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Training and management of event data collection with developmental disabilities treatment staff

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TRAINING AND MANAGEMENT OF EVENT DATA COLLECTION WITH DEVELOPMENTAL DISABILITIES TREATMENT STAFF

By
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"To him who sits on the throne, and to the Lamb, be praise and honor and glory and power, for ever and ever!"

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ABSTRACT

Staff management in developmental disabilities has long been the subject of behavioral researchers. An important deficiency in this area of investigation has been the study of treatment staff use of objective systems of measurement that serve as the basis of evaluating the treatment of resident maladaptive behavior. The present research examined the effects of common staff management interventions, a behavioral inservice, monitoring and verbal feedback, and supervisor presence, on direct care staff's accuracy and reliability in recording resident maladaptive behavior events.

The behavioral inservice resulted in improvements in percentage of maladaptive behavior events recorded for only one of four of the treatment staff groups studied. Significant improvements by all staff were demonstrated with the introduction of a brief monitoring period (10% of the observation period) followed by immediate presentation of verbal feedback regarding staff performance. These improvements were maintained when the verbal feedback was removed, in the supervisor presence condition. Performance improvements were also seen in generalization observation

sessions where the latter two sets of experimental stimuli were not applied.

The validity of the interventions studied was demonstrated by extremely high and consistent levels of "correct" performance on a feedback process evaluation instrument. No detrimental effects were seen in staff performance of other important duties. In fact, enhanced performance in other work areas occurred concomitant with improvement in event data recording, suggesting another type of generalization. Finally, in a consumer satisfaction survey, all participating staff indicated that the interventions were "helpful" and "likable."

INTRODUCTION

Treatment of the developmentally disabled has consistently been the subject of behavioral research for nearly a quarter of a century (e.g., see Bailey, Shook, Iwata, Reid & Repp, 1986). The onset of this research coincided with the beginning of the deinstitutionalization movement of the late 1960s and early 1970s which expanded the range of services clients received. Prior to efforts to move developmentally disabled individuals into community-based settings, most of the care they received was custodial. However, applied behavioral research began to illustrate that the aberrant, sometimes dangerous behavior exhibited in this population can often be reduced or eliminated, and, adaptive skills can be acquired by clients through systematic programming. Subsequently, the focus of treatment facilities changed from custodial care to training of adaptive behavior.

The scope of the behavior analytic research with developmentally disabled people has ranged from the evaluation of techniques for facilitating the acquisition and generalization of self-care, social, community survival, and vocational skills (e.g., Horner & Keilitz, 1975; Schepis, Reid, Fitzgerald, Faw, van den Pol, & Welty, 1982; Cuvo, Leaf, & Borakove, 1978; Page,

Iwata, & Neef,1976) to the analysis of methods for reducing and eliminating aggressive, disruptive, stereotypic, and self-injurious behaviors (e.g., Foxx & Shapiro, 1978; Lovaas & Simmons, 1969; Favell, McGimsey, & Jones, 1978). The methodological rigor of the research coupled with the development of techniques that require precise implementation for optimal effects (Bailey, 1990) pointed, early in the development of applied behavior analysis, to the question of generalized use of experimental findings in treatment settings (Ayllon & Michael, 1959; Panyan, Boozer, & Morris, 1970). The need for a technology of training and managing the implementation of experimentally validated procedures, as well as more general and traditional staff activities, became apparent. Thus, based on the same principles that served as a foundation for the development of treatment services, the study of staff training and management was initiated.

An underlying principle in behavioral research is that skill and performance deficits have their origins in environments, not in individuals, and as Reid, Parsons, & Green (1989a) suggest, the "primary cause" of performance deficits with human service personnel is "ineffective supervision and management." A primary objective of staff management research has been to facilitate the use of behavioral technology by "on-line" staff using various supervisory techniques (Reid et al.,1989a). Treatment agencies in developmental disabilities, unlike other

areas of psychological service provision, use the non-professional as primary direct care providers; this includes the delivery of professionally developed training and behavior reduction programs (Gardner, 1972a, 1972b; Reid et al., 1989a, p. 125), and collection of data used to evaluate such programs. Staff in these positions spend more time with clients than those in any other therapy capacity, and are a critical part of their habilitative environment. As a result, the staff training and management literature has most often targeted direct care staff, direct care supervisors, and teacher aids, typically with high school educations and minimal experience with handicapped individuals or in the application of behavioral techniques.

The most convincing research has shown instruction, demonstration, practice, and feedback to be important components for teaching skills to direct care staff in developmental disabilities service agencies. When training is complete, supervisory management techniques must be introduced to facilitate and maintain high levels of performance. These techniques typically have consisted of objectively defining job tasks, goal setting, explicit scheduling, performance monitoring, including self-monitoring, various forms of feedback that include praise and correction, and additional contrived reinforcers (Reid & Shoemaker, 1984).

The staff training and management literature, however, has been criticized for addressing limited areas of staff

performance (Christian, 1983; Frederiksen, 1984; Reid, Parsons, & Green, 1989b). One limitation, readily apparent to practitioners, is the study of event (or frequency) data collection in treatment facilities outside of formal research projects, especially with aberrant client behavior (Mozingo & Bailey, 1992). The difficulty in monitoring staff recording of aggressive, destructive, stereotypic, self-injurious, and psychotic behaviors as they occur in the natural environment is a unique problem, but one that is critical to effective behavior analysis, reduction program planning and evaluation, and psychiatric treatment evaluation.

Two bases for the lack of empirical investigation of staff event data collection behavior are readily evident:

1) such behavior presents a special problem of environmental control to staff management researchers, since the stimuli that are to effect staff behavior are not as readily arranged, as for example, is the case with skill acquisition programming, and

2) Measurement of such behavior is difficult for several reasons-

a) client target behaviors may occur with low frequency and/or irregularity, making the data collection and analysis processes slow,

and,

b) staff data collection is typically required 24 hours daily. Both 2a) and 2b) point to the need for lengthy data collection

sessions, conducted over extended periods of time (the opportunity for staff responding may not occur during each session).

Social Validity of Staff Training and Management Research

The social significance of dependent variables has historically been critical to the validity of behavior analytic research. The impact of staff management procedures must be demonstrated in terms of staff behavior change and, in turn, its overall effect on client welfare, "to be adequately evaluated" (Reid et al., 1989a, p. 13). Social significance of behaviors targeted for investigation must be considered in this regard. Staff target behaviors have included frequency of training programs conducted; staff-client interactions and supervisory interactions, including staff use of experimentally demonstrated prompting techniques and contingent reinforcement; use of client-specific training procedures, staff adherence to schedules, on-task behaviors in general activities, employee absences and attendance to meetings. In the most methodologically sound studies, reliability of dependent measures is assessed on 20% to 30% of all observations and is demonstrated to be 80% or higher between independent observers. The absence of such reliability results jeopardizes arguments concerning the social validity of the analysis. When techniques demonstrated effective in the experimental literature are utilized in non-research circumstances the need

for reliable data collection-that serves as a basis of evaluation of treatment services-becomes even more critical.

The two most studied sets of behavior in the staff training and management literature, skills training and active treatment/general therapeutic activities, have two common bases for the large amount of empirical investigation they have received. First, the provision of therapeutic activities, both specific and general, came to some legal importance in the early 1970s with legislation such as Public Law 94-142, that stipulated the provision, and subsequent strict accountability, of quality services for developmentally disabled individuals (Reid et al., 1989a). Additionally, the Title XIX Medicaid Program for Intermediate Care Facilities for the Mentally Retarded (ICF-MR), which provides funding for such agencies, requires that active treatment be "continuous" (Parsons & Reid, in press).

Interestingly, the question of whether data demonstrating the effects of active treatment programs, and more importantly, programs intended to impact maladaptive behavior, are reliable and accurate, has not been addressed, by the funding agencies or applied researchers. The funding agencies, might, justifiably be unaware of the room for error in any observation system, and as a result may take data presented in treatment facilities at face value. On the other hand, there are some current cases where such data have received more attention in legal proceedings

regarding the ethics of treatment received by developmentally disabled persons (Bailey, 1992). Applied researchers, it appears, have simply made a crude oversight of an important class of staff behavior. Evolving legal ramifications may bring this issue to the forefront of discourse, and experimentation, in applied behavior analysis.

A second common basis for the investigation of training and management techniques in the areas studied most frequently (skills training and active treatment/general therapeutic activities) is that the provision of treatment services by professional staff, both in training and active treatment, is limited. Paraprofessional staff, the primary subjects in much of the research, deliver the majority of such services; most of these individuals enter their positions with little or no experience in developmental disabilities, and are less likely to possess behavioral treatment skills. Ironically, these staff serve as primary data collectors in many behavioral treatment systems, often utilizing individualized, sophisticated behavioral measures, that in turn, are used as a basis of treatment planning and evaluation. Unfortunately, the contingencies of the scientific community governing the use of measures that are demonstrated reliable are lacking. As a result behavioral practitioners have resorted to a "blind faith" concerning the data they use to evaluate their treatments (and treatments of other disciplines, e.g. psychiatry) or have been required to

employ higher level professionals to attempt to collect "representative" samples of data on the behaviors of interest in short time periods, missing the majority of events that may occur throughout a day.

Finally, staff training and management researchers, have been concerned with the acceptability of the developing technology (Davis, Rawana, & Capponi, 1989). To date, the question of procedural acceptability has been based on target staff ratings of the interventions used (e.g., Greene, Willis, Levy, & Bailey, J.S., 1978; Quilitch, 1978; Kissel, Whitman, & Reid, 1983; Burgio, Whitman, & Reid, 1983). This is also important regarding techniques that might be used to impact event data collection. Documented reliability of treatment data may impact acceptability of behavior analytic techniques on a much broader scale. As more and more administrators and those serving the funding and licensure agencies become privy to behavior technology, evaluation of the administration of behavioral services is becoming more sophisticated. The ability to demonstrate that the data used to illustrate positive outcomes of the practice are reliable will certainly add to the integrity of behavior analysis and its proliferation as a preferred treatment technology.

Foundations for the Study of the Training and Management of Event Data Collection with Developmental Disabilities Treatment Staff

With the exception of two studies, (one an analog and the other an evaluation of training methods [Loeber, 1971; Katz & Lutzker, 1980]), the staff training and management research has addressed staff behavior that can be scheduled and conducted at specific times and has, in most cases, not had to depend on client behavior as an antecedent to staff behavior (one exception is the contingent delivery of praise). For instance, skill acquisition program sessions can be arranged to occur at any time; this is also the case with custodial and administrative behaviors. Such areas of investigation are nicely suited for formal systems of observation (i.e., observers can be scheduled when the activities are scheduled), as well as the various management techniques that have been described in the literature. On the other hand, staff behavior that is required only when particular client target behaviors are exhibited, that is, behavior that may occur at any time, is not as amenable to reliable and consistent observation, in the formal sense, and therefore, more difficult to supervise. Hence, the management and training techniques demonstrated to date have not been studied with regard to such behavior. One type of behavior that is of considerable importance to behavior analysts, perhaps at the heart of applied behavioral service, that fits this category,

is event data collection intended to provide frequency measures of target (typically aberrant) behaviors that may occur at any time of day under a variety of circumstances.

There is a pool of methodological/technical research addressing optimal data collection methods for research endeavors. For example, in a technical study comparing time-sampling, interval recording and frequency measures of "psuedobehavior" generated from an electromechanical event recorder, frequency measures provided the best estimate (100%) of "responding" and were used as a basis of comparison for the interval methods evaluated (Repp, Roberts, Slack, Repp & Berkler, 1976). The necessity to utilize "human transducers" (typically direct care staff) and the numerous other variables inherent in the developmental disabilities treatment environment may cause expectations lower than 100% interobserver agreement regarding the frequency of occurrence of client target behaviors. Unfortunately, outside of formal research and more intensive analyses by behavioral professionals, complex time sampling and interval procedures are not feasible as part of regular direct care staff activities in such settings, and based on the results of Repp et al. (1976), one might infer, much less useful as estimates of client responding. Event recording of relatively low-rate target behaviors is nicely suited for the 24-hour-a-day treatment environment, and most practical, typically requiring that staff make target behavior

entries upon each occurrence, and in the best arrangement, requiring only minimal interruption of other staff treatment and care routines.

The issue of interobserver agreement, or observational reliability, has received much attention as a research practice of applied behavior analysts (e.g., Iwata, Bailey, Fuqua, Neef, Page, & Reid, 1989, pp. 198-278). This research and discussion has examined various methods of computing and presenting the results of reliability assessments and optimal observational techniques, as well as variables effecting the behavior of human observers (e.g., Romanczyk, Kent, Diament & O'Leary, 1973). In addition, a few descriptions of relatively simple event data collection instruments and methods have been presented (Lindsley, 1968; Skrtic & Sepler, 1982; Drash, Ray, & Tudor, 1989). However, systematic analysis of the event data collection of on-line staff in treatment environments has not been conducted to date.

