THE EFFECT OF STAFF TRAINING ON THE LEVEL OF ENGAGEMENT
WITH INDIVIDUALS WITH DEVELOPMENTAL DISABILITIES WITHIN TWO
DAY-HABILITATION SETTINGS

BY

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Abstract

This study examined the effects of a staff-training intervention on the use of engagement procedures by direct-care staff who worked with adults with developmental disabilities. The intervention consisted of a mini-workshop, observation and feedback to staff members, on-the-job coaching of staff members, and a lottery incentive program. The intervention was implemented within two different types of day programs. In both types of day programs, the intervention increased the use of engagement procedures by staff members and produced both an increase in the clients' engagement and a reduction in the clients' inappropriate behaviors.

DESCRIPTORS: staff training, coaching, lottery, inappropriate behaviors, engagement, observation and feedback, and developmental disabilities

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The Effect of Staff Training on the Level of Engagement for Individuals with

Developmental Disabilities within Two Day-Habilitation Settings

Introduction

A major responsibility of all managers is to try to optimize the performance of

their employees.   Managers within human service programs for people with

developmental disabilities face a particularly difficult task. These managers must not

only supervise the employees who provide the direct services to people with

developmental disabilities but must simultaneously ensure that the services produce

humane, healthy, and enriching living environments for the clients served. To add to

managers' difficulties, their employees are typically poorly paid and serve clients

who often have significant health-care needs, limited self-care skills, and substantial

amounts of challenging behaviors. Thus, to be successful in managing employees

who provide direct care services for people with developmental disabilities requires

considerable skills in teaching, motivating, and management.

A variety of teaching and management methods have been evaluated that were

aimed at improving the work performance of employees who provide direct care for

people with developmental disabilities. The purpose of the present study was to

evaluate the effects of a teaching and management intervention on the work

performance of employees who provide direct care and teaching for people with

developmental disabilities in two day-habilitation programs. There are several

relatively recent reviews of the literature that are pertinent to this purpose. A review

by Hastings & Remington (1994) examined the literature on the effects of staff behavior on individuals with learning disabilities and challenging behavior. An article by Sturmey (1998) reviewed the applications of organizational behavior management to services for individuals with developmental disabilities. Phillips (1998) reviewed 19 studies published from 1987 to 1995 that had used behavioral management methods aimed at improving the work performance of teachers and other staff in schools and day treatment programs. The Phillips review is most relevant to the purpose of the present study.

Phillips divided the methods used to affect the work performance of teachers and other staff members into: antecedent interventions (such as workshops and classroom training, modeling of correct employee skills, and goal setting); consequent interventions (such as performance feedback to employees, public posting of measures of performance, and monetary rewards for meeting established performance goals); and multifaceted interventions (methods that used both antecedent and consequent interventions) and arrived at a number of conclusions. Three conclusions stated by Phillips are most relevant to the present study. First, Phillips concluded that the studies reviewed showed that antecedent interventions, consequent interventions, and multifaceted interventions all produced desirable changes in the work performance of teachers and other staff members who were responsible for the teaching and/or care of students/consumers. Phillips, however, did not indicate whether any one of the different types of interventions (antecedent, consequent, or multifaceted interventions) produced larger changes. Phillips also noted that there

were more studies of multifaceted interventions than of purely antecedent or consequence interventions. Second, Phillips noted that 13 of the 19 studies included measures of improved performance by students/consumers that were associated with changes in what the teachers or other staff members did. Third, Phillips reported that the acceptability of the intervention to the staff members directly affected by the intervention varied considerably from study to study. The primary indications of acceptability in these studies were the extent to which staff participants remained in or withdrew during the course of the study or continued to use the procedures after the research intervention was completed. In at least one of the studies (Green and Reid, 1994), a formal rating scale was used to obtain the opinions of teachers about the acceptability and usefulness of the intervention. In this case, the results indicated that the training was well received by all staff participants.

The articles reviewed by Phillips included studies published through 1994. To provide a context for the present study, all studies published from 1995 to 2006 that provided an evaluation of the effects of teaching and management interventions on the direct-care staff supporting people with developmental disabilities were reviewed. A total of 22 studies meeting the above criteria were identified. Following the model provided by Phillips, the 22 studies reviewed were categorized into antecedent, consequence, and multi-faceted interventions. Seventeen of the 22 studies were found to have applied a multi-faceted intervention. The remaining 5 studies employed antecedent interventions. No study used consequence interventions exclusively.

There are at least five major aspects of the recent literature on management of direct- care employees who serve and teach people with developmental disabilities that seem important: the types of interventions employed to affect employee behavior; the employee behaviors that were targets of intervention; the effects on client behavior or the environment in which the clients lived or worked;   the measures, if any, that were taken of the sustainability of the intervention; and the measures, if any, that were taken of consumer satisfaction.

As noted earlier, 17 of the 22 studies that provided an evaluation of the effects of teaching and management interventions on the performance of direct-care staff members employed multifaceted interventions. All of these 17 studies used some method of instructing staff members about the type and sometimes the level of performance that was expected of them, although the exact methods differed across studies.   The methods of instruction included verbal instruction (e.g., lectures, question/answer sessions, skill descriptions), written instruction (e.g., instruction manuals, self-study guides, checklists, handouts, pre/post quizzes, out-of-class assignments), and demonstrations (e.g., modeling, video demonstrations, on-the-job demonstrations).

Eight of the 17 studies using multifaceted interventions also included systematic practice of the skills during or shortly following the instruction by, for example, having staff members role play particular situations or by using specific tools to develop mock-up schedules or curriculum. Thirteen of the studies also included on-the-job coaching of staff members as they conducted their daily work

activities with the clients they taught. Finally, the procedures in all of the 17 studies employed some type of consequences for performance. Some of the consequences employed were public posting of individual performance during weekly staff meetings or private reviews by a supervisor of performance during the previous day or week.

A particularly noteworthy study of this group of 17 studies using multifaceted interventions was one by Cooper & Browder (2001). In this study staff members were taught to offer choices and prompt decision-making skills for clients with severe disabilities to make fast-food choices. The intervention employed an in-service training that included a supervisor's verbal instruction, video demonstration of the target skill, and a written instruction manual. Staff members then role played the use of the target skill and scored their own performance from a video tape of the role play using a skill checklist. Afterwards staff members received on-the-job coaching by their supervisor. The use of this multi-faceted intervention improved staff members' use of offering choices and prompting clients to make decisions by 76.6% and 86.8% points respectively. Furthermore, this study reports that client choice responses increased from baseline by 67% points and that they saw an overall increase in client participation in the community purchasing activity of 51.8% points.

The 5 studies that used only antecedent interventions typically used the same type of "instructional" methods such as workshops and manuals as were included in the multifaceted interventions. The overall magnitude of effect of antecedent interventions alone, however, appeared to be slightly less than in studies using

multifaceted interventions. In comparison, the antecedent interventions resulted in smaller effects in staff performance (average increase of 42% points) than found through the use of multi-faceted interventions (average increase of 49% points). Assessing the magnitude of change on client behavior through the use of antecedent interventions is difficult because only 1 of the 5 studies reported numerical measures (Vause et.al, 2000). This study used a training manual, workshop based testing, and observer prompts to instruct staff to use an assessment tool (Assessment of Basic Learning Abilities) and improve their matching of client ability with assigned tasks. The intervention resulted in a decrease of client aberrant behaviors (improved change of 14.3% points). In contrast, 12 of the 17 multi-faceted interventions reported numerical measures on client behavior showing improvement from baseline measures (average improvement of 38.08% points).

There was a considerable variety of skills taught to direct-care employees. This variety included skill sets designed to improve the quality or quantity of staff interactions with clients (e.g., offering clients choices and opportunities for self-governance, recognizing and prompting opportunities for client engagement, and use of verbal instruction and redirection to decrease occurrence of problem behaviors), teaching staff to utilize systems and tools (e.g., use of "Active Support" activity planning package, using schedules to enhance community access, and collecting data using data cards), and training supervisors to manage their employees (e.g., providing feedback and training staff to follow treatment plan protocols). Interestingly, several studies did not report measures of possible changes in on-the-

job performance of direct-care employee behavior.   Of the 22 studies, 4 relied solely on anecdotal reports by supervisors of direct-care employee performance.

As previously stated, numerical measures of improvements in client behavior were reported in only 12 of the studies. Of these 12 studies, 10 reported improvements in client behavior (e.g., increased independent responses, increased engagement, increased frequency of making choices) with 2 studies reporting inconsistent changes in client behavior. Of interest, the most common client measures reported (in 5 of the 12 studies) were measures of problem behaviors (e.g., decrease in frequency of aggression, SIB, self stimulation). In the studies that reported measures of problem behavior of clients, 4 studies indicated a decrease in problem behavior, 1 reported no substantial changes in problem behavior, and none reported an increase in problem behavior associated with the intervention.

