H., Schuh-Wear, C. L., & Brannon, M. E. Use of a group contingency to decrease staff absenteeism in a state institution. *Behavior Modification*, 1978, 2, 251-266.
- Repp, A. C., & Deitz, D. E. D. Improving administrative-related staff behaviors at a state institution. *Mental Retardation*, 1979, 17, 185-192.
- Rusch, F. R., & Kazdin, A. E. Toward a methodology of withdrawal designs for the assessment of response maintenance. *Journal of Applied Behavior Analysis*, 1981, 14, 131-140.
- Seys, D. M., & Duker, P. C. Improving residential care for the retarded by differential reinforcement of high rates of ward-staff behaviour. *Behavioural Analysis and Modification*, 1978, 2, 203-210.
- Shoemaker, J., & Reid, D. H. Decreasing chronic absenteeism among institutional staff: Effects of a low cost attendance program. *Journal of Organizational Behavior Management*, 1980, 2, 317-328.
- Skinner, B. F. *Science and Human Behavior*. New York: The Free Press, 1953.
- Sneed, T. J., & Bible, G. H. An administrative procedure for improving staff performance in an institutional setting for retarded persons. *Mental Retardation*, 1979, 2, 92-94.
- Thoresen, C. E., & Mahoney, M. J. *Behavioral self-control*. New York: Holt, Rinehart and Winston, 1974.
- Twardosz, S., & Sajway, T. Multiple effects of a procedure to increase sitting in a hyperactive retarded boy. *Journal of Applied Behavior Analysis*, 1972, 5, 73-78.
- Warren, S. A., & Mondy, L. W. To what behaviors do attending adults respond? *American Journal of Mental Deficiency*, 1971, 75, 449-455.

Received July 6, 1982

Final acceptance September 15, 1982