Recently, the application of computer technology to behavioral measurement, as a treatment and research tool, has been described and is in the early stages of experimental evaluation. Repp, Harman, Felce, Van Acker and Karsh (1989) demonstrated the use of a microcomputer system to continuously record target behaviors (up to forty-three different behaviors simultaneously) with high percentages of interobserver agreement between two formally trained

observers. Bar code technology has been compared with pencil-and-paper data collection methods with more traditional treatment and teaching staff (Eiler, Nelson, Jensen, & Johnson, 1989; Saunders, Saunders, & Saunders in press[a]; Saunders, Saunders, & Saunders, in press[b]). Substantial time savings in data processing (3 hours as compared to 36 hours monthly) were estimated with a bar code system as compared to pencil-and-paper methods utilizing data sheets in medical charts, a common (though perhaps less than optimal) method in many treatment settings (Eiler et al., 1989). Saunders et al. (in press[a]), in a more stringent comparison, showed increases in data collected per opportunity with a bar code method compared to paper-and-pencil methods with teachers and teachers aids, in circumscribed data collection (teaching) sessions. Each of these studies suggests great benefits of the use of computer technology in data collection and, perhaps due to its "high-tech" characteristics and relatively small expense, an attractive innovation in behavioral assessment and treatment, but with the following limitations:

1) Reliability and accuracy of use by direct care treatment staff required to record behavior that may occur randomly have not been evaluated (with pencil-and-paper or computer methods); despite expectations, there are no bases, empirical or theoretical, for assumptions that the reliability and accuracy of event data collection by on-line staff can be improved with

computer technology, beyond, perhaps a brief novelty effect. Analysis of staff data collection behavior (considering the reinforcement of such behavior and its antecedents, including the nature of the treatment setting and competing staff duties) and its management is still warranted.

2) Computer systems become less cost-efficient in smaller settings--worthy of consideration given continuing attempts to down-size treatment environments.

Behavior analysts have taken particular pride in their ability to objectively define and measure behavior in such a way as to clearly evaluate treatment techniques. Dependent measures used in the research exemplify the rigor in data collection that is attempted in applied settings when research is not being conducted. However, though target behaviors can be precisely defined, regular and frequent assessments of agreement between independent observers (from 20% to 30% of data collection periods, as is considered standard and demonstrated in most of the research) is rarely practical in such environments. Additionally, observations in formal research projects are typically conducted in circumscribed, and very brief time periods, whereas in the natural treatment setting particular behaviors may require true frequency evaluations 24 hours daily, at least in the initial stages of analysis. Reliable data collection in such circumstances presents a unique staff management challenge to practitioners in developmental

disabilities, and other human service arenas.

The implications of unreliable event data collection are far reaching. Behavioral treatment systems depend on such data for the following analysis and treatment planning purposes:

1) often, event data are used to reveal times of day, specific environments, and staff associated with target behaviors, leading to more in-depth analyses of such conditions; it is at this point that the behavioral professional may begin to more closely examine the behavior in question,

2) event data are used to facilitate treatment planning, or discontinuation of the analysis process; that is, the need for formal behavior programming or termination of intensive analysis is revealed by such data-for instance staff may provide exaggerated reports of potential target behaviors that are found, through formal data collection, to be of very low frequency and of little or no impact on the client's overall habilitative progress,

3) behavioral treatment planning frequently relies on such data in the evaluation of program effects; unreliable data collection may result in more intensive programming than is necessary being implemented, or the discontinuation or fading of programmatic contingencies when there has been no actual improvement, and finally,

4) psychiatric treatment recommendations may be made based on event data; the effects of psychotropic medications

are evaluated with such data and recommendations for medication withdrawal, dosage increases, and changes may be based on frequency data collected by on-line staff; additionally, such data can be useful in finding "minimally effective dosages" of medications.

Several variables seem relevant in effecting on-line staff event data collection:

1) the behavior of collecting continuous event data is not automatically reinforced; typically staff make an entry on a client chart or another type of data sheet or form with no consequence other than that inherent in the task--the response effort of walking to or taking out the data form and making a hand written entry,

2) staff are often unaware of the purpose of data collection and its potential impact on effective client treatment; for instance the data summary, graphic presentation, analysis and treatment planning processes often exclude on-line staff,

3) the nature of the behavior being measured may influence reliability of data collection; for example, an instance of aggression resulting in injury is more likely to be recorded than a lifting of a hand threatening aggression, and

4) competing staff behavior (e.g., custodial behavior, training and other therapeutic activities, and off-task behavior) may interfere with entry of event data.

The training and management techniques that have emerged

from the literature presented thus far provide a likely starting point for analysis of methods for training and managing event data collection behaviors. In fact, in a chapter addressing the treatment of aberrant behavior with staff management techniques, Reid, Parsons, and Green (1989b) provide a brief summary of the literature divided into the component steps of an effective (as experimentally demonstrated) management system. The authors apparently assume that the existing technology is sufficient to address the treatment of maladaptive behavior. but do not offer practical suggestions or specific directions for research.

The assumptions of Reid et al. (1989b) were more formally evaluated by Mozingo and Bailey (1992) in an analysis preliminary to the present study. Generally, a competency-based inservice that included presentation of sample client graphs derived from event data, lecture regarding the implications of the data (i.e., as a method of treatment evaluation), behavioral rehearsal, and a proficiency "check-out" with the trainer simulating client behavior, resulted in minimal and short-lived improvements in percentage agreement, between treatment staff and formally trained observers, that client target behaviors occurred (from an approximate average of 15% in baseline to 25% following the inservice), in two hour observation periods. The subsequent condition consisted of supervisor verbal feedback following fifteen minute supervisor

observation intervals, three times in two hours (or, with supervisory monitoring being conducted 37.5% of the time) and a daily performance report card (written feedback) resulting in immediate and sharp improvement in treatment staff event data collection (a mean of 84.4% of all events were recorded). Supervisory monitoring and verbal feedback were later faded to five minutes per hour, with only a slight decrement in staff performance. Experimental control was demonstrated in a multiple baseline design across two work shifts, with even more dramatic results on the second shift. A shortcoming of the study is found in that treatment conditions (especially the feedback fading conditions) were terminated prematurely, however, the results suggest the general technology is an adequate basis to initiate further investigation of the effective management of event data collection of maladaptive target behaviors. The study of this important class of staff behavior must address the following:

1) The design of research in these areas must include periods of observations much more lengthy than those reported thus far (e.g., fifteen minutes). Evaluating behavior that must be emitted contingent on randomly occurring events requires longer periods of observation, perhaps several periods of observation throughout a day. This, of course, makes the research endeavor a cumbersome task, in terms of time required and scheduling, both of primary observations and reliability

assessments. Including a broad range of times of observations should provide information regarding variability of staff performance at different times (a sort of structural analysis; e.g., Green, Reid, Perkins, & Gardner, 1991), pointing to optimal times for more focused data collection as well as intervention. Such an approach may be a satisfactory compromise to continuous 24 hour data collection.

2) When a technology is developed for monitoring and consequating staff data collection, generalized use in non-research settings becomes the next critical issue. What is the minimal level of supervisory monitoring and feedback required to maintain desired levels of responding? Romanczyk et al. (1973) demonstrated much improved reliability when observers were aware that reliability assessments were being conducted (in a research scenario). The data on feedback frequency suggest that fading of feedback is appropriate following an initial condition of frequent feedback. For instance, Ivancic, Reid, Iwata, Faw, and Page (1981) showed maintenance of staff therapeutic interactions when instructions and vocal feedback were reduced from 47% of all days to 19% of all days (group feedback frequency, however, was increased). Similarly, Dyer, Schwartz, and Luce (1984) showed maintained engagement in appropriate tasks by severely handicapped students when feedback to staff was reduced from an average of 3 times weekly to once a month. More recently Green et al., (1991)

showed no significant performance deficits when feedback was reduced from daily to twice weekly.

Event data collection behavior presents an unusual scenario when considering monitoring and feedback frequency. Two questions seem relevant:

a) What proportion of time must supervisors observe clients to provide adequate feedback to staff?

b) Do supervisors have to observe clients engage in target behaviors in order for effective feedback to be delivered? (i.e., Is feedback on the agreement between staff and supervisors regarding the non-occurrence of client target behaviors sufficient to facilitate staff recording of the occurrence of those behaviors?).

The latter is a critical question considering the efficiency of supervision of staff event data collection. Most large developmental disabilities treatment facilities do not have the resources to do the kind of intensive monitoring that appears necessary to thoroughly and continuously evaluate the behavior in question. Something short of optimal may have to suffice. For instance there may be one staff person, the "reliability supervisor", that continually sweeps areas where residents receive services, recording all events of maladaptive behavior. Such data would facilitate feedback and training efforts.

3) The logical question following 2) regards staff generalized responding in the absence of a "reliability

supervisor". Perhaps attempts at self-monitoring are appropriate here, or a system of peer-monitoring and feedback.

4) Researchers need to address the question of performance objectives when working with such behaviors. Certainly, capturing every event of inappropriate client behavior is optimal. In the large treatment facility, there may be, at times, a constant "flow" of aberrant behavior creating loud, chaotic environments. The research standard is 80% reliability from thoroughly trained observers--can we expect this from our direct care staff?

5) Finally, what stimuli will facilitate the behavior in question? Several methods can be drawn from the research:

a) At the front end, competency based training is important (primarily to eliminate possible skill deficits). Such training should include: instructions, modeling or demonstration, role-playing or practice, and feedback (Reid et al., 1989b, p.181).

b) Another antecedent set of variables worthy of consideration may be a form of participative management (Burgio, et al., 1983). Though this practice has not been studied in isolation, it may have some benefits on the behaviors being discussed here. In many treatment facilities, direct care staff, those most likely responsible for collecting event data and implementing reduction programs, are often unaware of the importance of data collection and

how it is used, including what the data show in relation to what they see subjectively in the treatment environment. A participative management approach may involve providing clear rationale to staff regarding the tasks they are required to perform, allowing staff input as to how to best measure client behavior and what behaviors to measure, and regular participation in treatment planning meetings where data are clearly presented and staff receive feedback on how their performance is impacting their client's treatment.

c) The research to date has clearly shown that antecedent (training, etc.) methods are not sufficient to facilitate ongoing staff performance (e.g., Richman, Riordan, Reiss, Pyles, & Bailey, 1988; Reid et al., 1989a; Mozingo & Bailey, 1992). Thus, feedback and reinforcement techniques must be evaluated. The methods should resemble those demonstrated in other areas of staff management, including those studied by Mozingo and Bailey (1992). The Mozingo and Bailey (1992) investigation used a combination of verbal and written feedback, without a component analysis. Both techniques have been shown to effect positive staff behavior change (e.g., Brown, Willis, & Reid, 1981; Richman et al., 1988; Shoemaker & Reid,1980; Repp & Deitz, 1979), each having its own advantages and disadvantages. Reid et al. (1989b) point out that verbal feedback is readily available and facilitates staff/supervisor interaction. A drawback of

verbal feedback is that its effectiveness seems related to the sincerity of the feedback provider; some individuals may not be sincere regarding their staff's performance, or unable to effectively convey sincerity. Written feedback provides a permanent record of staff performance and allows for more efficient scheduling of preparation time by supervisors, but excludes the one-to-one interaction necessitated by verbal feedback (Reid et al.,1989b).

The purpose of the present study was to systematically evaluate event data recording of resident maladaptive behavior by direct care staff in a large residential treatment facility for developmentally disabled persons (Intermediate Care Facility). The objectives of the research included:

1) analysis of the effects of a behavioral, competency based inservice on staff event data collection--the inservice also served to eliminate skill deficiencies as a variable in experimental conditions introduced later,

2) analysis of a minimum level of monitoring, followed by verbal feedback, necessary to facilitate adequate staff performance,

3) analysis of the effects of monitoring (or, supervisor presence) alone, following its pairing with verbal feedback, in maintaining staff performance, and

4) analysis of the effects of the experimental conditions on

other areas of staff performance, including custodial and general care behaviors and staff off-task behavior.

The effectiveness of previously studied staff management techniques as applied to staff continuous frequency data collection using an established pencil-and-paper instrument (Behavior Programming Data Cards--"pouch cards", always carried by target staff) was evaluated in the present research. Specifically, percentage agreement between trained observers and treatment staff regarding the occurrence of resident maladaptive behaviors served as the primary unit of analysis of a competency based inservice procedure, and a supervision package that consisted of supervisory monitoring and verbal feedback. Unlike previous staff management research that initially used long periods of monitoring followed by feedback and then fading, the initial monitoring and feedback condition evaluated in this study was considered to be the minimum necessary to facilitate desired changes in staff performance, followed by the withdrawal of feedback in a supervisor presence alone (monitoring) condition. Generalized responding was evaluated in observation periods when the monitoring and feedback stimuli were not applied.

METHOD

Participants and Setting

The study was conducted in a privately operated 80 bed Intermediate Care Facility for Developmentally Disabled individuals (ICF/DD). Staff participants (the primary subjects of the research) included eight Direct Care Instructors (DCI), two per group of developmentally disabled participants (resident groups) on the first (6:00am to 2:00pm) and second (2:00pm to 10:00pm) work shifts. Staff participants were selected because their service recipients (resident participants) engaged in maladaptive target behaviors measured by the event data collection system targeted in the research. During most observation periods, only one of the assigned DCIs was present with a resident group, though in many sessions, both target staff were in the observation area.

First shift staff participants included four women ranging in age from 28 to 46 years (mean of 37 years). Formal education obtained by the staff ranged from eighth grade to a high school degree, with years of experience in developmental disabilities ranging from 3 years, 2 months to 11 years, 9 months (mean of 6 years, 2 months). Second shift staff participants included 3

women and 1 man with an age range of 22 to 60 years (mean of 33 years). Formal education obtained by second shift staff ranged from eighth grade to a high school degree, with years of experience in developmental disabilities ranging from 1 month to 4 years, 9 months (mean of 1 year, 11 months).

Developmentally disabled participants in the ICF/DD were assigned to various activity groups based on level of functioning, similarity of training programs, gender (the residents in groups typically share living areas), and age (for instance a "senior's" group may have a lower intensity activity schedule than a group of younger residents). Two activity groups were utilized in the study, with three resident participants in one group, and two in the other. The residents selected for the study were targets of an event data collection system designed to measure specific, individually defined, maladaptive behaviors.