There were 10 studies reviewed that provided measures of the sustainability of the training effects. Of these, 9 reported that staff performance maintained near intervention levels and one study reported that staff behavior had returned to lower than baseline levels. There was not a common length of time for collecting data on maintenance. The length of time ranged from 10 days to 64 weeks.

Only 7 of the 22 studies reported any measures of staff-member participant acceptance or other forms of social validity (e.g. ease of use, perceived effectiveness, and perceived importance). Most often a 5-point Likert-type questionnaire was employed to assess staff members' satisfaction with the intervention and their perception of its effectiveness (e.g., Parsons, Reid & Green, 1996; Embregts, 2003;

and Wolery, Snyder, Wets & Katzenmeyer, 1997). In the studies where measures of
social validity were provided, the majority of studies reported favorable ratings of
acceptance and perceived efficacy in improving staff and client behavior.
Unfortunately, none of these studies evaluated the satisfaction of the clients
themselves through the use of adapted questionnaires or by asking persons who knew
the clients well. Thus, it is somewhat difficult to assess if any of the 22 reviewed
studies resulted in perceived meaningful differences to the clients or their families.

In summary, the use of multi-faceted interventions appears to be the most
commonly utilized approach to staff training. The most common components
employed within these interventions were workshop-based trainings where verbal
instructions were employed (e.g., describing the skill to be taught, giving rationales
for using the skill, and providing examples of when and how the skill could be used)
and on-the-job coaching using observation and performance feedback. Skills most
commonly selected for training direct-care staff members related directly to staff-
client interactions (e.g., basic teaching skills, prompting, and engagement). These
skill sets appear to relate directly to the quality and quantity of staff interactions with
clients and seem to be the most likely to affect client behavior. Despite this, it is not
common practice to report what effects the interventions have on client behavior.
Similarly, reporting measures related to the sustainability of a training effect and
social acceptance and support for the intervention is not standard practice. Thus,
while it appears there is sufficient technology available to improve staff performance
there is insufficient information on: how client behaviors were affected by

improvements in staff performance, how meaningful changes in staff member performance were to client behavior, how well the interventions and any effects of the interventions were received by other consumers such as family members and/or advocates for the clients, how well received these interventions were by staff participants, and how sustained the interventions and their effects were across time. The purpose of the present study was to try to address some of the issues listed above while evaluating the effects of a training program for direct-care staff members responsible for people with developmental disabilities in a day-habilitation program. One of the problems in the day-habilitation program was that direct-care staff members appeared to engage in a large number of activities that seemed unrelated to the needs of the clients they supervised. Often direct-care staff members were observed talking with co-workers about things unrelated to client care, apparently day dreaming, or wandering around the day program. This resulted in missed opportunities to engage clients in functional activities as well as an increased risk for dangerous client activities like elopement from the facility, pica, aggression, and self-injurious behaviors. Additionally, when direct-care employees did interact with clients it often was not in ways that appeared to encourage clients to engage more in activities or that taught clients new skills. In the present study, we used a multifaceted intervention to teach direct-care staff skills designed to increase client engagement in activities that were made available at the day program. We measured changes in the performance of both direct-care staff members and clients. We also took measures of the acceptability of the procedures to staff members and measures

of the acceptability of the outcomes to client advocates.

Method

Setting

The study was conducted within a community program that provided residential, case-management, health, behavioral, and day services to people with multiple and severe developmental disabilities.

There were 90 people with developmental disabilities (clients) who participated in the day services. The program utilized two methods for the provision of day services for each client throughout the week. For three days of each work week, clients received day services that were organized and staffed by teachers from the agency's day center. On the remaining two days of the work week, clients participated in activities organized and staffed by their home teachers. Both types of services were offered between 8:30 a.m. and 4:30 p.m.

The day-center setting had 6105 square feet of space and was divided into nine different rooms that were used for day activities, the preparations of snacks/meals, and restrooms. Each morning the clients who were scheduled to receive the day-center organized services arrived from their homes and were placed into a caseload grouping of three or four clients who had similar interests. One staff member (a teacher) was responsible for each caseload and for each client in his or her caseload. As soon as each caseload group was formed and each teacher had gathered the supplies that he or she needed (pen, client data cards, petty cash and company cell phone), the group started their day schedule of activities. The types of activities that were included within the daily schedule were on-site classes in art, cooking,

gardening, crafts, and activities in the community such as shopping at a local discount store, swimming at the city aquatics facility, bowling, going out to eat at fast-food restaurants, and visiting the local parks and community centers where the clients could play basketball or catch, walk trails, and use exercise equipment. Sack lunches were brought from home and lunch periods were scheduled during naturally occurring activity breaks between the hours of 11:00 a.m. and 1:00 p.m. At the end of the day, each caseload of clients returned to the day center and caseloads split back into their original roommate-based groupings for the ride home.

The home-organized day services were similar to the day-center organized services in that both included many of the same type of community activities such as walking, shopping, eating out at fast-food restaurants, and going to the local parks. But, for these home-organized community activities, the clients left for the activities directly from their homes and were not placed into groupings of clients who had similar interests. Instead, the clients participated in community activities with their roommates in small groups (typically of two or three clients). Additionally, with the home-organized schedule, all activities other than community activities were done at home. Home activities included watching television, listening to music, playing musical instruments, cooking/preparing lunch, reading/looking at magazines and completing household tasks such as cleaning their rooms and doing their laundry. During community and home activities, the home-based teachers, generally a married couple who lived within the home, were responsible for providing support and teaching for the clients.

Participants

      The teachers who participated in this study were three men and four women, whose ages were between 23 and 64 years old. Prior to the start of the study, all teachers had received new-staff orientation training which was 40 hrs in length. The classes in new-staff orientation training included classes on the agency's mission and history; identifying potential abuse, neglect, and exploitation; American Red Cross courses on Cardio Pulmonary Resuscitation and First Aid; OSHA procedures for dealing with bloodbourne pathogens; defensive driving and vehicle safety; Mandt Crisis Management; medication administration; and a review of the agency's employee handbook. Upon completion of new-staff orientation, the teachers completed 16 hrs of "shadow training". "Shadow training" consisted of scheduled observations where new employees were paired with experienced staff members during regular work hours and the new employees were expected to shadow the experienced employee as the experienced employee performed typical everyday duties.

      Three of the teachers who were responsible for the day center-organized services were employed on an hourly basis and worked eight-hour shifts during the day for five consecutive days each week. The other four teachers, two married couples, received salaries and live-in stipends. They were responsible for the provision of the home-organized day services and all home (residential) services provided to clients. Each teaching couple resided in one side of a duplex that housed three or four clients on the other side of the duplex.

The educational backgrounds and related work experiences of the teachers were varied. One of the teachers had a graduate degree, one had an undergraduate degree, three had taken undergraduate classes, and two had completed high school. Prior to their current employment, only one of the teachers had experience working with people with developmental disabilities.

In addition to these seven teachers, there were seven client-participants, five women and two men, with ages ranging between 21 and 38 years old. These clients lived in the residential program and participated in the day program. Each had severe to profound developmental disabilities. Two of the client-participants were blind and two required the use of wheel chairs to ambulate (one was entirely dependent on staff members for movement of the wheel chair). Three client-participants had some expressive language skills but the other four did not consistently use any signs, vocalizations, or spoken language that served to communicate effectively with other people. Three client-participants required extensive staff assistance with personal hygiene tasks. All of the client-participants sometimes exhibited aberrant behaviors. Two of the client-participants exhibited self-stimulatory behaviors including rocking in place, pacing, head rubbing, flipping pages of a book, and lip pulling. One of the client-participants ingested inedible objects. Four exhibited yelling and three of the seven had histories of eloping or aggressive behavior which included hitting, biting, pinching, pulling hair, and scratching towards staff and other clients.

Staff Training Intervention and Data Collection

The intervention had three components: a mini-workshop designed to provide

information to teachers; observation of teachers on the job as well as feedback to and coaching them; and a lottery incentive system.

Mini-workshop. The mini-workshop was a 45-min training period similar to that used by Harchik et al. (1992) to improve staff performance. The workshop focused on what teachers could do to increase client engagement in daily activities. The mini-workshop included instruction and discussion on: (a) defining client engagement within scheduled activities for social interaction, self-care activities, leisure activities, domestic activities and vocational activities; (b) recognizing opportunities for client engagement within scheduled activities; (c) ways of increasing client engagement by using prompting, modeling, and providing behavior-specific praise or tangible reinforcement (as part of the mini-workshop, the teachers also reviewed a handout outlining the steps for teaching a new skill, included in Appendix A); (d) how to address potential barriers to client engagement, (such as how to engage more than one member of the caseload at the same time and how to engage a client who is displaying inappropriate behavior); and (e) planning, achieving, and maintaining goals for client engagement.

At the end of the mini-workshop the participants were given the opportunity to ask questions and discuss specific engagement issues related to their caseloads. It was at this time that the researcher described the observation, feedback and coaching procedures, as well as the lottery incentive program.

Observation/coaching/feedback. The observation/coaching/feedback procedures involved a researcher observing both teacher and client behaviors during

20-min observations. These observations were scheduled to occur at different times

across the days of the week between the hours of 10:00 a.m. and 3:30 p.m.

Generally, these observations were conducted with only one observer present except

when evaluating inter-observer reliability and then two observers were present.

During all sessions where two observers were used, the two observers were signaled

by a tape-recorded prompt when to start recording by a single pocket cassette tape

recorder with a headphone jack splitter and two headphones. Each observer used one

set of headphones, stood 4 ft apart, and were simultaneously cued when to observe for

3 s by the same pre-recorded voice prompt ("Begin 3 s observation now… end.").

Observers collected data using pens, data sheets (see Appendix B), and clipboards.

Throughout all observations, observers used the first ten s of each minute to

determine what activity the participants were doing. Then, observers watched for a 3

s period and for the remaining 47 s of the minute recorded what had been observed

during the 3 s interval.

  Teacher-Participant behavior. Using the data sheets, observers collected data

on what the teachers were doing during the 3 s interval (providing behavior-specific

praise, talking with co-worker, assisting client with self-care task, etc.). The observer

then scored this behavior as being a "2", "1", or "0". A "2" denoted that the teacher

used one of the targeted skills taught within the mini-workshop (i.e., physical prompt,

spoken instruction, modeling, providing behavior-specific praise or tangible

reinforcement, and assistance with a self-care task); a "1" was scored if the teacher

passed off responsibility for a client to another teacher, was engaged in social

interactions with a client, or completed client-related documents (data card, seizure and incident report); and a "0" was scored if the teacher exhibited other behaviors. At the beginning of each observation, teachers were asked to show the observer the clients' activity schedule for that day. If the teacher had a copy of the clients' daily activity schedule, the researcher scored a "Y" for Yes; otherwise an "N" for No was scored.

Client-Participant behavior. Observers collected data on what clients were doing during the 3 s interval (e.g., painting, sitting alone, pacing, speaking with staff, etc.). The observer then coded this activity as a D = activity of daily living (ex. domestic, or self-care), a Q = quality of life activity (activity identified within a client's person-centered plan as being an activity preferred by the client), C = community activity (activity taking place within a community setting), and O = all other activities. These categories were not exclusive of each other allowing the researcher to score the clients' participation in more than one category. For example, eating at a restaurant could be scored as a "D", "Q", and "C" because this activity was a meal at a restaurant identified as being highly preferred by the client within the community. The level of client engagement during each interval was scored as either a: "0" = client had no engagement during interval; "1" = client was attending to, but not actively participating in the activity; "2" = client was actively participating in a functional activity (e.g., eating or drinking, making dinner, talking to someone, setting the table, cleaning his or her room, doing laundry). Observers also scored the occurrence of inappropriate behavior = "IB" by the client (e.g., hitting others, hitting

self, yelling, self-stimulatory behaviors, elopement, etc.). Observers also scored whether the client was on schedule (at the assigned location at the time specified on the clients' daily schedule). This was scored as a "Y" for Yes or an "N" for No.

Teacher feedback. Prior to the staff-training intervention, the observers recorded the behaviors described above but did not provide feedback to the teachers before, after, or during the observation. After the teachers had received the mini-workshop, however, the researcher/observer began to provide feedback immediately following the observation. Feedback took the form of spoken behavior-specific praise and instruction about the teachers' use of the target skills during the observation. In general, instruction took the form of recommendations for the future use of the target skills (when and how). The target skills were physical prompting, spoken instructions, modeling, providing behavior-specific praise or tangible reinforcement, and assistance with self-care tasks. Additionally, a lottery ticket was awarded for each observed instance of a teacher using one of the targeted skills. Thus, after the completion of the 20-min session, teachers were given a small card (the size of a business card) that had printed on it, "Nice Teaching! You're Definitely on Track!" for each time the teacher had displayed a target skill during any one of the 3-s observations (see Appendix C). At the end of the day, teachers could write their name on any of the cards they had received and deposit the cards into a decorative bowl for the lottery drawing.

Lottery incentive. The lottery incentive program was similar to the one used by Bannerman (1994). Each week a lottery drawing was held. Two cards were

blindly drawn from the total number of cards submitted; one from the cards collected from the day-center teachers and one from the cards collected from the home teachers. Each winning teacher was then allowed to choose from three prize envelopes. Prize envelops contained items that were selected from a list of suggestions developed by the teachers and included commercial lottery tickets, movie passes, and gift certificates to preferred local restaurants and local retail stores. The cash value for the prizes ranged between $5 and $20. While teachers were told the envelopes contained prizes from their suggested list, they were unaware of the contents of each envelope.

Experimental Design

A multiple-baseline design was used to evaluate the effects the intervention had on the teachers' use of the target skills. As described earlier, each of the seven client-participants in this study participated three days a week in day-center organized activities and two days a week in home-organized activities. Of the seven teacher-participants, three worked at the day center, two worked one of the homes, and two worked in the other home. Data were collected in all three settings (the day center and each of the two homes) during the same days, but the implementation of the staff-training intervention was staggered across the teachers in the three settings. First, the day center teachers, Lisa, Samuel, and Cathy received the intervention. Second, Brant and Sarah, a married couple who lived in one of the homes and provided support and teaching during the home-organized day activities received the intervention. Third, Henry and Kara, a second married couple who lived in another

of the homes and provided support and teaching during the home-organized day activities, received the intervention.

Reliability of Data Recording

Reliability was collected on 21% of the observations. Two pairs of headphones and a headphone jack splitter were employed so that each observer could simultaneously hear the voice prompts. Table 1 shows the reliability of recording for each of the measures taken.

Measures of Satisfaction with Intervention and Outcomes

Two satisfaction surveys were completed. The first survey was administered as a post-intervention measure of the satisfaction of the seven teachers who participated in the study with the intervention. (Please see Appendix D for a copy of the survey.) This survey asked the teachers to rate their satisfaction with: (a) the extent to which the researcher assisted the teacher in becoming a better teacher; (b) the ease the teacher felt when being observed by the researcher; (c) the ease the teacher felt when receiving feedback from the researcher; (d) the usefulness of the feedback the teacher received from the researcher; (e) the effect the consulting procedures used by the researcher had on the lives of the clients served. The possible ratings for each survey question and for both surveys were one of six ratings: 6 = Very Satisfied; 5 = Satisfied; 4 = Slightly Satisfied; 3 = Slightly Dissatisfied; 2 = Dissatisfied; 1 = Very Dissatisfied.

The second survey was administered preceding and following the intervention to evaluate case managers' satisfaction with the day services provided to the clients.

(Please see Appendix E for a copy of the survey.) The case managers were professionals who were responsible for the development of the clients' person-centered plan and for identifying the most optimal service providers for the clients who participated in this study. In order to evaluate the day services prior to intervention, case managers were asked to observe the client-participants during both day center-organized activities and home-organized day activities during baseline and then to complete the survey. The survey asked them to rate their satisfaction as to: (a) whether the clients served were engaged in meaningful activities; (b) whether the teachers interacted with the clients served appropriately and positively; (c) whether the case managers were comfortable with the way teachers dealt with inappropriate behaviors; (d) whether the teachers effectively supervised and monitored those with whom they were working; (e) whether teachers took advantage of teaching opportunities as they implemented the schedule; (f) whether teachers shared their time effectively across clients served involved in the schedule; and (g) the overall quality of the client's day schedule and his/her daily experience. Several weeks after the implementation of the intervention, case managers were again asked to observe clients in both day center and home settings and to rate their level of satisfaction with the same seven questions.

Results

As shown in Figure 1, teacher use of one or more of the target skills of physical prompting, spoken prompting, modeling, providing behavior-specific praise or tangible reinforcement, providing assistance with self-care tasks within the 3-s intervals in the day-center organized and home-organized day services averaged 23% and 25% respectively during the baseline periods. Post-intervention the average percentage of intervals where teachers used one of more of the target skills was 68% within the day center setting and 77% within the two home settings.

As shown in Figure 2, the average percentages of intervals client-participants were actively participating in a functional activity during baseline (shown by line graph) was 28% within the day center setting and 31% within the home settings. Post intervention, the average percentages of intervals client-participants were actively participating in a functional activity were 60% and 75% respectively.