Group 1 consisted of three profoundly mentally retarded females ranging in age from 32 to 38 years (mean of 34 years). The participants had no other psychological/psychiatric diagnoses. Group 2 consisted of two adult profoundly mentally retarded males, one 58 years old, and the other 59 years old, with one participant (ES) having a secondary diagnosis of bipolar disorder (as diagnosed by the facility psychiatric consultant). All resident participants engaged in at least one formally measured maladaptive behavior (to be defined below),

that served as components of the primary dependent measure.

Observations were conducted in the resident's regularly scheduled activity areas, including living areas, training and classroom (pre-vocation, recreation, human growth and development, and leisure skills modules) areas, and the facility dining room.

Materials

The Behavioral Programming Data Card ("Pouch Card") was already in use at the target facility as an instrument for collecting frequency data on resident maladaptive behavior (see Appendix A for an example). "Pouch card" use was the subject of this research. There was one card for each resident participant with space for staff names, resident names, target behaviors and definitions entries, and a list of place (location) codes. The cards were carried in cloth pouches worn around the waists of all direct care instructors (DCI). Trained observers used the Event Data Formal Observation Sheet (Appendix B) during all data collection sessions, and the Feedback Data Sheet (Appendix C) in the monitoring plus feedback and the supervisor presence experimental conditions.

Additional materials included pencils for data entry and a digital clock with large read out (1 1/8 inch numbers) mounted on the wall in each observation area (not including areas of transit, e.g., halls and outside areas).

Measurement

Primary Dependent Measures

DCI Pouch Card Data Collection. A DCI pouch card entry (refer to Appendix A) included the date, the time of occurrence of the target behavior (according to the digital clocks mounted in observation areas), the place (entered by the codes listed at the bottom of the pouch cards), the behavior (entered by the behavior code listed at the top of the pouch card, individualized by resident), a "hatch" mark for each occurrence of the target behavior (entered directly under the behavior code, in the same box), and the DCI initial. Pouch cards were deposited in storage boxes in the facility clock room at the end of each work shift and collected by the researcher (the researcher returned the cards after the data were summarized, to allow for summarization of the data by facility staff for regular treatment purposes). Staff pouch card data were summarized using the Data Summary Sheet (Appendix D) and compared against the data obtained by the trained observers.

Percentage Agreement. Percentage agreement between DCIs and researcher-trained observers regarding the occurrence of resident maladaptive target behaviors served as the primary dependent measures. An agreement occurred when DCI entries on the pouch cards of resident participants were made at the same time (to the minute) as entries made by trained observers, and included the same target behavior code, and number of

"hatch" marks (or number of occurrences of the target behavior). For instance, if 8:03 am was entered with 3 "hatch" marks for target behavior number 1 (e.g., aggression) and at 8:10 am with 2 "hatch" marks by the trained observer and the DCI, 100% agreement (5 target behavior entries each) was obtained. If the DCI entered only one event at 8:03 am, 60% agreement (3 of 5 events entered) was obtained. If the time on the digital clocks changed just as a trained observer was making an entry (or immediately following the entry), a note was made on the data sheet. A DCI entry made at either time was considered valid, or in agreement with the observer. DCI entries were also compared to recordings made by trained reliability observers (using the same formula, presented below), to further validate the use of the primary trained observer entries as a standard of comparison for DCI event data recordings; this measure was used in addition to a standard interobserver (primary versus reliability trained observers) agreement assessment. Total percentage agreement per session was computed using the following equation with DCI entries compared against primary trained observer entries:

(total # events entered by DCIs at time 'a')
+ (total # events entered by DCIs at time 'b') .....
+ (total # events entered by DCIs at time 'x')

÷

(total # events entered by trained observers at time 'a')
+ (total # events entered by trained observers at time 'b').....
+ (total # events entered by trained observers at time 'x')

X

100.

Total percentage agreement (regarding all resident target behaviors) between all DCI participants present with a client group during an observation session, and the trained observers served as the primary dependent variable. However, the experimental conditions were applied to individual staff. The behavior targeted by this research was a recording that a resident target behavior occurred, making total number of events entered regarding a particular resident's behavior the critical variable.

Resident Target Behaviors

Participating resident maladaptive target behaviors were already being measured at the facility with the Behavioral Programming Data Card ("Pouch Card"). The definition for each

target behavior was previously formulated and individualized by the resident's treatment team, thus, "aggression" was defined differently for different participants, and there were variable numbers of target behaviors for each person.

Group 1

LL - headbutting: striking and pushing with head; biting: pressing teeth into staff or other residents; pushing: placing hands on another and pressing forward; hitting: striking another with open palm or fist; scratching self: any scratching (digging with finger nails) of her own body parts.

WL - destruction: turning over objects, throwing objects (but not at a person); falling to floor: sliding out of chair or falling to the floor from a standing position; stripping: removing or attempting to remove clothes; headbanging: banging head against walls, tables, etc.; scratching self: any scratching (digging with finger nails) of her own body parts; aggression: kicking, throwing objects at a person, spitting, scratching others.

JW - pica: dropping to the ground or attempts to drop to consume cigarette butts, or otherwise placing inedibles in her mouth.

Group 2

WW - physical aggression: hitting, kicking, pushing or attempts of such towards residents or staff; verbal

aggression: making threats to do bodily harm to another.

ES - aggression: slapping, kicking, scratching, hitting or pinching others.

Other Staff Behavior

Five mutually exclusive categories of staff behavior were measured at the time of onset of occurrence of resident target behaviors or episodes of behavior, and immediately following the termination of target behaviors or behavior episodes. These measures were employed as a basis for evaluating possible detrimental effects on other important staff duties, imposed by the experimental conditions applied to event data collection behavior. The staff behavior definitions were adapted from Iwata, Bailey, Brown, Foshee, and Alpern (1976) and included:

1) custodial work - maintenance work (e.g., clothing care, bed making, cleaning, food preparation), client care (e.g., bathing, feeding, dressing, toileting, grooming),

2) stimulation-training - maintaining physical contact, verbally interacting, or manipulating objects with a resident other than resident care, or entering data (e.g., reading to or playing with a resident, giving instructions, observing, and marking data sheets/writing),

3) supervision-task discussion - verbally interacting with a supervisor or fellow staff person regarding some aspect of resident care, stimulation-training, or staff coordination (e.g., coordinating duties, being prompted to do something with a

resident, receiving instructions regarding break times or resident schedule changes),

4) off-task - staff were in the observation area, but not engaged in custodial work, stimulation-training, or supervision-task discussion, and,

5) out of area - target staff were not in the observation area.

Monitoring and Feedback Process Assessment

During the monitoring (10%) and verbal feedback and supervisor presence (both described below) experimental conditions the behavior of the supervisors was assessed using the Feedback Data Sheet (Appendix C). These data were collected to evaluate whether monitoring and feedback were delivered as trained and appropriate to the experimental condition. Twenty-two items were possible (when in the feedback condition and when two staff were present) in an "Observation" section and "Feedback" section on the data sheet, including length of the monitoring period, whether supervisors observed while deferring interaction with staff and residents, whether supervisors made comparisons of their data entries versus DCI data entries, and whether verbal feedback regarding the comparison was provided.

Observation System

Observers included thirteen advanced undergraduate psychology students with a strong interest in applied behavior analysis and/or developmental disabilities who were enrolled in

a Directed Individualized Studies course in these areas of psychology.

Observer Training. Observers were trained using a video taped enactment of a leisure skills module similar to those conducted at the facility. The tape included three residents (actors) that engaged in high rates of maladaptive behavior. In addition to the resident characters, there was one DCI. Observers viewed the tape and practiced data entry, following presentation and instruction in use of the Event Data Formal Observation Sheet (Appendix B) and Observational Guidelines (Appendix E). The observers first viewed the tape, recording the behavior of one resident, followed by a viewing and recording of the behavior of two resident actors, followed by a viewing and recording the behavior of two resident actors as well as the behavior of the DCI character. Verbal performance feedback regarding reliability (interobserver agreement) followed each viewing, with the entry of 100% of all behaviors that occurred the criteria for moving on to the next level of recording. Training was completed when 100% was obtained at all three levels. Further training was conducted by presenting and discussing specific, individualized resident target behavior definitions, and conducting in vivo observations of each target resident until 80% agreement between the observers and researcher, regarding the occurrence of resident and staff behavior, was obtained for each group of residents.

Training in the use of the Feedback Data Sheet was conducted in the same manner with the researcher engaging in live simulations of supervisor monitoring and feedback behavior as a stimulus for practice and evaluation of use of the data sheet.

Observational Procedures. Before formal observations began, each participating DCI was told that the student observers would be in their activity areas daily to observe "what our residents and staff do." Such observations were typical in the facility, even with student observers, so chances of staff reactivity to observers was likely minimized.

Observations were conducted weekdays during four time periods. During first and second shifts primary observations were conducted four to five days weekly, with observations to evaluate generalization conducted three and two days weekly for each of the two work shifts, respectively. The primary observation sessions were those times where the experimental conditions were implemented. In the generalization probe sessions, all observational procedures were the same, but the experimental stimuli were never presented (with the exception of the behavioral inservice), providing for an assessment of staff responding in the absence of such stimuli, and following their earlier presentation the same day. First shift primary observations occurred from 8:00 to 8:55am for Group 2 in a resident living area and dining room, and 9:05 to 10:00am for Group 1 in a pre-vocational classroom. The generalization

probes occurred from 12:00 to 12:55pm for Group 2 in a resident living area and dining room, and 1:05 to 2:00pm for Group 1 in a resident living area and classroom. Second shift primary observations were conducted from 2:00 to 2:55pm for Group 2 in a resident living area and dining room, and 3:05 to 4:00pm for Group 1 in a resident living area and dining room. The generalization probes occurred from 4:00 to 4:55pm for Group 1 in a recreation classroom and leisure skills module and 5:05 to 6:00pm for Group 2 in a leisure skills module and resident living area.

Observers entered each observation area at the scheduled times and positioned themselves in the room as far away from the participants as possible, while clear view of each participant was maintained. The time was entered on the appropriate data sheet, along with target staff initials (information such as the date, page number, and type of observer were entered prior to arrival to the observation area, with the session number entered by the researcher; see the Observational Guidelines in Appendix E). The observers continually scanned the observation area from resident participant to resident participant. Each time a resident target behavior occurred, the observer entered the target behavior number at the top of the data entry columns (using the column until it was full), the time of occurrence as indicated by the digital clocks located in the observation areas, the place (using

the place codes at the bottom of the data sheet), a "hatch" mark for each event of the target behavior that occurred at the time entered, the initials of the staff present, and the staff behavior codes for each DCI. Whenever a resident left the observation area the time of departure and subsequent return was entered. If a resident target behavior occurred in an area where there was no clock (e.g., moving from one activity to another), the time on the clock in the location arrived at next was entered.

During the monitoring (10%) and verbal feedback and supervisor presence experimental conditions, the Feedback Data Sheet (see Appendix C) was used in addition to the standard observation form. When the supervisor entered the observation area, his/her arrival was entered. When he/she was positioned to observe, the time was entered (Time A), followed by entries for each of the additional items in the "Observation" section, including a second time (Time B) when the supervisor approached a DCI (during the feedback condition) or departed (during the supervisor presence condition). During the monitoring (10%) and verbal feedback condition, entries were made in the "Feedback" section when the DCI's pouch cards were requested and evaluated by the supervisor. For each of the twenty-two possible items on the data sheet (ten in the "Observation" section and six for each target DCI present in the "Feedback" section) the observers entered "yes" if the supervisor engaged in the behavior listed, "no" if the supervisor

did not engage in the behavior, and "NA" if the item did not apply (e.g., during the supervisor presence condition, there was no interaction between supervisors and DCI participants). A "yes" was considered a correct response except on item 4 in the "observation" portion of the data sheet ("Does the supervisor engage in conversation with staff regarding the "pouch card" system?") where "no" was the correct response.

In all sessions, observers were instructed to enter resident target behaviors first, followed by "other staff behavior", and finally, the Feedback Data Sheet.

Interobserver Agreement

Reliability assessments regarding occurrence of resident maladaptive behaviors and "other staff behavior" were conducted during 29% of observation sessions during baseline and all experimental conditions. The checks were conducted by trained observers and the researcher, designated as "reliability" observers. The reliability observers conducted observations just as the primary observers, from a space in the observation areas as far as possible away from the primary observer, but still in position to see all staff and resident behavior. Reliability was computed by calculating percentage agreement between primary and reliability observers that target behaviors occurred at the time of the primary observer entries, then averaging across the total number of primary observer entries in the observation session (Bailey & Bostow,

1979). The formula used to compute percentage agreement for each entry was:

fewest number of events entered between reliability and primary observers (at primary observer entry time #1)

÷

greatest number of events entered between reliability and primary observers (at primary observer entry time #1)

X

100.

The equation was applied to each entry time of the primary observer, the resulting percentages were totaled and divided by the total number of entry times, and resulted in a mean percentage occurrence agreement per observation session.

Reliability on the "other staff behavior" was assessed by comparing primary and reliability observer entries for each time entry made by the primary observer, only when there was agreement by the reliability observer regarding resident target behavior. Since the behavioral indices of concern regarding other staff behavior were "on-task" ([1] custodial work, [2] stimulation/training, or [3] supervision/task discussion), (4) "off-task", and (5) "out of area", an agreement occurred when both observers entered one of the "on-task" behaviors, when both observers entered "off-task", or when both observers

entered "out of area", for each DCI participant present during the observation session, at the onset and at the end of the resident target behavior or episode of target behaviors. For each target behavior entry, there were two "other staff behavior" entries for each participating DCI present. Percentage agreement between primary and reliability observers was computed for each target behavior entry (total agreements divided by total agreements plus disagreements times 100), added together and divided by the total number of entries, resulting in an average percentage agreement per target behavior entry per session. Reliability results for measures of occurrence of resident maladaptive behavior and "other staff behavior" are presented in Table 1.