During baseline, the average number of 3-s intervals scored for inappropriate behavior per 20-min observation (shown by the bars in Figure 2) was 5 within the day-center setting and 4 within the home settings. After intervention, the average number of 3-s intervals scored for inappropriate behavior per 20-min observation was 3 in the day center and was less than 1 in the homes.

As displayed in Figure 3, the teacher satisfaction ratings obtained an average of 7 weeks after the intervention ranged from an average of 4.0 to 5.0 across the questions for the center-based teachers and from 4.0 to 5.6 for the home teachers. The average rating across all questions for the center-based teachers was 4.7 or

Slightly Satisfied to Satisfied, and was 5.4 or Satisfied to Very Satisfied.

Figure 4 shows the satisfaction ratings of the center-based setting by the case managers. During baseline, satisfaction scores averaged 3.97 across all questions or slightly dissatisfied to slightly satisfied. Post-intervention, satisfaction ratings of case managers across all questions averaged 5.71 or satisfied to very satisfied. Figure 5 shows the case managers' ratings of the home-based settings. During baseline satisfaction scores averaged 5.67 or satisfied to very satisfied across all questions. Post-intervention measures averaged 5.6 or satisfied to very satisfied across all questions.

Discussion

In this study, a multifaceted training program was used with teachers who provided direct care to clients with severe developmental disabilities to try to increase the extent to which the teachers prompted and praised clients for engaging in activities provided in two day programs (a center-based day program and a home-based day program). The teacher-training program included: (a) a short (45 min) period of instruction and discussion with teachers about what client engagement was, what opportunities there were to engage clients in activities, and how to increase the engagement of clients in the activities; (b) observation of teachers working with clients and giving the teachers feedback about how well they were using the skills that were taught in the short instructional period; and (c) providing lottery tickets for possible prizes to teachers when they were observed using the skills that they had been taught in the short instructional period. The teacher-training program produced increased teacher use of the skills that were taught for all teachers in both day-programs (improvement of 34.9% points to 58.8% points across teachers) as well as increased amounts of client engagement in day program activities for all clients in both day programs (improvement of 19% points to 58.6% points across clients). Client participation in inappropriate behavior was found to decrease across both day programs after intervention (decreases of 28% points to 89% points across clients). The teachers in both day programs gave high ratings for level of satisfaction with the intervention. Additionally, case managers of the clients, who were responsible for identifying the best available services for the clients, were asked to evaluate the day

services before and after the implementation of the teacher-training program. Before the implementation of the teacher-training program, the ratings by case managers of the center-based day program were mixed (low, medium, and high) whereas the ratings of the home-based program were high. Following the implementation of the teacher-training program, the ratings by the case managers of the center-based program were all moderate to high ratings and ratings of the day program remained high.

These results are similar to those found by several other studies where staff was taught to use specific skills to increase client engagement (Dyer, Swartz, & Luce, 1984; Harchik et al., 1992; Jones, Felce, Lowe, & Bowley, 2001; Mansell, Felce, de Kock, & Jenkins, 1982). While the components' featured within this study differed slightly in duration and content from earlier studies, this study showed that an intervention involving a short initial training workshop paired with on-the-job observation and feedback resulted in positive gains in staff performance and client engagement. The marked decreases in client inappropriate behaviors found within this study, however, were dissimilar to results found within Jones et al. (2001) which showed little effect on stereotypic behaviors. This difference may be due to different functions that the stereotypic behavior measured in the Jones et al. study had versus the functions that the various inappropriate behaviors measured in present study had. The high ratings for teacher satisfaction were similar to those found by Harchik et al. (1992). Furthermore, the current study extended the social validity measures proposed by Harchik et al. (1992) and found high ratings supporting the social

significance for these measures.

A possible limitation of this study was that the primary observer/researcher was also a supervisor within the center-based day program. This potentially could have affected the level of teacher reactivity to the observations. It should be noted, however, that, on the whole, the greatest gains in teacher performance were within the home-based day program where the primary observer/researcher was not a supervisor. Another limitation in the present research was the absence of long-term follow up for program maintenance. This was not possible due to extensive changes in the organization of the day program shortly after this research was completed. Another finding that could prove to be potentially limiting in the present study involved the teacher satisfaction scores. Although these scores showed that the intervention was well received by the both centered-based and home-based teachers, both groups indicated that they were less than comfortable with being observed by the researcher. These findings are consistent with the Miltenberger, Larson, & Orvedal (1992) study where staff consistently reported their least-liked interventions involved a feedback component.

Future research should assess the durability of these effects across longer periods of time to see if implementation maintains, or, if there is a drift away from the intervention, what is required to maintain the effects. Another area of research that could prove beneficial to the field is the use of similar types of intervention to improve other staff behaviors such as schedule compliance, data collection, and medication administration. A final recommendation for future research would be to

assess how frequently or infrequently observations need to be scheduled and whether the lottery system played an important part in the effects of the present intervention.

Managing staff members within the human service field is a demanding and stressful job. The average manager works under the watchful eyes of federal and state regulatory bodies, client advocacy groups, and the families of the clients they serve. Employee turnover is high, and retention of good staff members is extremely difficult. The effects found as part of this study, however, seem both socially significant and well received by the teacher-participants. Furthermore, changes in the teachers' behavior were correlated directly with improvements in client behavior: increases in client engagement in functional activities and decreases in the number of inappropriate behaviors clients displayed. This is important because staff members often complain because the clients they serve are hard to engage in activities and often display problem behaviors. Additionally, some of the inappropriate behaviors displayed by clients can result in injuries to clients and/or staff members. Hopefully, these kinds of improvements in client behavior may act as positive outcomes so that teachers are less likely to avoid clients (e.g., by missing shifts, by decreased physical proximity with clients, and by engaging in non-client related activities) and clients are more likely to engage in learning activities.

There were improvements in teacher and client behavior in both the day-program settings and the home settings, but the largest effects, at least in client behavior, were found within the home settings. It is interesting in this context to note that the satisfaction measures obtained from the case managers showed the smallest

increases in the home settings. This, however, was because the pre-intervention measures were quite high to begin with and had much less room for improvement. Particularly interesting were the case manager ratings for the one questionnaire item that focused specifically on whether the clients were "engaged in meaningful activities". Pre-intervention ratings on this item were actually slightly higher than were the post-intervention ratings, but both sets of ratings were relatively high. Nevertheless, the relatively high ratings of "meaningful engagement" by case managers prior to intervention do not correspond to the "objective" measures of client engagement shown in Figure 2, which were quite low. There may be a number of reasons for this. First, there may not be a close correspondence between the "objective" definitions of "meaningful engagement" and people's understanding of what "meaningful engagement" is. Second, the difference may be because the activities that constitute "meaningful engagement" are different in the day center and at home. Finally, the difference may also be related to other factors that differ between the day center and the homes. For example, people who visited both the day center and the homes regularly often noted that the homes were aesthetically more attractive and inviting, less noisy and chaotic, and had a much fewer number of clients present than the day center. If this latter point is relevant, then it suggests that environments that have general characteristics in common with these home-like settings may provide not only better opportunities to improve the behaviors of both clients and staff members, but also settings that are more generally acceptable or valued by clients, families of clients, and society at large.

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Appendix A

Relevant Steps to Teach Interaction
0, 1, 2, or NA

Note which type of interaction and rate

I. Reinforcing Appropriate Behavior	II. Teaching a New Skill	III. Teaching a Replacement Behavior	**TEACHING INTERACTIONS CHECKLIST***	**RATINGS & NOTES**
			1.a. Use <u>active listening skills</u> (eye contact, responsive facial expression & voice tone, active listening posture, verbal and non-verbal encouragements, reflective statements, open & closed-ended questions throughout, Use person's mode of communication)**	
			b. <u>Elicit person's involvement</u> in process throughout**	
			2. <u>Expression of affection</u> (e.g., smile, greeting, joke, physical contact)	
			3. <u>Initial positive</u> or empathy statement	
			4.a. <u>Describe inappropriate behavior</u>	
			b. <u>Rationale</u> (e.g., negative consequences of engaging in inappropriate behavior)	
			5.a. <u>Describe appropriate behavior</u>	
			b. <u>Rationale</u> (e.g., positive consequences of engaging in appropriate behavior)	
			6. <u>Describe the steps</u> to the appropriate behavior	
			7. <u>Demonstrate</u> the desired behavior	
			8. <u>Practice</u> (with prompts if necessary)	
			9. <u>Feedback</u> a. Praise (descriptive & specific) and positive consequence	
			b. Corrective feedback	
			10. <u>Re-practice</u>	
			1. <u>Feedback</u> a. Praise (descriptive & specific) and positive consequence	
			b. Corrective feedback	
			12. <u>Plan when to use the behavior</u>	

Some steps may be deleted or shortened depending on the needs and learning style of the individual.   0= not done
1= done partially   2= done very well   NA= not applicable
** Score 1.a. & 1.b. last

Appendix B

Front of Data Collection Tool

Time	Individual Name	Teacher Name	What Consumer/ Teacher is Doing?	Activity Information	Consumer Engagement	Teacher On-task	Copy of Schedule	On Schedule
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No
			C: T:	D Q C O	0 1 2 IB	2 1 O	Yes No	Yes No

Appendix B (continued)

Back of Data Collection Tool

ENGAGEMENT OBSERVATION PROCEDURES

Time: This observation should be completed using one 3 second probe each minute. Taking 10 seconds to acclimate oneself to the setting prior to the probe.