Interobserver agreement in use of the Feedback Data Sheet (monitoring and feedback process assessment) was assessed during the monitoring (10%) and verbal feedback and supervisor presence conditions (in 22% of all sessions). Agreement was computed for "yes", "no" and "NA" entries as total agreements divided by total agreements plus disagreements times 100. Additionally, to evaluate the accuracy and reliability of the resident target behavior entries (the data that served as the feedback stimuli) made by supervisors conducting monitoring and feedback sessions, interobserver agreement was assessed between the supervisors and primary observers when there were target behavior occurrences during the six minute monitoring

Table 1

Interobserver Agreement for Maladaptive Event Recording and "Other Staff Behavior"

	Percentage Agreement Maladaptive Event Recordings		Percentage Agreement "Other Staff Behavior"	
Condition	Range	Mean	Range	Mean
Baseline	0-100	81.9	65-100	90.9
Behavioral Inservice	67-100	87.3	61-100	89.0
Monitoring (10%) + Verbal Feedback	73-100	95.6	0-100	86.8
Supervisor Presence	81-100	96.0	90-100	98.6

period (the method used to compute interobserver agreement between primary and reliability observers was also used for this purpose). There were resident target behavior events in 11% of all monitoring (10%) and verbal feedback and supervisor presence sessions. Results of the reliability assessments of the monitoring and feedback process assessments are presented in Table 2.

Staff Acceptability Questionnaire

After all data were collected, participating staff completed the questionnaire that appears in Appendix F. The questionnaire allowed for analysis of consumer satisfaction with the staff management methods applied on two dimensions, "helpfulness" and "likability." The questionnaire was adapted from that used by Korabek, Reid, and Ivancic (1981) due to its apparent suitability for evaluating staff acceptability in the present study.

Experimental Conditions

Baseline. During baseline DCIs engaged in their usual routines. These routines varied depending on the assigned location and activity for the resident groups at any given time. When groups were in living areas staff typically provided prompts to residents to engage in various self care (dressing and grooming, dental care, toileting, etc.) and daily living (bed making, straightening closets, folding/hanging clothes, and other cleaning) tasks, praised appropriate responding or

Table 2

Interobserver Agreement for Monitoring and Process Assessment (Feedback Data Sheet/Maladaptive Events Recorded by Supervisors)

	Feedback Data Sheet Percentage Agreement Primary versus Reliability		Resident Target Events Recorded Percentage Agreement Primary versus Supervisor	
Condition	Range	Mean	Range	Mean
Monitoring (10%) + Verbal Feedback	88-100	98.1	0-100	78.4
Supervisor Presence	- -	100.0	90-100	98.3

approximations, or otherwise provided assistance with these tasks, and generally interacted with residents. The same kind of prompting, praising, and general interaction occurred in each activity, specific to the assigned task (e.g., recreation, dining, human growth and development [nail care, desensitization training, etc.], and leisure). Staff were also responsible for general supervision of the residents, management of inappropriate behavior, and custodial chores (such as cleaning toileting accidents), and data entry (on pouch cards, task analyses, toileting data sheets, etc.).

Behavioral Inservice. An inservice was conducted by the researcher (the Staff Behavior Analyst at the facility) that included the following:

1) A lecture/discussion that presented the event data collection process, sample graphs of resident maladaptive behavior, how the data are used as a treatment planning base, and the implications (both in terms of behavioral and psychiatric treatment) of adequate/inadequate event data recording.

2) A materials check-out that included looking at each target DCI's set of pouch cards. "Check-out" occurred when a DCI had a pouch card with available entry space, with the resident's name, and target behavior codes and definitions written on the card. If the participating DCIs did not have pouch cards in usable

condition, they were prompted to prepare them in the inservice.

3) A review of all relevant resident participant maladaptive behavior definitions was conducted.

4) A discussion regarding the daily "designated pouch card" person was conducted. This was the only addition to the system (beyond the procedures that were already expected of staff), used to facilitate evaluation of individual staff performance and assign one person to "data collection duties" when more than one staff was present. The staff were prompted to alternate as the "designated pouch card" person whenever they worked on the same day. This person would be responsible for all pouch card entries except when they left the resident group area; at this point, the other staff became responsible.

5) A proficiency check-out was conducted whereby the inservice facilitator simulated resident target behaviors while staff entered the appropriate data following each event, in five minute sessions. A digital clock like those in resident activity areas was mounted in the inservice area. At the end of the session, feedback was provided to each participating staff regarding the reliability of their entries. DCIs were considered proficient and having completed the

inservice when they entered all events (100%) simulated. The simulation sessions were repeated, varying the frequency of target behaviors, for DCIs that did not achieve 100% performance in previous simulations, until such a level of performance was obtained. The "designated pouch card" person procedures were also rehearsed at this time.

Monitoring (10%) and Verbal Feedback. During each monitoring and verbal feedback condition, regular facility supervisory staff, that included Behavior Program Specialists, Behavior Program Associates, and the Staff Behavior Analyst (the researcher), conducted monitoring and verbal feedback sessions in the primary observation periods. Training for supervisory staff entailed participation in the behavioral inservice described above (independent of participating DCIs) and rehearsal of verbal feedback responses as described below. When each supervisor demonstrated 100% of the items on the Feedback Data Sheet correctly in rehearsal trials they began conducting formal monitoring and feedback sessions.

The monitoring (10%) and verbal feedback sessions were conducted as follows: the supervisor entered the observation area at the onset of each observation period, observed resident participants for six minutes (or approximately 10% of the 55 minute observation period), and entered each event of target behavior emitted on their own set of pouch cards, using the

mounted digital wall clocks for time entries. The supervisors said nothing to the DCI participant during this observation period. At the end of the six minute monitoring period the supervisor approached the DCI participant(s). When there were two staff present during the monitoring period, the supervisor asked who was the "designated pouch card" person, and continued the feedback session with that person. If, in this case, the designated person left and returned during the monitoring period, the non-designated person also received feedback regarding the time they were alone with the residents. Feedback was presented to one DCI at a time. The supervisor asked to see DCI pouch cards, whether or not a resident target behavior was observed during the monitoring period and compared the DCI pouch card data entries with theirs; this served as a stimulus to verbal feedback. After comparing data entries the supervisor provided verbal feedback regarding DCI performance that was phrased to approximate one of the following examples: 1) "You have no entries on your pouch card, I didn't see any of your pouch card residents engage in any target behaviors during my observation. Good job! Remember to get down any target behaviors you see for the rest of the day. Thank you." 2) "You have one entry for aggression for ES at names the time and one verbal aggression for WW at names the time. I'm glad you entered those target behaviors, I saw the same behaviors at the same times you entered. While I was

monitoring, I also saw WW try to hit JF at names the time, that's one event of physical aggression. You must have missed it. Please enter that event now. So, we agreed on two of three events. Be sure to enter every event you see for the rest of the day. Thank you." 3) "During my observation, I saw LL head butt two times at names the time, and WL scratch her self at names the time. You entered the same target behaviors at the same times as my entries. Nice work! Keep it up! Thank you." Verbal feedback was provided on each participating resident. If there were discrepancies in target behavior entries, the DCI was prompted to "practice" by copying the entry made by the supervisor. Following the practice, the supervisor drew a line through the practice entry and initialed the card so that it would not be included as an agreement in data processing. One supervisor and one back-up supervisor was used for each pair of DCIs throughout the supervision/feedback conditions.

Supervisor Presence. The supervisor presence experimental condition was conducted exactly as the monitoring (10%) and verbal feedback condition, but, the verbal feedback was not provided. The supervisor simply entered the observation area, made entries on his/her pouch cards and left at the end of six minutes, without any interaction with participating DCIs pertaining to pouch card data collection.

Experimental Design

A multiple baseline single subject design across the first and

second work shifts was employed to evaluate the effects of the experimental conditions, with each condition being applied to groups of 2 DCIs that worked with each of the resident participant groups. Following baseline, the behavioral inservice was implemented, followed by the monitoring (10%) and verbal feedback condition, then the supervisor presence condition.

Debriefing

At the completion of the study, all participating staff were thoroughly debriefed. Debriefing included presentation of the rationale for each individual being selected to participate, the experimental conditions presented, and the goals and outcomes of the study. Participants were also given an opportunity to raise questions regarding the research.

RESULTS

Percentage Events Recorded

Figures 1-4 show percentage events recorded across first and second shifts in primary [where the monitoring (10%) and verbal feedback and supervisor presence stimuli were applied] and generalization (where experimental stimuli, with the exception of the behavioral inservice, were not applied) observation sessions. The plotted data represent days when resident target behaviors occurred and, staff had the opportunity to make event recordings. As can be seen, in most sessions there was only one participating DCI present.

Figure 1 shows Group 1 DCI performance across first and second shifts in primary sessions. During baseline first shift staff recorded zero of the observed events, while on second shift a mean of 11.2% of the observed events were recorded. The uptrend beginning in Session 18 on second shift coincided with the addition of a new staff person (AW) as a DCI with the resident group. The behavioral inservice resulted in no change on first shift, while there was an improvement to a mean of 55.5% events recorded on second shift. Introduction of monitoring (10%) and verbal feedback lead to an immediate and marked increase in

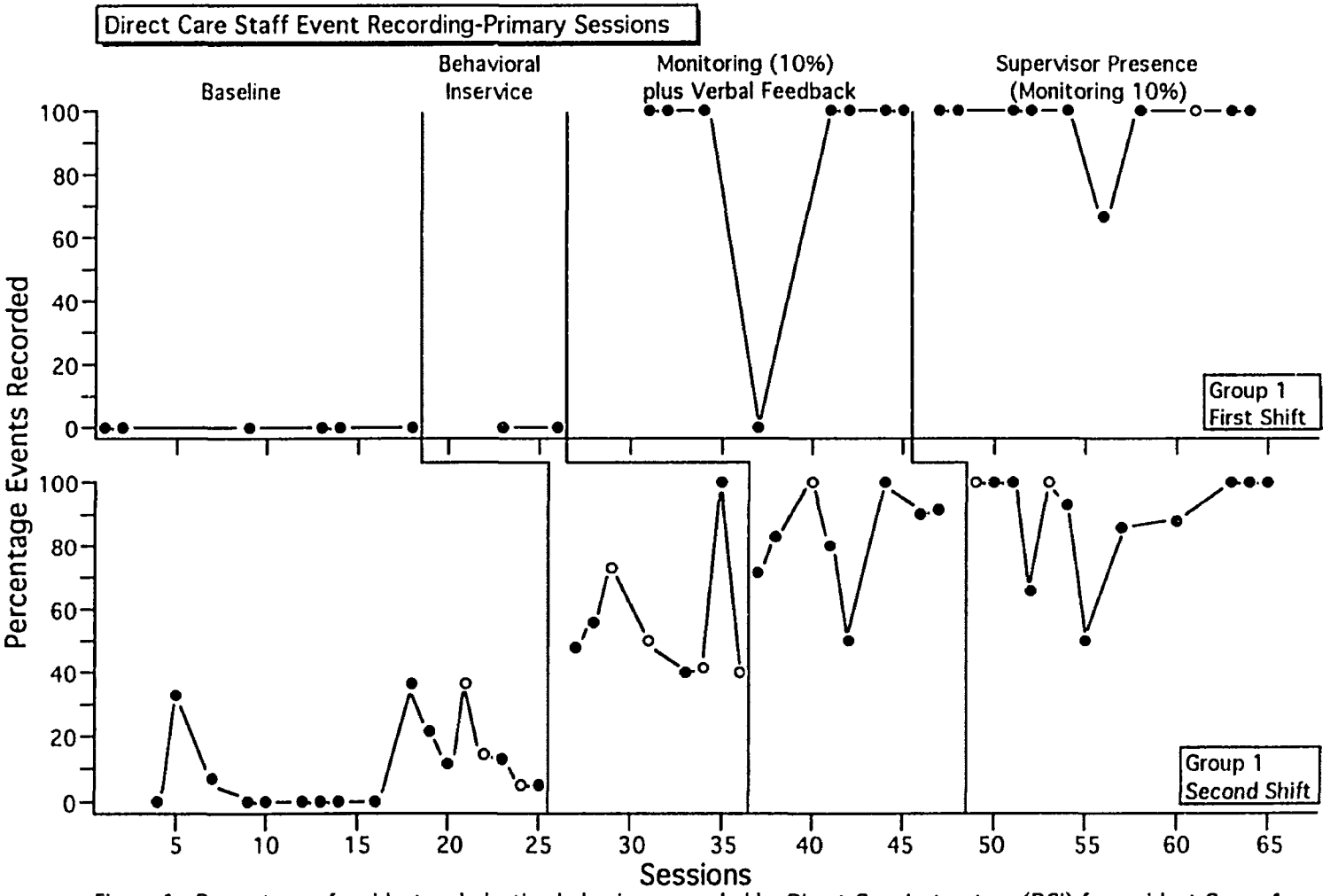

Figure 1. Percentage of resident maladaptive behaviors recorded by Direct Care Instructors (DCI) for resident Group 1 across first and second shifts in primary observation sessions. Filled circles depict sessions with one target DCI present, open circles depict sessions with two target DCIs present.