Individual: Each individual being observed should have his/her name in a separate box on the observation. More than one individual may be observed at the same time if the observer is able to visually observe the person(s) the entire interval.

Teacher: Record the name of the teacher who is working with the individual in the corresponding box. If more than one teacher is working with the individual being observed, record both teachers names, noting which teacher is the primary teacher.

What is the person doing? Note activities the person/teacher is engaging in during the 3 second time period.

Activity Information:
>   **D=** Activity is a daily living activity (ex. Domestic, self-care)
>   **Q=** Activity is a quality of life indicator
>   **C=** Activity is a community activity
>   **O**= Activity is defined as other
>   *note: more than one activity code may be circled.

Engagement rating: Record the level of engagement according to the following rating scale:
>   **0=** Individual had no engagement during interval.
>   **1**= Individual is attending, but not actively participating in the activity.
>   **2**= Individual is actively participating in a functional activity.
>   *When a person is actively doing a task. Ex. Eating or drinking, making dinner, talking to someone, setting the table, making dinner, doing laundry. Etc.
>   **IB=** Inappropriate behavior occurred during the 3 second interval. Ex. Hitting others, hitting self, yelling, self-stimulatory behaviors, elopement, etc.

Teacher on task: Record the level of engagement according to the following rating scale:
>   **2**=Prompting, modeling, behavior specific praise or tangible reinforcing, providing instruction, assistance with self-care tasks;
>   **1**= Pass-off, social interactions, and completing client related documents (data card, seizure and incident report);
>   **O**= Other behavior observed.

Copy of Schedule:
>   **Y**= A copy of the individual's schedule is present.
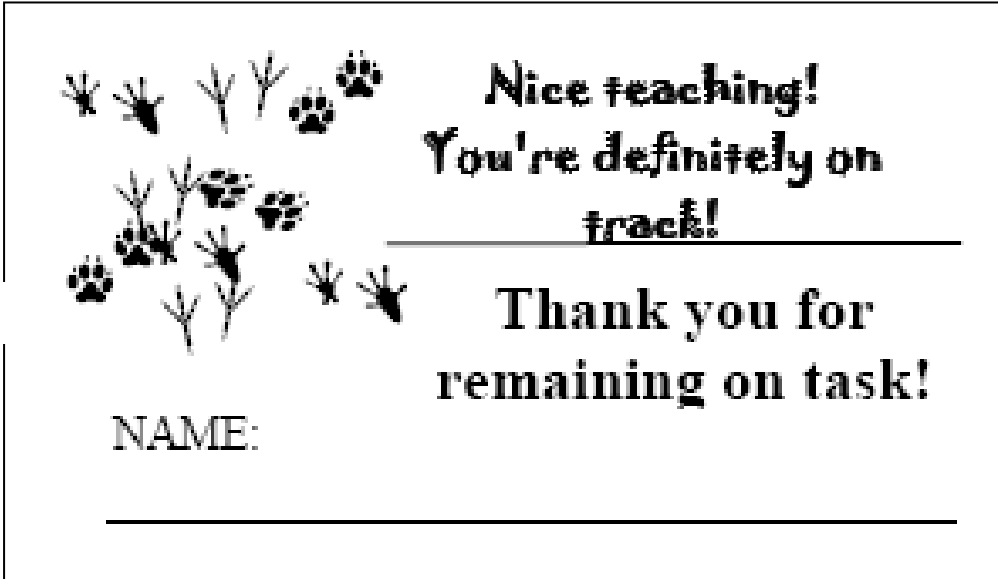>   **N**= A copy of the individual's schedule is not present.

On Schedule:
>   **Y=** Individual served was on-schedule.
>   **N**= Individual served was not on-schedule.

Appendix C

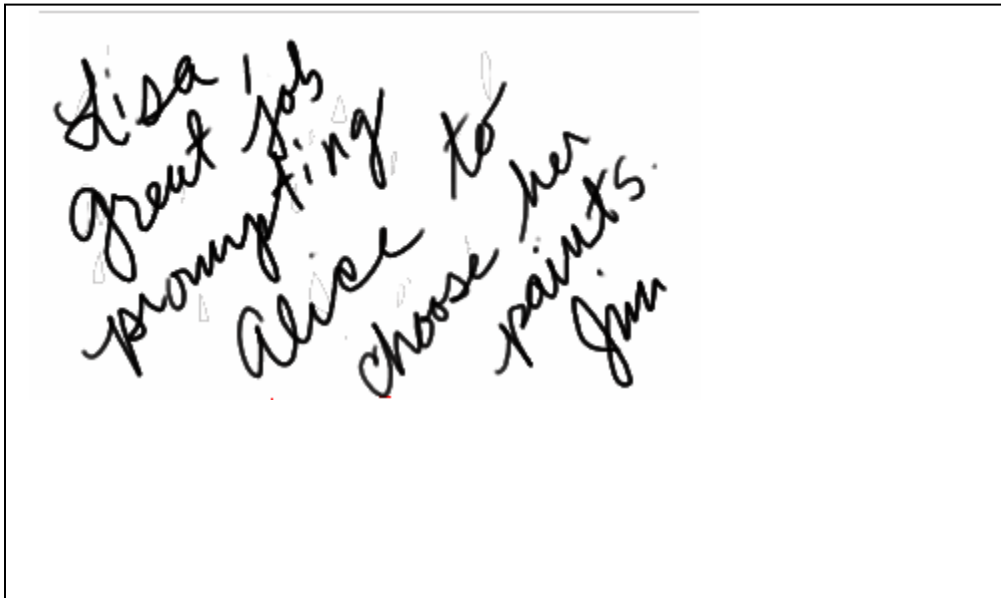Lottery Ticket

(Front)

(Back)

Appendix D

Teacher-participant Satisfaction Survey

Date: _____

Please tell us what you think. We really want to know!

1. (Very Dissatisfied) = not acceptable, extensive action required.
2. (Dissatisfied) = needs significant improvement, very few positive aspects.
3. (Slightly Dissatisfied) = the negative outweighs the positive, uncomfortable
4. (Slightly Satisfied) = several suggestions for improvement, but still some level of comfort.
5. (Satisfied) = generally happy, some suggestions for fine-tuning.
6. (Very Satisfied) = no or very minor suggestions for improvement.

1	2	3	4	5	6	N/A	
							1. **The extent to which the researcher assisted me in becoming a better teacher:**
							2. **The level of ease I felt when being observed by the researcher:**
							3. **The level of ease I felt when receiving feedback from the researcher:**
							4. **The usefulness of the feedback I received from the researcher:**
							5. **The affect the consulting procedures used by the researcher had on the lives of the men and women in care:**

Appendix E

Social Validity Survey Given to Case Managers

Date: _____

Please tell us what you think. We really want to know!

1. (Very Dissatisfied) = not acceptable, extensive action required.
2. (Dissatisfied) = needs significant improvement, very few positive aspects.
3. (Slightly Dissatisfied) = the negative outweighs the positive, uncomfortable
4. (Slightly Satisfied) = several suggestions for improvement, but still some level of comfort.
5. (Satisfied) = generally happy, some suggestions for fine-tuning.
6. (Very Satisfied) = no or very minor suggestions for improvement.