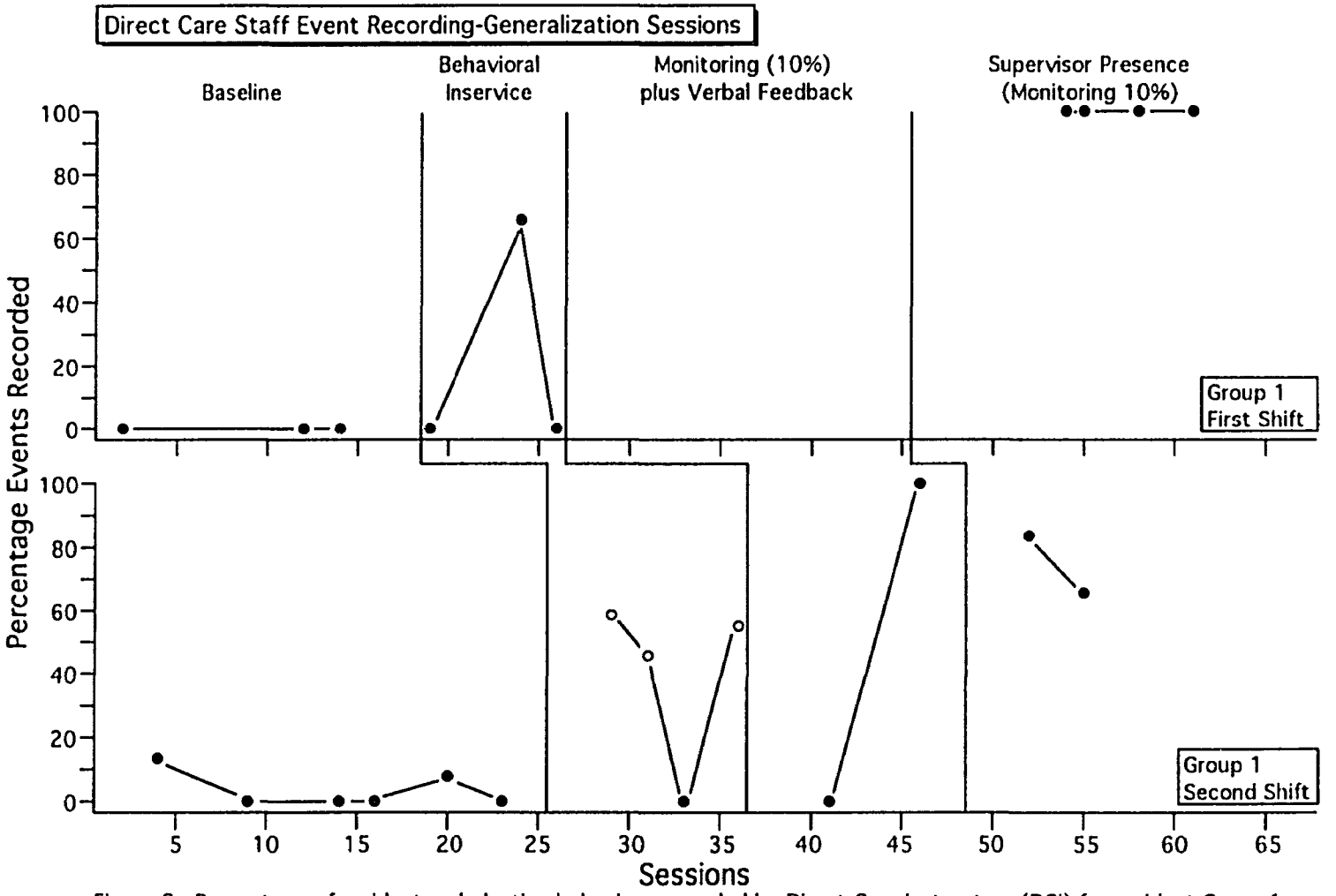

Figure 2. Percentage of resident maladaptive behaviors recorded by Direct Care Instructors (DCI) for resident Group 1 across first and second shifts in generalization observation sessions. Filled circles depict sessions with one target DCI present, open circles depict sessions with two target DCIs present.

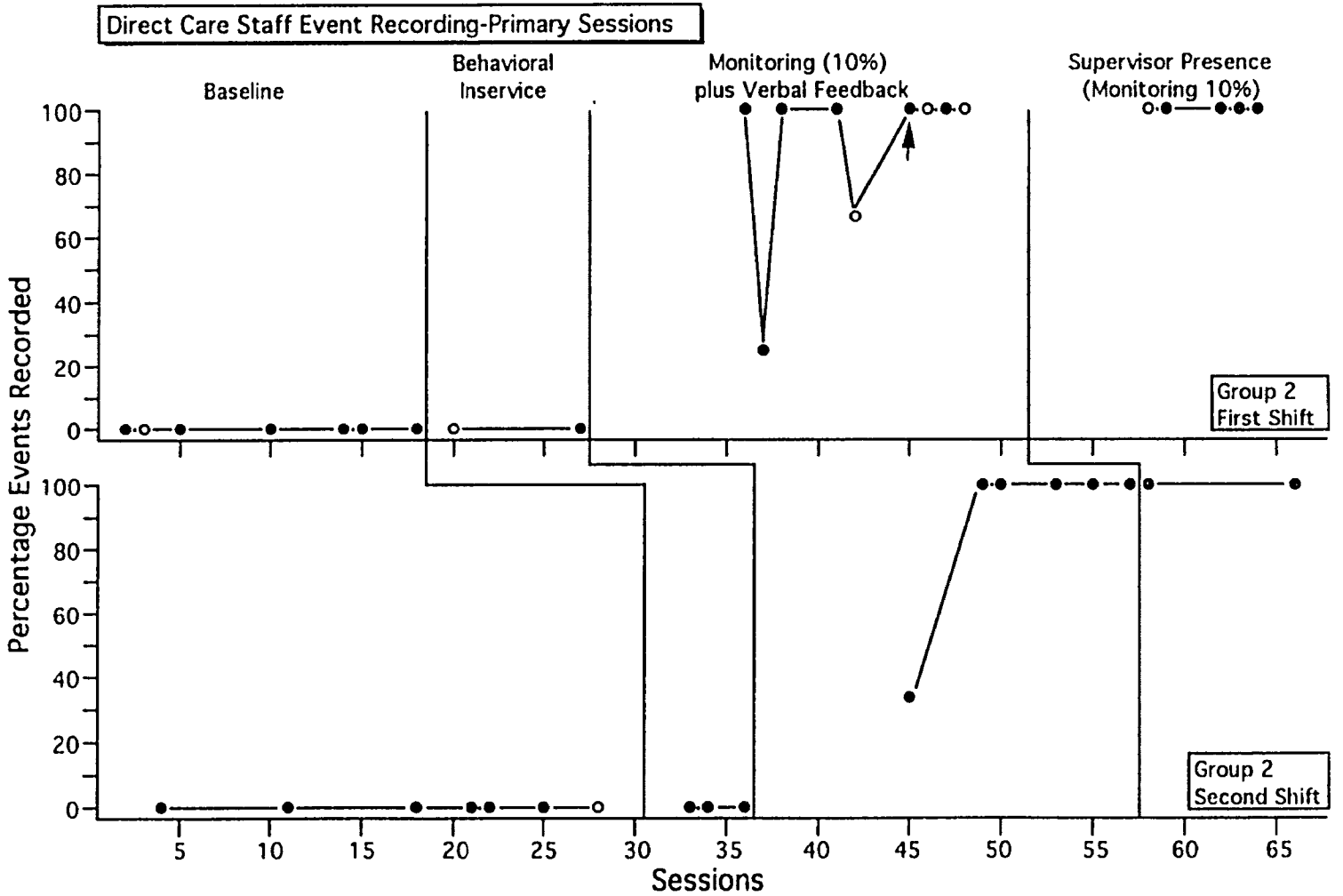

Figure 3. Percentage of resident maladaptive behaviors recorded by Direct Care Instructors (DCI) for resident Group 2 across first and second shifts in primary observation sessions. The arrow indicates no feedback provided in the session. Filled circles depict sessions with one target DCI present, open circles depict sessions with two target DCIs present.

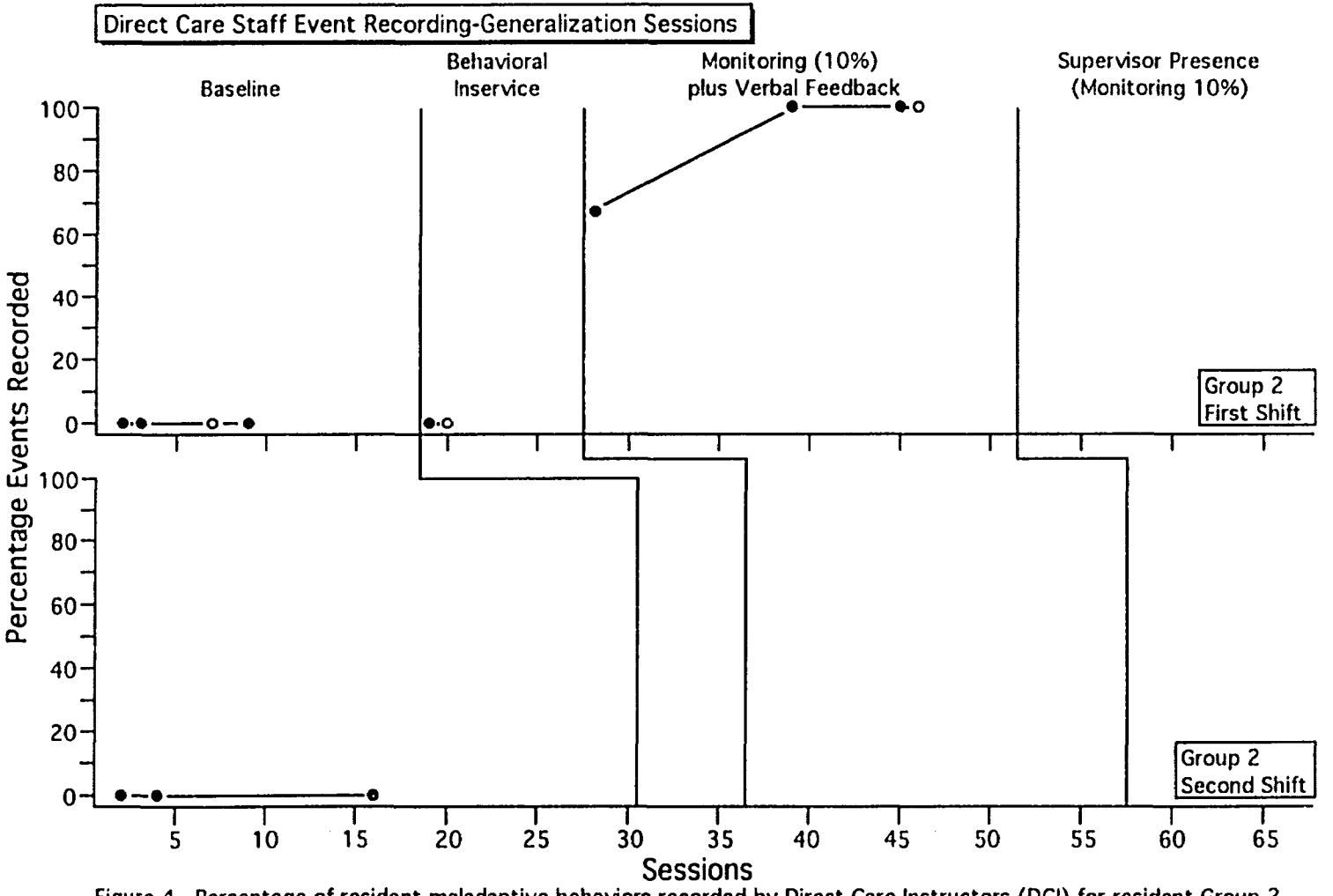

Figure 4. Percentage of resident maladaptive behaviors recorded by Direct Care Instructors (DCI) for resident Group 2 across first and second shifts in generalization observation sessions. Filled circles depict sessions with one target DCI present, open circles depict sessions with two target DCIs present.

percentage events recorded by first shift DCIs (100% performance in all but one session, with a mean of 87.5%), with a similar, but more variable effect depicted for second shift staff (mean of 83.3%). Finally, following the withdrawal of verbal feedback, in the supervisor presence phase, a high level of DCI performance continued; both shifts improved further, with means of 96.7% and 90.3% on first and second shifts respectively.

Figure 2 illustrates Group 1 DCI percentage events recorded in generalization sessions. Though there are many fewer data points (e.g., zero for the monitoring (10%) and verbal feedback condition for first shift) generalized responding is demonstrated three hours and one hour later, on first and second shifts respectively. Baselines similar to the primary sessions are evident, with some improvement following the behavioral inservice. Improved performance is most evident in a comparison between the baseline and supervisor presence (applied during the primary sessions) conditions, from a mean of 0% to 100% on first shift and 3.7% to 75% on second shift.

Figure 3 depicts percentage events recorded by Group 2 DCIs in primary observation sessions. DCI performance was stable with zero events recorded in all baseline sessions and continuing at zero following the behavioral inservice. Significant improvement is seen with the onset of the monitoring (10%) and verbal feedback condition with staff

performance at 100% maladaptive behavior events recorded in all but two and one session on first and second shifts, respectively. Stable performance at 100% is evident with both groups of staff following the withdrawal of verbal feedback in the supervisor presence phase. Figure 4 shows the results of the generalization session observations and indicates very few sessions with the occurrence of resident maladaptive behaviors. First shift staff demonstrated improved performance in the monitoring (10%) and verbal feedback phase in the absence of the experimental stimuli three hours after the primary session.

Percentage Events Recorded by Individual Direct Care Instructors (DCI)

Individual DCI data for maladaptive events recorded are presented in Table 3, including number of sessions that DCIs were present when resident target behaviors occurred, and ranges and means of percentage events recorded across the experimental conditions, in primary observation sessions. In every instance individual DCI performance improved at the onset of monitoring (10%) and verbal feedback and continued at high levels in the supervisor presence condition, following participation in the behavioral inservice, with the exception of BD who left the study before data were obtained on him in the last condition. The behavioral inservice lead to improved responding only with Group 1 second shift staff (AW and JA), also the only two staff that made maladaptive event entries in

Table 3

Individual Direct Care Instructor (DCI) Percentage Events Recorded By Condition in Primary Observation Sessions

Resident Group	DCI	Baseline #S	Baseline Range	Baseline Mean	Inservice #S	Inservice Range	Inservice Mean	Monitoring(10%)/ Verbal Feedback #S	Monitoring(10%)/ Verbal Feedback Range	Monitoring(10%)/ Verbal Feedback Mean	Supervisor Presence #S	Supervisor Presence Range	Supervisor Presence Mean
Group 1 (1st Shift)													
	KD	1	--	0	1	--	0	1	–	100	2	–	100
	AE	5	--	0	1	--	0	7	0-100	86	8	67-100	96
(2nd Shift)													
	AW	10	0-43	15	8	40-64	49	3	71-100	85	2	67-100	84
	JA	11	0-33	7	5	0-100	38	5	50-100	82	9	50-100	91
Group 2 (1st Shift)													
	AB	4	--	0	1	--	0	4	25-100	81	3	–	100
	JB	4	--	0	2	--	0	6	25-100	80	3	–	100
(2nd Shift)													
	ML	4	--	0	1	–	0	4	33-100	83	2	–	100
	BD[a]	3	--	0	2	–	0	1	–	100	0	–	–

Note. #S = number of sessions that DCI was present and resident target behaviors occurred.

[a]BD was transferred to another resident group and did not participate in the Supervisor Presence condition.

baseline. The number of sessions that each DCI was present and resident maladaptive behaviors occurred varied considerably, for the following reasons:

1) KD seemed to have much more verbal control (i.e., was more liberal in delivering contingent verbal praise) over Group 1 residents on first shift than AE, hence fewer target behaviors occurred in her presence; additionally, KD was often used to conduct individual resident training sessions, making her absent for many sessions.

2) Group 1 second shift staff had the greatest opportunity to make maladaptive behavior entries across and within observation sessions--the residents engaged in the highest rate of target behaviors during these observation periods (this is illustrated in Table 6).

3) The fewer number of sessions for AW (Group 1, shift 2) is accounted for by her leave of absence from sessions 41-47 and her ultimate resignation following session 53. Similarly, JA missed several sessions recovering from two auto accidents in the course of the study.

4) Group 2 residents engaged in the fewest number of target behaviors on second shift, likely due to their age (senior men) and less demanding activity schedule as the day waned.

5) BD only participated intermittently in the monitoring (10%) and verbal feedback condition and not at all in the supervisor presence condition due to his transition, and later

transfer, to another resident group.

Individual DCI performance was consistent with the group data presented in Figures 1 and 3, as indicated by means in each condition. The ranges depict some variability in the performance of individual staff. However, with the exception of Group 1 second shift DCIs, all participants performed at 100% in the large majority of sessions in the monitoring (10%) and verbal feedback and supervisor presence conditions (the number of sessions below 100% for each staff in these conditions were: KD-0, AE-2, AB-1, JB-2, ML-1, BD-0, AW-3, JA-8).

Other Staff Behavior

Results of the measure of "other staff behavior" are presented in Table 4. The percentage engagement in the on-task behavior categories (custodial work, stimulation-training, supervision-task discussion) at the on-set and termination (end) of target behavior episodes across conditions is illustrated to either have gone unchanged or improved throughout the course of the study. Most notable improvement is seen for KD and AE whose on-task behavior increased 50% and 60% from the baseline to the inservice conditions and continued into the monitoring (10%) and verbal feedback conditions, respectively, with a slight decrement for AE in the supervisor presence condition. JB showed a gradual improvement throughout the study, while AB showed improvement in her on-task behavior following the inservice and through the monitoring (10%) and

Table 4

Individual Direct Care Instructor (DCI) Mean Percentage Engagement In "On-Task" Behavior at On-Set and End of Maladaptive Behavior Episodes in Primary Observation Sessions

Resident Group	DCI	Baseline On-Set	Baseline End	Inservice On-Set	Inservice End	Monitoring(10%)/ Verbal Feedback On-Set	Monitoring(10%)/ Verbal Feedback End	Supervisor Presence On-Set	Supervisor Presence End
Group 1 (1st Shift)	KD	50	50	0	100	100	100	100	100
	AE	40	40	100	100	100	100	89	89
(2nd Shift)	AW	88	88	78	79	89	89	93	93
	JA	76	76	74	77	81	83	80	81
Group 2 (1st Shift)	AB	67	67	100	100	90	90	67	67
	JB	75	75	67	67	93	93	100	100
(2nd Shift)	ML	100	100	100	100	100	100	100	100
	BD[a]	100	100	50	50	50	100	- -	- -

[a]BD was transferred to another resident group and did not participate in the Supervisor Presence condition.

verbal feedback condition, with a return to her baseline mean in the supervisor presence condition. There were no significant changes in the means from the on-set to the termination of target behavior episodes within experimental conditions, with the exeception of BD in the monitoring (10%) and verbal feedback condition (two resident maladpative behaviors occurred in the one session that BD was a participant in this condition).

Percentage of DCI Entries As Compared to Primary Versus Reliability Observers

Table 5 shows mean percentage agreement of DCIs with primary observers and with reliability observers in sessions that reliability assessments were conducted and resident target behaviors occurred, across all experimental conditions in all observation sessions. Mean differences between the two are also presented. The results show perfect agreement between DCI entries when compared with primary against reliability event recordings, with the exception of Group 1 second shift where there is only a 5.4% discrepancy. (Note: These results suggest perfect interobserver agreement for Group 1 first shift and Group 2 first and second shifts, between primary and reliability observers in sessions where resident target behaviors occurred. This was the case when participating DCIs were present, hence the mean percentage difference scores of "0" in Table 5. However, the figures presented in Table 1 on

Table 5

Direct Care Instructor (DCI) Percentage Primary Observer Entries Recorded Versus Percentage Reliability Observer Entries Recorded

Resident Group	Mean % Primary Observer Entries Made	Mean % Reliability Observer Entries Made	Mean % Difference
Group 1 (1st Shift)	92.0	92.0	0.0
(2nd Shift)	52.0	49.0	5.4
Group 2 (1st Shift)	100.0	100.0	0.0
(2nd Shift)	66.5	66.5	0.0

Note. Figures were computed from all reliability assessment sessions with resident target behavior occurrences.

general interobserver agreement were calculated from sessions with resident target behavior occurrences whether or not participating DCIs were present. Interobserver agreements were often less than perfect in these sessions, accounting for the means below 100% in Table 1).

Mean Number of Entries Made Per Session Across Experimental Conditions

The mean number of entries made by DCIs and primary observers, and mean differences across experimental conditions in primary observation sessions are presented in Table 6. Mean differences in number of entries made decreased across experimental conditions, consistent with the data when presented in terms of percentage events recorded (Figures 1 and 3). In addition, Table 6 shows changes in mean number of opportunities to respond per session across conditions. The mean number of primary observer entries across conditions is fairly stable for Group 1 first shift and Group 2 second shift. However, there was a 43% decrease in opportunities to respond (from 11.5 to 6.5), or mean number of primary observer entries, from the monitoring (10%) and verbal feedback condition to the supervisor presence condition for Group 1, second shift. In contrast, there was a 50% increase in mean number primary observer entries for Group 2, first shift, from the monitoring (10%) and verbal feedback condition to the supervisor presence condition.

Table 6

Mean Number of Entries Made Per Observation Session by Primary Observers Versus Direct Care Instructors (DCI)

Resident Group	Baseline	Behavioral Inservice	Monitoring (10%) + Verbal Feedback	Supervisor Presence
Group 1 (1st Shift)				
Mean # DCI Entries	0.0	0.0	1.5	1.3
Mean # Primary Observer Entries	2.3	1.0	1.8	1.4
Mean Difference	2.3	1.0	.3	0.1
(2nd Shift)				
Mean # DCI Entries	1.6	6.3	9.8	5.8
Mean # Primary Observer Entries	11.2	12.1	11.5	6.5
Mean Difference	9.7	5.9	1.8	0.7
Group 2 (1st Shift)				
Mean # DCI Entries	0.0	0.0	1.7	4.4
Mean # Primary Observer Entries	2.3	3.0	2.2	4.4
Mean Difference	2.3	3.0	0.6	0.0
(2nd Shift)				
Mean # DCI Entries	0.0	0.0	2.2	1.5
Mean # Primary Observer Entries	1.3	2.3	2.6	1.5
Mean Difference	1.3	2.3	0.4	0.0

Note. Means were computed only from sessions with resident target behavior occurrences.

Monitoring and Feedback Process Assessment

Supervisor monitoring and feedback was conducted as trained, at 100% levels of accuracy in the majority of sessions, with little variation. In the monitoring (10%) and verbal feedback condition, the mean percentage correct as evaluated with the Feedback Data Sheet was 98.6 across all sessions. Similarly, in the supervisor presence condition, mean percentage correct was 99.5 across all sessions.

Staff Acceptability

Results of assessments of acceptability of the behavioral inservice and supervision methods investigated are presented in Table 7. The interventions were considered helpful and likable by seven of the eight participating DCIs (AW resigned her position at the facility before the acceptability questionnaire was administered). All interventions received the most favorable rating on the "helpfulness" and "likability" dimensions most often, with the exception of "helpfulness" of the supervisor presence condition, considered "very helpful" by only half the participants. Monitoring (10%) and verbal feedback was better received than the supervisior presence condition on both dimensions and seemed to corroborate DCI verbal reports that they "liked to hear how they were doing."

Table 7

Staff Acceptability of the Training and Supervision Methods Evaluated

Dimension	Supervisory Procedures	Percentage Each Category Selected				
Helpfulness		Very Helpful	Somewhat Helpful	No Help At All		
	Behavioral Inservice	86	14	0		
	Monitoring (10%)/ Verbal Feedback	86	14	0		
	Supervisor Presence	50	50	0		
Likability		Liked Very Much	Liked Some-what	Neither Liked or Disliked	Disliked A Little	Disliked A lot
	Behavioral Inservice	86	14	0	0	0
	Monitoring (10%)/ Verbal Feedback	86	14	0	0	0
	Supervisor Presence	67	33	0	0	0

DISCUSSION

This research clearly showed that a brief monitoring period followed by verbal feedback, resulted in significant increases in the percentage of maladaptive behavior events recorded by Direct Care Instructors (DCI). Moreover, DCI event data recording maintained, and improved, in a supervisor presence condition that consisted of the 6 minute monitoring session without feedback. Generalized responding was demonstrated in observation sessions where monitoring (10%) and verbal feedback and supervisor presence were not presented. The results were achieved without interfering with staff performance of other important duties, in fact some individual DCIs showed increases in the percentage of time they were "on-task" during maladaptive behavior events, when the experimental stimuli were introduced. Additionally, consumer satisfaction assessments indicated that the supervisory methods were well received by participating DCIs.

Behavioral Inservice

The behavioral inservice improved staff performance sufficiently to result in demonstration of competency in the inservice session. However, the inservice resulted in no improvement over baseline in event recording for three of the

four groups of staff. This is consistent with the results of other research (e.g., Gardner, 1972b; Quilitch, 1975), and suggests that skill deficits alone were not the major factor contributing to DCI's imprecise baseline performance, and certainly, not following the inservice. Group 1 second shift staff, were making recordings in baseline, suggesting that they, at least minimally, had the requisite skills for making accurate and reliable data entries. The improvement following the inservice by these staff was likely due to a refinement of their skills, or, perhaps related to their learning the implications of the data in the discussion portion of the inservice.
Subjectively, these staff seemed more interested than the other participants in seeing their residents do well and performing to the satisfaction of their supervisors (regular shift supervisors, not necessarily those that later served as feedback providers).

Monitoring (10%) and Verbal Feedback

The introduction of a brief monitoring period followed by immediate verbal feedback led to rapid and substantial improvement in DCI event data recording. Several conclusions can be drawn regarding the effects of the monitoring (10%) and verbal feedback condition:

1) The supervisors became a stimulus to the desired response. Supervisor entry into an activity area to observe residents involved in the "pouch card" event data collection system, followed by specific feedback to DCIs regarding their

performance in making entries, made staff aware that they were being observed for specific supervisory purposes. This was corroborated by staff verbal reports at the end of the study that "it helped to have someone observe how we were doing." Any such discriminative stimulus effects generalized beyond the six minute observation and feedback sessions. This was demonstrated in most DCI performance improvements being exhibited when the supervisors were not present (maladaptive behavior events occurred in only 11% of the supervisory sessions in the monitoring and verbal feedback and supervisor presence conditions). Additionally, improved responding was demonstrated in the generalization sessions, best illustrated with Group 1 staff (Figure 2), where the supervisory techniques were not used.

2) Verbal feedback regarding the non-occurrence of resident maladaptive behavior events was sufficient to obtain the desired improvements in DCI performance. One implication of this is supervisors need not be present to observe maladaptive behavior events in order to provide functional feedback.

3) Related to 2), the results showed a short monitoring period is apparently sufficient as a basis for feedback. The Mozingo and Bailey (1992) pilot investigation assumed that a lengthy monitoring period would provide greater opportunity for supervisors to observe resident target behaviors, giving staff the opportunity to emit the desired response(s) in the presence

of supervisors; this would presumably provide for more potent feedback. The results of the present analysis discount this assumption.