1	2	3	4	5	6	N/A	
							1. **The persons served were engaged in meaningful tasks.**
							2. **The teachers interacted with the persons served appropriately and positively.**
							3. **You were comfortable with the way teachers dealt with inappropriate behaviors.**
							4. **The teachers effectively supervised and monitored those with whom they were working.**
							5. **Teachers take advantage of teaching opportunities as they implement the schedule.**
							6. **Teachers share their time effectively across persons served involved in the schedule.**
							7. **The overall quality of the person's day schedule and his/her daily experience.**

Appendix F

Review of performance improvement interventions published between 1995 and 2006

Reference	Cooper, Karena J. & Browder, Diane M. (2001). Preparing staff to enhance active participation of adults with severe disabilities by offering choice and prompting performance during a community purchasing activity. Research in Developmental Disabilities, 22, 1-20.
Population	8 adults with severe - profound MR/MI; 4 SPED grad students. The intervention was implemented in community fast food restaurants.
Setting	Fast food restaurants
Intervention	Multifaceted intervention: Instructed staff within an in-service setting to offer fast-food meal choices to adults with severe disabilities using: (A) verbal instruction from the supervisor, video demonstration of the skill, and a written instruction manual; (B) a practice element using role plays to practice the skill; (C) on-the-job observation by supervisor and performance feedback. (D) No discussion of a consequence being delivered for staff's use or failure to use target skill.
How clear intervention responsible for effect?	Use of multiple baselines across staff showed clear changes. Further generalization probes were done during baseline and intervention phases showing skills applied to other clients too.
Magnitude of change: baseline to after intervention	Increases in staff use of offering choices from an average of 1.17 choices (out of 5) offered during baseline to an average of 5 choices (out of 5) offered post intervention. This represents an increase in offering choices of 76.6% points. Staff use of prompting improved from an average of .81 occurrences (out of 5) during baseline to an average of 5 occurrences (out of 5) post intervention. This represents an increase in staff correctly prompting clients of 83.8% points.
Effect intervention had on the environment or client behavior	Improvements in client choice responses were found. Baseline measures showed average of 1.3 responses (out of 5) and an average of 4.65 response (out of 5) post intervention. This represents an increase in choice responses of 67% points. Improvements in client participation were found too. Baseline measures showed an average of 4.14 pts (out of 20) scored for participation and post intervention measures showed an average of 14.5 pts (out of 20) scored. This represents an increase in client participation of 51.8% points.
Measures of Sustainability	Yes. Staff was able to maintain and generalize target skill across settings and participants.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Ducharme, J. M., Williams, L., Cummings, A., Murray, P., & Spencer, T. (2001). General case quasi-pyramidal staff training to promote generalization of teaching skills in supervisory and direct-care staff. Behavior Modification, 25, 233-254.
Population	3 supervisors, 9 direct-care staff, and 20 clients with DD.
Setting	3 group homes in Toronto
Intervention	Antecedent intervention: Classroom instruction using modeling, role play, performance feedback to teach supervisory skills and also teaching skills.
How clear intervention responsible for effect?	Use of multiple baseline design across three groups of supervisor/direct-care staff.
Magnitude of change: baseline to after intervention	Baseline measures for supervisory staff average 28.3% across all supervisors with post intervention measures of 68.3%. This represents an increase of 40% points in supervisor use of target skills. Direct care staff baseline measures average 30% across participants with post intervention measures average 75.6%. This represents an increase of 45.6% points in direct care staff use of target skills.
Effect intervention had on the environment or client behavior	No client measures were collected.
Measures of Sustainability	No maintenance measures were reported.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Embregts, Petri, J.C.M. (2002). Effect of resident and direct-care staff training on responding during social interactions. Research in Developmental Disabilities, 23, 353-366.
Population	5 children with mild MR and ADHD; 7 direct care staff
Setting	Therapy room in a special school
Intervention	Multifaceted intervention: Instructed staff to respond to clients appropriately (provided verbal re-direction to clients when clients display problem behavior) through the use of one-on-one meetings with the researcher. Instructions were provided using: (A) Verbal descriptions and appropriate and inappropriate client behaviors and staff responses and rationales for the use of the target skills; (B) No practice opportunities were provided; (C) No on-the-job coaching was provided; (D) Weekly staff meetings were scheduled where video feedback was delivered paired with experimenter praise, corrective statements (if needed), percentage data of client correct and incorrect responses, percentage data for staff correct responses, and encouragement for staff to increase their use of appropriately responding to clients.
How clear intervention responsible for effect?	Multiple baseline design across subjects showed clear changes from baseline measures.
Magnitude of change: baseline to after intervention	Increase in staff use of appropriate responses was found. Baseline measures showed an average of 16.96% of intervals where staff responded appropriately. Post intervention measures showed an average of 39.08% of the intervals where staff responded appropriately. This represents an increase of 22.12% points.
Effect intervention had on the environment or client behavior	Improvements in client behavior was inconsistent despite the application of both client and staff interventions. Baseline measures showed average of 11.37% of intervals with inappropriate client behavior. Post intervention measures showed an average of 9.54% of intervals with inappropriate client behavior. Additionally 1 client showed worse behavior post intervention. This represents an improvement of 1.84% points.
Measures of Sustainability	No maintenance was reported.
Staff and Community Acceptance	Yes. Used a 5 pt Likert scale staff questionnaire. Staff reported video and graphic feedback was very effective in improving staff responses; not effective in changing client behavior; video feedback very pleasant but confrontational.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Embregts, Petri, J.C.M. (2003). Using self-management, video feedback, and graphic feedback to improve social behavior of youth with mild mental retardation. Education and Training in Developmental Disabilities, 38, 283-295.
Population	6 pre-youth with MR, 6 direct-care staff
Setting	Residential facility for children and youth with mild MR
Intervention	Multifaceted intervention: Instructed staff to respond to clients appropriately (provided verbal re-direction to clients when clients display problem behavior) through the use of one-on-one meetings with the researcher. Instructions were provided using: (A) Verbal descriptions and appropriate and inappropriate client behaviors and staff responses and rationales for the use of the target skills; (B) No practice opportunities were provided; (C) No on-the-job coaching was provided; (D) Weekly staff meetings were scheduled where video feedback was delivered paired with experimenter praise, corrective statements (if needed), percentage data of client correct and incorrect responses, percentage data for staff correct responses, and encouragement for staff to increase their use of appropriately responding to clients.
How clear intervention responsible for effect?	Multiple baseline design across residents with follow-up.
Magnitude of change: baseline to after intervention	Results similar to earlier Embregts studies. Baseline measures showed an average of 72.17% of intervals where staff responded appropriately. Post intervention measures showed an average of 83.77% of the intervals where staff responded appropriately. This represents an increase of 11.6% points.
Effect intervention had on the environment or client behavior	Results similar to earlier Embregts studies. Baseline measures showed average of 10.38% of intervals with inappropriate client behavior. Post intervention measures showed an average of 2.99% of intervals with inappropriate client behavior. This represents an improvement of 7.39% points.
Measures of Sustainability	Yes. Follow-up probes were performed 4 months after the intervention. Staff training had been discontinued and client measures had returned to baseline levels.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Felce, D., Bowley, C., Baxter, H., Jones, E., Lowe, K., & Emerson, E. (2000). The effectiveness of staff support: evaluating Active Support training using a conditional probability approach. Research in Developmental Disabilities. 21, 243-255.
Population	19 adults with severe - profound MR; 52 direct care staff
Setting	5 community managed homes
Intervention	Multifaceted intervention: Staff were trained to use "Active Support" techniques through: (A) An initial workshop where household staff developed client activity schedules and a follow-up training between individual staff and a trainer that provided verbal instruction, demonstration and a series of short written instruction booklets explaining "Active Support"; (B) No practice opportunities within the workshop were provided; (C) Trainers worked with staff individually to provide on-the-job practice and feedback; (D) Weekly staff meetings were held to discuss staff performance.
How clear intervention responsible for effect?	Multiple baseline design staggered across 5 houses (1 a month). Unclear what effect it had on staff behavior but does appear to be a change in client behavior
Magnitude of change: baseline to after intervention	Anecdotal report of increases in staffs' quantity and quality of interactions, but no data was reported either graphically or within the text to support this.
Effect intervention had on the environment or client behavior	Statistical analysis of the data using Yule's Q indicated increases in assistance promoted engagement. Average of .79 during baseline and .92 post intervention show a significant change (T= 8.5) in client behavior.
Measures of Sustainability	No maintenance was reported.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Harchik, A. E., Anderson, M., Thomson, R., Forde, K., Feinberg, L., Rivest, S., & Luiselli, J.K. (2001). Evaluation of a participatory, competency-based model of staff training in a community habilitative setting. Behavioral Interventions, 16, 1-13.
Population	3 program specialists; 10 adult clients
Setting	Day program; an apartment; a group home
Intervention	Antecedent intervention: Staff were taught to use nine target skills deemed critical to improve client care using: (A) one-on-one trainings (10-15 minutes in duration) with staff to review the outcome of initial performance assessment with verbal instruction on items performed correctly and items performed incorrectly; (B) Within these sessions the trainer modeled the correct responses and staff were given an opportunity to practice the correct response; (C) No on-the-job coaching was provided; (D) No consequence was delivered outside of training sessions.
How clear intervention responsible for effect?	Multiple baseline design across the competency checklist.
Magnitude of change: baseline to after intervention	Baseline measures for 3 staff participants averaged 48.5%. Post intervention measures averaged 93.83%. This is an increase of 45.33% points.
Effect intervention had on the environment or client behavior	No measures were taken
Measures of Sustainability	No maintenance was reported.
Staff and Community Acceptance	Anecdotal report that training procedures "engendered a true collaborative relationship" amongst participants and trainers.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Jones, E., Felce, D., Lowe, K., & Bowley, C. (2001). Evaluation of the dissemination of Active Support training in staffed community residences. American Journal on Mental Retardation, 106, 344-358.
Population	106 adults with MR/DD and 303 direct-care staff
Setting	38 staffed group homes
Intervention	Multifaceted intervention: Staff were taught to implement "Active Support" training through: (A) Verbal instruction via presentations and written instruction booklets; (B) Staff practiced the Active Support planning via group activities and by developing client activity plans; (C) On-the-job coaching was provided via a trainer to individual staff members and included observation and feedback; (D) No consequence was delivered.
How clear intervention responsible for effect?	AB (pre-post design) used. Authors comment on design's limitations, but design was used due to size of study, restrictions on time limiting timeliness of data collection, and ethical issue of with holding a previously proven effective treatment from a group of clients.
Magnitude of change: baseline to after intervention	Authors report significant increases in the use of verbal instruction and nonverbal assistance following the training. Staff use of the target skills occurred 6.3% of the time during baseline and increased to 11.9% during post-intervention. This represents an increase of 5.6% points. The use of total assistance skills increased from baseline measures of 7.5% to post intervention measures of 14.6%. This represents an increase of 7.1% points in the use of total assistance skills.
Effect intervention had on the environment or client behavior	Increases in client participation in activities were found to have occurred in the homes. Baseline measures showed an average of 3.7 hours per week per person spent engaging in the home with post intervention measures of 11 hours. This is an increase of 7.3 hours engaging in the home. Increases from baseline were found in the range of community activity (2.6 to 4.1 per month), and the types of community activity were found (6 to 6.7 out of 10 possible). No change was seen in social engagement or engagement in challenging behavior.
Measures of Sustainability	No maintenance was reported.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Kneringer, Mary-Jean & Page, Terry J. (1999). Improving staff nutritional practices in community-based group homes: evaluation, training, and management. Journal of Applied Behavior Analysis, 32, 221-224.
Population	13 direct care workers; 5 adults with DD
Setting	2 community based group homes
Intervention	Multifaceted intervention: Staff was trained to follow proper food handling/preparation practices through: (A) Three 1 hour lectures and written handouts and checklists, (B) No practice was offered; (C) No on-the-job coaching was provided; (D) Performance feedback (verbal and graphic) was delivered in a group format during weekly staff meetings by the supervisor.
How clear intervention responsible for effect?	Multiple baseline design across staff behaviors
Magnitude of change: baseline to after intervention	Baseline of staff use of target behaviors averaged 45.13%. Post intervention measures average 92.5%. This represents an increase in the use of target behaviors of 47.37% points.
Effect intervention had on the environment or client behavior	Client related measures showed post intervention improvements in bodyweight (average loss of 7.78 kg), Triceps fat fold (average reduction of 3.6mm), improvements in blood pressure, and a reduction in cholesterol (average 18.6 ml/dl).
Measures of Sustainability	Yes. Skills maintained across 6 months of follow-up probes. Supervisor prompting of staff use of skills was reduced from once a week during intervention to once every month during maintenance.
Staff and Community Acceptance	Social validity measures supported the use of the intervention, but did not measure staff acceptability.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Category	Content
Reference	Lavie, T., & Sturmey, P. (2002). Training staff to conduct a paired-stimulus preference assessment. Journal of Applied Behavior Analysis, 26, 589-596.
Population	3 teacher assistants; 8 autistic children
Setting	Classroom
Intervention	Multifaceted intervention: Staff were taught to perform paired-stimulus preference assessments through: (A) One-on-one training sessions were implemented where staff received verbal instruction on the skills to be taught, a written checklist outlining the skills, and a video demonstration of the skills; (B) On-the-job practice opportunities were provided; (C) Staff received on-the-job performance feedback from the trainer until 85% of all steps completed correctly; (D) No consequence was delivered.
How clear intervention responsible for effect?	Multiple baselines across 3 staff were used. This provided necessary control to ensure experimental control.
Magnitude of change: baseline to after intervention	Baseline measures for the staffs' use of the target skill were an average score of 19.6%. Post intervention measures averaged 99.3%. This represents an increase of 79.7% points in staff use of paired-stimulus preference assessment skills.
Effect intervention had on the environment or client behavior	No client measures were collected
Measures of Sustainability	No maintenance was reported.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Luiselli, J.K. & St. Amand, C. (2005). Staff training in applied behavior analysis: Improving knowledge competencies of service providers for people with developmental disabilities. Mental Health Aspects of
Population	24 direct care workers
Setting	A day school, a residential school, and an adult day habilitation center
Intervention	Antecedent intervention: (A) Presentation, (B) Testing, (C) Discussion
How clear intervention responsible for effect?	Simple pre post design competency topics. Did not control for knowledge that staff may have already acquired outside of training.
Magnitude of change: baseline to after intervention	Staff knowledge of skill sets was tested during baseline and average 61.13% correct. Post training the average score was 86.7%. This represents an increase in the average score of 25.57% points.
Effect intervention had on the environment or client behavior	No measures were taken
Measures of Sustainability	Yes. Effect was maintained at 1 month probe.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Category	Content
Reference	McKnight, Tami Jo & Kearney, Christopher A. (2001). Staff training regarding choice availability for persons with mental retardation: A preliminary analysis. Journal of Developmental and Physical Disabilities, 13, 1-10.
Population	6 staff participants; 8 residents with MR
Setting	4 ICF/MR group homes
Intervention	Multifaceted intervention: Staff were taught to provide choices (e.g., what to wear, what to eat, what activity to do) to clients through: (A) Verbal instruction and question/answer scenarios, (B) In workshop
How clear intervention responsible for effect?	Pre post design with control group
Magnitude of change: baseline to after intervention	Authors report significant increases in the offering of choices during sessions.
Effect intervention had on the environment or client behavior	Client measures using Vineland Adaptive Behavior Scales and Vineland Modified Adaptive Behavior Scale showed differences in post intervention scores from baseline, but were shown to not be significant following Bonferroni correction.
Measures of Sustainability	Yes. A follow-up probe was performed 30 days after the intervention. Results show that the staff effect maintained at post intervention levels.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Mozingo, D.B. & Smith, T. (2006). Enhancing frequency recording by developmental disabilities treatment staff. Journal of Applied Behavior Analysis, 39, 253-256.
Population	8 direct care instructors; 5 adults with profound mental retardation
Setting	Residential treatment facility for persons w/ DD
Intervention	Multi-faceted intervention: Staff was taught to accurately record frequency data of client aberrant behaviors through: (A) A 45 minute lecture by the investigator and distribution of data recording materials; (B) No opportunities for practice were provided; (C) On-the-job supervisor observation and feedback was provided to staff; (D) No consequence was delivered.
How clear intervention responsible for effect?	Multiple baselines across 1st and 2nd shifts with multiple interventions.
Magnitude of change: baseline to after intervention	Baseline measures showed staff uses of the target behavior an average of 2% of intervals. After the in-service intervention there was an average increase in staff performance of 13% points to 15% of intervals where the target skill was used. This effect was further increased with the application of supervisor observation and feedback to an average increase from baseline of 74.67% points to 76.67%. When feedback was removed and the supervisor only observed there was another increase of 10% to 86.67% of an increase from baseline of 84.67%.
Effect intervention had on the environment or client behavior	Client problem behaviors averaged 2.6 per session during baseline. Post intervention these decreased to 1.67. This was a decrease in problem behavior of close to 1 per session.
Measures of Sustainability	No maintenance was reported.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Parsons, M., Rollyson, J.H., & Reid, D.H. (2004). Improving day-treatment services for adults with severe disabilities: a norm-referenced application of outcome management. Journal of Applied Behavior Analysis. 37, 365-377.
Population	3 certified special education teachers, 4 paras, 30 adults with severe - profound MR
Setting	4 different program site classrooms
Intervention	Multifaceted intervention: Staff was taught to improve on-task behavior (skill involved rotating staff attention across client caseload) through: (A) a 1 hour in-service where rationales and verbal instruction was provided for target skill and written instructions were handed out; (B) No opportunities for systematic practice were provided; (C) On-the-job observation and feedback by the supervisor was provided; (D) Graphic feedback and praise were delivered by program director following sessions.
How clear intervention responsible for effect?	Design used was a multiple probe across Sites 1 and 2.
Magnitude of change: baseline to after intervention	Increases in staff distribution of teaching interactions were found post intervention. Baseline measures averaged 49.5% across both Sites. Post intervention measures averaged 69% across both Sites. This represents an increase of 19.5% points in the number of students receiving instruction.
Effect intervention had on the environment or client behavior	On-task client behavior increase from baseline measures of an average of 36% to an average of 68% post intervention in Site 1. In Site 2, these measures averaged 27% and 67%, respectively. This represents an average increase in on-task behavior of 36% points across both sites.
Measures of Sustainability	Yes. Maintenance probes were performed across 64 weeks. Staff on-task behavior remained above average baseline levels.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Parsons, M.B., & Reid, D.H. (1995). Training residential supervisors to provide feedback for maintaining staff teaching skills with people who have severe disabilities. Journal of Applied Behavior Analysis, 28, 317-322.
Population	10 supervisors.; 100 direct care staff
Setting	Residential facility for clients having severe DD
Intervention	Multifaceted intervention: Staff supervisors were taught to provide feedback through: (A) 4hr classroom training (lecture, written handouts; (B) Role plays were done and performance feedback was provided; (C) on-the-job coaching of supervisor's performance by the trainer; (D) No consequence was delivered.
How clear intervention responsible for effect?	Design used was a multiple probe across 2 groups of supervisors.
Magnitude of change: baseline to after intervention	Supervisor use of teaching skills improved from an average of 64% correct teaching behavior during baseline to 79% during post intervention. This represents an increase in correct use of teaching skills of 15% points. Baseline measures of feedback performance averaged 41% of the correct steps used by all supervisors. Post intervention measures 86%. This represents an increase of 45% points in the correct use of feedback steps.
Effect intervention had on the environment or client behavior	No client measures were collected
Measures of Sustainability	Yes. Maintenance probes were performed at 42 and 82 days after intervention. With both probes staff performance remained well above baseline levels of behavior.
Staff and Community Acceptance	All supervisors that completed the acceptability survey gave the program the highest ratings for liability and helpfulness. Unclear how many supervisors did not fill out the survey or how they scored the other questions?