4) A standard tactic and assumption in behavioral research, utilized in the Mozingo and Bailey (1992) pilot study, is in order to obtain the desired effect with supervisor monitoring (or other sorts of stimuli, depending on the area of investigation), a long period of monitoring is necessary initially, followed by systematic fading to shorter and shorter time intervals. For instance, in the staff management research, frequencies of feedback typically start high and are faded (e.g., Ivancic et al., 1980; Dyer et al., 1984). In the present investigation, feedback frequency was stable throughout the monitoring (10%) and verbal feedback condition and removed entirely in the supervisor presence condition. Monitoring duration started and remained low (through the supervisor presence condition). Apparently, a small monitoring period followed by verbal feedback is sufficient to facilitate staff event data recording. This is an important implication when considering use of the findings of this research in treatment settings. Six minutes of supervisory monitoring per hour, initially paired with feedback, was sufficient to obtain extremely high levels of reliable and accurate data entry. In fact, results of the generalization assessments suggest that six minutes per hour per shift may be sufficient to maintain adequate performance.

5) The effects of the use of verbal feedback corroborate the findings of previous research (e.g., Richman et al., 1988), and illustrate that, regarding maladaptive behavior event recording, written feedback is not a necessary component. This extends the preliminary findings of Mozingo and Bailey (1992) who provided written and verbal feedback to participating staff.

Supervisor Presence

Following its initial pairing with verbal feedback, supervisor presence (or 6 minutes monitoring) alone, was related to maintenance of high levels of accurate and reliable event data recording. Supervisor presence may have become a conditioned stimulus because of its being paired with the feedback. However, in developing the most efficient supervision method, two questions need attention in future research. First, would a significant effect have been obtained if supervisor presence was introduced following the inservice, before being paired with feedback? Supervisors were already present in the treatment environment, entering activity areas randomly, and providing feedback regarding other areas of staff performance, with periodic checks of whether staff were carrying their data collection materials ("pouch cards"). Baseline data suggests this had no impact on event data recording. Supervisor presence following behavioral inservice, on the other hand, may result in improved data collection performance, and requires empirical investigation. Second, would staff performance have remained

at high levels if further fading of the experimental stimuli to supervisor presence of shorter duration or no supervisor presence, had been implemented, and if so, for how long? The six minutes per fifty-five minute observation period used in this study seems a small investment. However, this totals 96 minutes per 16 waking hours daily. The present investigation's generalization results suggest that supervisor presence is not needed every hour. The minimum time necessary to maintain high levels of reliable and accurate event data recording requires additional research.

Individual Staff Performance

Individual DCI performance was consistent with that of pairs of DCIs that worked with resident groups. The greatest variability in the performance of individual staff was seen with Group 1 second shift staff. This was likely due to the greater number of events that occurred per observation session (as depicted in Table 6 in the "mean number of primary observer entry" rows). Often, more than one target resident was engaging in target behaviors simultaneously, or one resident (WL) engaged in several target behaviors consecutively.

Two DCIs were present for only 16% of the primary observation sessions when resident maladaptive behaviors occurred (for various reasons involving staff assignments and attendance). Thus, most of the data in the primary data set (Figures 1-4) depict the performance of one DCI. On days when

two DCIs were present, during the monitoring (10%) and verbal feedback and supervisor presence conditions, anecdotal reports by supervisors indicated that the staff followed the guidelines for the "designated pouch card" person. On such occasions, only one staff was responsible for recording maladaptive behavior events when both were in the observation area. Primary observer reports revealed that there never seemed to be any debate or confusion regarding who was responsible for making the entries in such situations. However, non-designated staff were observed to prompt the designated person to enter an event, or give the time of an event to the designated person, on a few occasions. Such "peer prompting" or even peer monitoring may be the subject of future research. The use of self-monitoring has been demonstrated useful (when used with other techniques) in improving staff performance in other areas (e.g., Korabek et al., 1981 used self-monitoring to enhance staff performance in resident feeding activities). In the case of event data recording, there is a built in self-monitoring, inherent in the task of making a data entry. However, since the bottom line is one of reliability and accuracy, a second staff, or peer, may be useful as a more regular, and natural reliability observer, and feedback agent.

Other Staff Behavior

Staff on-task behavior was evaluated throughout the study to capture any detriments to staff performance in other areas of

responsibility imposed by the experimental stimuli. Surprisingly, three subjects showed large mean increases in their engagement in other important duties, while the remaining subjects showed smaller improvements, or no changes in their on-task behavior. Stimulus generalization apparently occurred. Perhaps, again, the presence of supervisors observing and providing feedback in a systematic, and structured manner was responsible for these improvements. One DCI, AB, exhibited a return to baseline levels of responding in on-task behavior, while event recording remained at high levels, when verbal feedback was withdrawn (in the supervisor presence condition). Perhaps in her case, the verbal feedback, or direct face-to-face contact with the supervisor, influenced a broader range of responses (beyond event data recording), with supervisor presence alone failing to become conditioned sufficiently to maintain the on-task improvements, while apparently maintaining control over event recording performance.

Validity of the Measures Employed

Dependent Measures. The present research examined a type of interobserver agreement between DCIs and trained observers, the basic research question involved reliable use of a measurement technique, employed as part of a behavioral treatment system. Hence, the validity of the experimental measurement system takes on greater importance. The validity of the dependent measures was assessed at several levels.

First, standard interobserver agreement between two trained observers (reliability versus primary) was conducted and shown adequate for resident target behavior entries and "other staff behavior" entries.

Second, the performance of DCIs was compared against both primary and reliability observers in cases when reliability was assessed and resident maladaptive behaviors occurred in the presence of participating staff (Table 5). This assessment provided for a three-way analysis of interobserver agreement. For instance, if a primary observer missed an event that was recorded by the reliability observer, DCI agreement with the reliability observer would be greater than it would with the primary observer, assuming that the DCI made the entry. The results of this assessment support the standard reliability results. Minimal differences were seen only with Group 2 second shift staff (these differences were likely due to the greater number of events that were exhibited by the residents).

Independent Variables. Agreement between supervisors and primary observers was assessed in the monitoring and verbal feedback and supervisor presence conditions to evaluate the accuracy of the verbal feedback provided by the supervisors in the feedback condition; this assessment also served to further validate the measurement system. The results in Table 2 show that supervisors reliably and accurately recorded target resident maladaptive behavior events, and therefore provided

accurate feedback to staff.

The process of monitoring and providing feedback was demonstrated to occur with a high degree of accuracy, as well, indicating that the experimental stimuli were implemented as trained, and were consistent throughout the study. Such process assessments are becoming more common in behavioral research, and are critical when making comments about the effects of experimental stimuli. Evaluation of the reliability of presentation of independent variables is essential to the process of scientific replication, as well as dissemination of experimental findings to non-research environments.

Miscellaneous. A possible confounding variable appeared when analyzing the data in terms of number of events entered by primary observers and DCIs by experimental condition (Table 6). The number of opportunities for DCIs to make event entries was stable for two of the four pairs of staff. However, with Group 1 second shift, there was a substantial decrease in the number of events emitted by resident participants from the monitoring (10%) and verbal feedback condition to the supervisor presence condition. This may have contributed to the increased percentage agreement between DCIs and primary observers in the supervisor presence condition. Conversely, Group 2 first shift residents emitted twice as many target behaviors in the supervisor presence condition as they did in the monitoring (10%) and verbal feedback condition. Group 2 staff performance

improved in the supervisor presence condition, despite having more opportunities to respond (or fail to respond). This may discount the notion that Group 1's improved performance in the last condition was due to a decrease in the number of resident maladaptive behavior events that occurred.

The number of events emitted by residents apparently contributed to different levels of performance. Group 1 residents on second shift engaged in the highest rate of target behaviors overall, but the events were often condensed into small segments of the fifty-five minute observation periods. It was not uncommon for 4 or 5 events to occur in one minute. At such a rate, it was difficult, perhaps impossible at times to make record of every event, especially if a "burst" of resident behaviors occurred two or three times an hour. Additionally, 12 different target behaviors were being measured with Group 1 residents, while there were only three for Group 2 residents. A variety of behaviors occurring rapidly required entries of different target behavior codes and a tally for each occurrence (in addition to the time, location, and staff initials). In the case of Group 2, when consecutive target behaviors occurred, they were typically the same behavior. Thus, staff were only required to enter one behavior code and a tally. A greater rate of responding was required for Group 1 staff on second shift than for all other participants. Different levels of responding, in terms of stimulus (resident behavior) topography and rate,

and staff response topography and speed in making entries, was apparently required for the two different sets of DCIs. Considered in this manner, the fewer events in the supervisor presence condition for Group 1 second shift staff, may in fact, have been responsible for their improved performance.

Treatment Implications

The need to reliably and accurately measure behaviors exposed to behavioral and/or psychiatric treatments, including evaluating the need for such treatments, is obvious. The supervision methods demonstrated in this research provide a low cost means of improving and maintaining high levels of treatment staff performance in making recordings of maladaptive behavior events, that, in turn provide a more sound basis for evaluating the effects of treatment services. As a result, the provision of quality services to developmentally disabled individuals, is better demonstrated. Optimally, an approximation of the research methodology employed in this study would periodically be implemented to provide a continuing assessment of the supervision methods employed; that is, more formal observations of periods longer than the 10% monitoring periods will be necessary to periodically assess the reliability and accuracy of event recording, since actual observation of resident target behaviors in the monitoring sessions may be infrequent (e.g., 11% of the time in the present case). This may be accomplished more efficiently, by providing monitoring for 6

minutes each hour for example, or, once a resident's target behaviors are better understood, providing monitoring at times when higher rates are evident, increasing the likelihood that the monitors would also serve as "occurrence" reliability assessors.

The resident's behavior, that served as part of the primary dependent measure in this research, was being documented, to some degree, before the experimental stimuli were employed, despite the baseline performance of participating staff (6 of 8 staff made no event recordings in baseline). However, when the supervision methods were introduced, a sudden and sharp uptrend in target behavior frequencies appeared on resident treatment graphs. Many professional staff exposed to these graphs, not privy to the research, assumed that the resident's were engaging in higher rates of targeted behaviors, when in actuality, the rates were unchanged, but more reliably documented. This resulted in a reconsideration of the treatments the resident's were receiving; currently, three of the five resident participant's treatment plans have been re-evaluated and modified. The revised treatment plans may account for the large reduction in the number of target behavior events seen for Group 1 on second shift in the last (supervisor presence) condition of the study.

Controlling Properties of Resident Behavior

Optimally, resident target behaviors would be sufficient

stimuli to the response of making a data entry. However, baseline and post-inservice DCI performance indicated this did not occur in the absence of direct supervision. Interestingly, it was rare [though it did occur in 11% of the monitoring (10%) and verbal feedback and supervisor presence sessions] that immediate consequences were applied to the staff behavior of taking out a pouch card and making a data entry, and, staff performance at times when supervisors were not present (and in the supervisor presence condition) was never consequated. The feedback provided by the supervisors seemed to function as an antecedent stimulus, as opposed to a consequence. It is possible that the feedback, in the presence, and more often, the absence of resident target behaviors, functioned to condition the stimuli of resident maladaptive behaviors to control data entry responses.

General Conclusions

Applied behavior analysis has, "at its heart", objective measurement of treatment effects as a basis for its evolution as a preferred treatment modality, especially in developmental disabilities and mental health service arenas. However, empirical investigation of data recording has been neglected. Nevertheless, behavior analysts have been especially proud of their ability to objectively evaluate their treatments--typically, applications of techniques demonstrated valid in methodologically stringent research. The present investigation

provides a foundation for thorough analysis of the data collection systems used in natural, treatment environments.

The pitfalls of evaluating event data collection in treatment settings, and perhaps the basis for a failure to study such behavior to date, include, most notably, a cumbersome, slow moving analysis. Data collection sessions must be lengthy, and data may not be obtained every day (target staff must be present and residents must engage in maladaptive behaviors in order for the analysis to occur). Thus, there is a thin schedule of reinforcement for the researcher (though, perhaps due to its intermittent, variable ratio nature, one that should produce robust responding). This type of analysis, though, is necessary as behavior analysts strive to maintain the integrity of their discipline [(which must be upheld before governmental bureaucracy, (Reid et al., 1989a; Parsons & Reid, in press); and more recently, the legal system (Bailey, 1992)].

Regarding acceptability of the techniques, traditional analysis of target staff acceptability is important, as a measure of consumer satisfaction. However, a broader level of acceptability by the consuming public and treatment agency administrators will continue to be established by demonstrating effective, and valid, treatment effects. Such validity and confidence in clinical treatment findings should be founded empirically, as has been the case with the treatments themselves. This must be done in a continuation of the present

formal analysis, as well as ongoing demonstration of reliable data in clinical applications.

The present analysis illuminates several avenues of research, in addition to those already mentioned. These include the application of the techniques evaluated here to the high-technology approaches that are currently becoming popular. Reliable and accurate bar code data entry for instance, likely requires formal methods of supervision. One study might evaluate the introduction of bar code, or other computer technology as an intervention, and follow with methods similar to those demonstrated here, as needed. There may be additional, more efficient and effective, pencil and paper techniques for collecting event data. A comparison of various techniques seems warranted, since behavioral practitioners have personal preferences regarding the techniques used, and, there is currently no one widely accepted standard. Finally, analysis of behavior reduction programming in applied settings may resemble the methodology used in the present research. That is, formal observation will entail "waiting" for target behavior occurrences, analyzing staff implementation of programmatic procedures in response to target behavior events, and applying techniques, perhaps similar to those used in this investigation.

The staff management research literature is extensive, yet some critical areas of human service staff performance have

been completely ignored. This study opens a new line of staff management research that continues to have consumer welfare and effective treatment provision as its base. The continuation of the development of the most humane and effective treatments relies on these research deficiencies being addressed, and their results, when worthy, disseminated as part of the behavioral treatment systems that are being established in response to a growing demand for ethical and effective psychological practice.

Appendix A: Behavioral Programming Data Card ("Pouch Card")

BEHAVIORAL PROGRAMMING DATA CARD

CLIENT:
BEHAVIOR:

DATE											
TIME											
PLACE											
BEHAVIOR											
INITIALS											

STAFF NAME:

PLACE CODES: Lobby (L) Hall (H) Bathroom (B) RecRoom (RE)
Dining Room (D) Classroom (C) Passive Area (PA)
Outside (O)

Appendix B: Event Data Formal Observation Sheet

Event Data Formal Obs.	Session#:	Page#:	Date:	Observer:	Circle: Primary Reliability	Time: to	Client:
					Observer Break - d:________ r:________		

•Target Behavior # 1: ____________________: ____

•Target Behavior # 2: ____________________: ____

•Target Behavior # 3: ____________________: ____

•Target Behavior # 4: ____________________: ____

•Staff Initials(write down as they enter the area): __________, __________, __________, __________, __________, __________, __________, __________, __________, __________, __________, __________, __________.

•If observing more than one client in a group enter any departure and return times for the above named client:1) d:________r:________; 2) d:________r:________; 3) d:________r:________; 4) d:________r:________; 5) d:________r:________; 6) d:________r:________

TB #:				Staff B	
Time	Place	Events (++++)	Staff Present	On-set	At end

TB #:				Staff B	
Time	Place	Events (++++)	Staff Present	On-set	At end

TB #:				Staff B	
Time	Place	Events (++++)	Staff Present	On-set	At end

TB #:				Staff B	
Time	Place	Events (++++)	Staff Present	On-set	At end

•Place Codes: Lobby (L); Hall (H); Bedroom (BR); RecRoom (RE); Dining Room (D); Classroom (C); Passive/Central Area (PA); Outside (O)

•Staff Codes: 1=Custodial Work; 2=Stimulation/Training; 3=Supervision-task discussion; 4=Off-task; 5=Out of area

more entry space, definitions, special instructions on back

Event Data Reliability | Continued-additional space for observational entries as necessary.

TB #:				Staff B	
Time	Place	Events (++++)	Staff Present	On-set	At end

TB #:				Staff B	
Time	Place	Events (++++)	Staff Present	On-set	At end

TB #:				Staff B	
Time	Place	Events (++++)	Staff Present	On-set	At end

TB #:				Staff B	
Time	Place	Events (++++)	Staff Present	On-set	At end

•Staff Behavior Definitions and Codes:

•1 = Custodial Work = maintenance work (E.g., clothing care, bedmaking, cleaning, food preparation); client care (E.g., bathing, feeding, dressing, toileting, grooming).

•2 = Stimulation-Training = maintaining physical contact, verbally interacting, or manipulating objects with a client other than client care or is taking data (E.g. reading to or playing with a resident, giving instructions, observing, and marking data sheets/writing).

•3 = Supervision-task discussion = verbally interacting with a supervisor or fellow staff person regarding some aspect of client care, stimulation-training, or staff coordination (E.g., coordinating duties, being prompted to do something with a client, receiving instructions regarding break times or client schedule changes).

•4 = Off-task = in the area, but not engaged in 1, 2, or 3.

•5 = Out of area = staff member is not in observation area.

Specific Special Considerations When Observing ___________: ____________________

____

____

____

Always Take a Copy of the Observational Guidelines to the Observation Sessions to Assist in Providing Answers to any Questions that May Come Up While you are Observing

Appendix C: Feedback Data Sheet

Feedback Data Sheet

Observer:	
Circle: Primary	Reliability
Date:	Session #:
Observation Time:	
Client Group(circle): 1 (women)	2 (men)
Supervision Session #: 1	2

Instructions: When you gather materials for an observation session, check who will be the supervisors you will observe for the sessions; if none are scheduled, you do not need any of these sheets. You will need one sheet for each supervision session scheduled. Fill out the top of the sheet before you go to the observation location. Fill out one sheet for each supervision session as they occur. A supervision session begins when a supervisor is in position to observe (item 2 in the "Observation" section). If there are two sessions during an observation period, they will be separated by a feedback interaction between the supervisor and DCI (see "Feedback" section). Attempt to position yourself to hear the interaction between the supervisors and DCI. If you do not hear a vocal response or otherwise miss an observation as described below, leave the item blank. Place a check in one box (yes, no or na) when the supervisor engages (or fails to engage) in the behavior listed. In the event that any combination of staff, resident and supervisor behavior is occurring simultaneously, target resident data entries are your primary concern; get those first. Your second priority is supervisor (feedback) data (this sheet); finally, you will enter "other staff behavior."

Observation

yes no na

- ☐☐ 1. Supervisor enters room.
- ☐☐ 2. Positions herself to see and hear all target residents. Time A: _____, supervisor initials: _____
- ☐☐ 3. Observes target residents, scanning from one client to another if there is more than one target client present.
- ☐☐ 4. *Does the supervisor engage in conversation with staff regarding the "pouch card" system?
- ☐☐☐ 5. During the observation period, defers all DCI questions (e.g., "I'll talk with you in a few minutes about that.")
- ☐☐☐ 6. Defers interaction with residents (if residents attempt to initiate conversation, states that she "can't talk now").
- ☐☐☐ 7. Following an observation period, approaches a DCI; Time B: _____.
- ☐☐☐ 8. If there was more than one DCI present during the supervision period, asks "who is the designated pouch card person?" Who was designated? (initials)_____.
- ☐☐☐ 9. If there was only one DCI present during the entire supervision period, the supervisor proceeds with the feedback section with that DCI.
- ☐☐☐ 10. If two DCIs are present, and the designated pouch person left the area during the observation period, the supervisor proceeds with the following feedback steps with each DCI.

Length of Observation: Time B - Time A = _____

Feedback

Complete the following for each DCI that the supervisor talks with concerning the pouch cards.

yes no na

- ☐☐ 1. Asks to see DCI pouch cards.
- ☐☐ 2. Compares her pouch card with DCI's pouch card.(visually)
- ☐☐ 3. Makes statement to DCIs regarding the comparison, for each target resident present. (e.g. "I saw WW hit at 10:30, that's what you entered too").
  # of target residents present during supervision session: _____
  Statement made regarding (check):
  ☐WW ☐ES ☐WL ☐LLC ☐JW
- ☐☐☐ 4. Supervisor prompts DCI to copy what he/she entered (if their was a discrepancy).
- ☐☐☐ 4a. Supervisor scratches through and initials card.
- ☐☐ 5. Prompts DCI to enter every event for the rest of the day.
- ☐☐ 6. Thanks Staff.

yes no na

- ☐☐ 1. Asks to see DCI pouch cards.
- ☐☐ 2. Compares her pouch card with DCI's pouch card.(visually)
- ☐☐ 3. Makes statement to DCIs regarding the comparison, for each target resident present. (e.g. "I saw WW hit at 10:30, that's what you entered too").
  # of target residents present during supervision session: _____
  Statement made regarding (check):
  ☐WW ☐ES ☐WL ☐LLC ☐JW
- ☐☐☐ 4. Supervisor prompts DCI to copy what he/she entered (if their was a discrepancy).
- ☐☐☐ 4a. Supervisor scratches through and initials card.
- ☐☐ 5. Prompts DCI to enter every event for the rest of the day.
- ☐☐ 6. Thanks Staff.

Primary Observer - Total Possible: _____ Total Correct Responses: _____
%tageCorrect:_____

Reliability Observer - Total Possible: _____ Total Correct Responses: _____
%tage Correct: _____

Percentage Agreement between Primary and Reliability: _____

Appendix D: Data Summary Sheet

Data Summary

Group (circle): 1 2

Observation Interval: _____

Page: _____

Session		Obs.	"R"	Target Resident	Time of			Target Staff	#Events Recorded	%tage	Other Staff Behavior					
											On-Set			At End		
Date	#	Init.	Y/N	Initial	Entry	TB#	#Events	Present	by Staff	Agree	%1-3	%4	%5	%1-3	%4	%5
— 92																
— 92																
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Session #	Total Events	Target Staff Mean %tage (initials) _____ _____	Mean %tage Agreement (TB entries)	Staff Other Behavior Mean %tage Per Category 1-3 OS	1-3 AE	4 OS	4 AE	5 OS	5 AE

Appendix E: Observational Guidelines

Observational Guidelines

•When you pick up the data sheets, enter the date, your name (observer), the page number (this will likely always be "1"), and circle "primary" if you are a primary observer (unless assigned by Dennis, you will always be a primary observer) or "reliability" if you are a reliability observer.

•Walk to the location where you will conduct the observation. Greet the staff that are present. If you don't know them, or they've never seen you, introduce yourself and inform them as to who you are and what you are doing. E.g. "I'm _____. I'm a student from FSU and I'm working with Dennis Mozingo. I'll be observing in this area today." If staff inquire further, tell them that you are observing clients.

•Find a location in the area where the target client(s) is, as far away from them as possible, but in position to see and hear possible target behaviors. Try to find a place out of the line of vision of the client(s).

•Begin the observation session by entering the beginning time at the top of the data sheet, after you are positioned.

• Specific Observational Procedures:

1) Each time a staff person enters the area of the observation (that is, the specific area where the target client is located) enter their initials in the "Staff Initials" section. This includes the staff that are present when you first arrive at the location and all that enter thereafter. If you don't know their names introduce/re-introduce yourself and get their names as described above, and make the appropriate entry. Try not to be noticed entering staff initials.

2) If a client leaves the area, and is not traveling with the rest of their group, follow the client (at a distance of at least 50 feet) unobtrusively, and continue the observation wherever they may go (with the exception of bathrooms or when in bedrooms by themselves; if they are with a whole group in a bedroom continue your observation in that room). When observing more than one client in a group, do not follow a client that may leave, instead, enter the time that they left your line of vision next to a "d"(depart), when the individual returns, enter the time of return next to the appropriate "r."

3) Filling in the Target Behavior (TB:) boxes: enter the number one in the first (far left) "TB" box. Use this column for target behavior #1 (as defined at the top of the page). If the client(s) you are observing have more than one target behavior, enter the numbers in the "TB" boxes as they occur, sequentially, from left to right. If the client you are observing has only one target behavior or only exhibits one target behavior, than, the remaining columns may be used for additional occurrences of that target behavior. Be sure to properly label the "TB" boxes. If the client is exhibiting several target behaviors and you need more room, turn your data sheet over and use the space on the back, following the same general procedure.

4) To observe the target client(s), watch them directly whenever they are not looking in your direction. If they are looking in your direction observe from the corner of your eye. If you are observing more than one client, continually scan the area from target client to target client.

5) Upon the occurrence of any target behavior, note the client's behavior first, than, glance at staff, and enter:

For Clients-always enter client data first

a) the time,
b) the place (see place codes at the bottom of the data sheet),
c) a "hatch" mark for each occurrence of the target behavior at the time of occurrence already entered,

For Staff-enter staff data after client entries are made

a) the initials of all staff present at the time of occurrence, each staff initial will be entered in its own box.
b) what each staff was doing at the moment of onset of the target behavior, or series of target behaviors (see staff behavior codes on the back of the data sheets).
c) what each staff was doing at the end of the target behavior, or series of target behaviors (see staff behavior codes on the back of the data sheets).

*If there are more than five staff present for any event or set of events, continue into the next row of spaces.

6) At the end of the session, enter the time in the appropriate space at the top of the sheet.

7) In the "Observer Break" space enter the time of departure and the time of return. Breaks will only be assigned by Dennis.

8) Please note any questions/comments regarding definitions, or other concerns in a blank area on the data sheet.

You are primarily concerned with client behavior, make every effort to "catch" every event of such; staff data should be entered secondary to client data (with effort to "catch" staff behavior with every event of client behavior). If this is not possible on every event, go for client data first

Appendix F: Staff Acceptability Questionnaire

Staff Acceptability Questionnaire

Instructions: Below are a list of the supervision methods that were used with you to improve the "pouch card" data collection system. For each section place a check on the line under the rating that best describes how you feel about the supervision procedure used. For "Helpfulness" check how much the supervisory procedure helped you to better collect data on your "pouch cards." For "Likability" check how much you liked each of the supervisory procedures used.

Dimension	Supervisory Procedures	Rating Scale		
Helpfulness		Very Helpful	Somewhat Helpful	No Help At All
	Behavioral Inservice	_____	_____	_____
	Monitoring (10%) and Verbal Feedback	_____	_____	_____
	Supervisor Presence	_____	_____	_____

Likability	Liked Very Much	Liked Somewhat	Neither Liked or Disliked	Disliked A Little	Disliked Alot
Behavioral Inservice	_____	_____	_____	_____	_____
Monitoring (10%) and Verbal Feedback	_____	_____	_____	_____	_____
Supervisor Presence	_____	_____	_____	_____	_____

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BIOGRAPHICAL SKETCH

Dennis Brian Mozingo was born in Lynwood, California on January 10, 1963. He earned a Bachelor of Arts degree in Psychology from the University of California, Los Angeles in 1985 and a Master of Science degree in Psychology at Florida State University in 1989. He entered the doctoral program in Psychology in the Spring of 1990. Dennis' professional experiences include serving as a therapist on the UCLA Young Autism Project and as a research assistant on the Los Angeles Head Trauma Survey and the vocational rehabilitation program at the Brentwood Veterans Administration in Los Angeles, California. Since moving to Florida he has served as a behavior specialist in a day training facility for people with developmental disabilities, behavior analyst consultant in a state mental institution, and Staff Behavior Analyst at Liberty Intermediate Care Facility. In addition, he served for two years as the office and registration manager for the Florida Association for Behavior Analysis.