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Parsons, M.B., Reid, D.H., & Green, C.W. (1996). Training basic teaching skills to community and institutional support staff for people with severe disabilities: A one-day program. Research in Developmental Disabilities, 17, 467-485.
Population	24 institutional staff and group home staff
Setting	Residential settings
Intervention	Multifaceted intervention: Staff were taught to use basic teaching skill through: (A) Classroom instruction (pre-quiz, training video, out of class assignment, post quiz; review assignment); (B) Practice sessions were provided within the classroom setting; (C) On-the-job observation and feedback was provided; (D) No consequence was delivered.
How clear intervention responsible for effect?	Multiple probes across two groups of staff.
Magnitude of change: baseline to after intervention	Baseline measures for staffs' correct use of teaching skills averaged 33.5%. Post intervention measures averaged 97%. This represents an average increase in the use of teaching skills of 33.5% points. Increases in staff use of verbal skills were also found with baseline measures of 69% and post intervention measures of 89%. This is an increase in the use of verbal skills of 20% points.
Effect intervention had on the environment or client behavior	Reports of client behavior are summarized as clients making more progress in their programs and requiring less assistance with activities. On a scale of 1 to 4 with 1 being the highest level of assistance and 4 being the least amount of assistance baseline scores averaged 1.23 across the clients. Post intervention measures average 2.6. This is an improvement of 30.1% points.
Measures of Sustainability	No maintenance was reported.
Staff and Community Acceptance	Staff scored most components as "liked very much" except the videos which scored between neutral and "liked somewhat". All rated overall training as being extremely helpful.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Reid, D., Parsons, M., Lattimore, L.P., Towery, D. & Reade, K.K. (2005). Improving staff performance through clinician application of outcome management. Research in Developmental Disabilities, 26, 101-116.
Population	3 job coaches and 5 autistic workers; 3 para teacher and students
Setting	Community jobs and classroom
Intervention	Multifaceted intervention: Staff is taught to improve their application of prompting supported workers through: (A) Initial verbal instructions with rationale for skill use; (B) No systematic workshop practice sessions were provided; (C) On-the-job supervisor feedback was provided to staff; (D) Supervisors provided corrective feedback prior to end of staff work day.
How clear intervention responsible for effect?	Multiple probe design across three vocational staff.
Magnitude of change: baseline to after intervention	Increases in staff use of prompting skills from an average baseline measure of 8.6% to post intervention average of 89%. This is an increase of 80.4% points.
Effect intervention had on the environment or client behavior	In a second study researchers report improvements in client on-task behavior from average baseline measures of 48.5% to post intervention measures average 94%. This represents an average increase in on-task client behavior of 45.5% points.
Measures of Sustainability	Yes. Follow-up probes were performed between 10 and 20 weeks after the intervention. All probes showed that staff behavior maintained at the high levels found following intervention.
Staff and Community Acceptance	Staff scored satisfaction surveys as being very satisfied and reported planning on using the intervention in the future.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Sarokoff, Randi & Sturmey, P. (2004). The effects of behavioral skills training on staff implementation of discrete-trial teaching. Journal of Applied Behavior Analysis, 37, 535-538.
Population	3 SPED teachers and 1 autistic 3 year old
Setting	Within a room in child's home
Intervention	Antecedent intervention: Staff is taught to use discrete-trial teaching through: (A) Written instruction and a review of baseline performance in graph format; (B) practice opportunities were provided and critiqued by investigator; (C) No on-the-job coaching was provided; (D) No consequence was delivered.
How clear intervention responsible for effect?	Multiple probe design across three staff.
Magnitude of change: baseline to after intervention	Baseline measures of teacher use of discrete-trial teaching skills average 45%. Post intervention measures average 98%. This is an average increase of 53% points in the correct use of discrete trial skills.
Effect intervention had on the environment or client behavior	No client measures were collected
Measures of Sustainability	No maintenance was reported.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Smalley, Kimberly A., Certo, Nicholas J., & Goetz, Lori (1997). Effect of a staff training package on increasing community integration for people with severe disabilities. Education and Training in Mental Retardation and Developmental Disabilities, 32, 42-48.
Population	5 behavioral aides
Setting	A day treatment activity center
Intervention	Multifaceted intervention: Staff were taught to increase community access for clients through: (A) Three one-on-one trainings were done where the researcher taught the staff how to utilize the VOIS tool; (B) Researcher and staff worked together to identify client activity schedule weaknesses and strengths as a part of the practice sessions (C) Subsequent sessions involved the researcher reviewing the client schedules and providing feedback and suggestions for improvements; (D) No consequence was delivered.
How clear intervention responsible for effect?	Multiple baseline across staff
Magnitude of change: baseline to after intervention	Staff use of the target skill improved. In baseline the average number of activities offered was 1.03 per week. Post intervention measures showed an increase to 5.92 activities offered. This is an increase of 4.88 activities.
Effect intervention had on the environment or client behavior	No measures were taken
Measures of Sustainability	Yes. Maintenance probes were performed over a 6 week period. Staff performance maintained at or above levels found within intervention condition.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Category	Content
Reference	Vause, T., Martin, G.L., Cornick, A., Harapiak, S., Chong, I., Yu, D.C.T., & Garinger, J. (2000). Training task assignments and aberrant behavior of persons with developmental disabilities. Journal of Developmental Disabilities, (2) 37-53.
Population	3 staff instructors; 18 clients with developmental disabilities
Setting	3 adult training classrooms at a day habilitation center
Intervention	Antecedent intervention: Direct care staff were trained to assign tasks to clients based on their ability level through the use of: (A) Self-instruction manual, (B) testing, (C) prompting
How clear intervention responsible for effect?	AB design used across the three staff and in three settings.
Magnitude of change: baseline to after intervention	During baseline sessions staff averaged only 20% correct use of target skill. Post intervention this average increased to 80%. This represents an increase in the correct use of the target skill of 60% points.
Effect intervention had on the environment or client behavior	During baseline the clients engaged in aberrant behaviors an average of 53.3% of the observed sessions. Post intervention measures only 39%. This represents a decrease of 14.3% points.
Measures of Sustainability	No maintenance was reported.
Staff and Community Acceptance	No measures were taken.

Appendix F (continued)

Review of performance improvement interventions published between 1995 and 2006

Reference	Wolery, M., Anthony, L., Snyder, E.D., Wets, M.G., & Katzenmeyer, J. (1997). Training elementary teachers to embed instruction during classroom activities. Education and Treatment of Children, 20, 40-58.
Population	3 general education teachers; 3 pre-teen students with developmental disabilities
Setting	3 classrooms
Intervention	Multifaceted intervention: Staff was taught to embed instructional trials using a constant time delay procedure within daily activities through: (A) Staff received a written instruction manual and participated in a question/answer session about the process; (B) role play sessions were offered and observed by the investigators. Feedback was provided based on performance; (C) On-the-job training observation and feedback was provided by the investigators following each observation; (D) No consequence was delivered.
How clear intervention responsible for effect?	The design used a multiple probe across participants.
Magnitude of change: baseline to after intervention	Teacher use of target skill averaged .63 trials per session across all three teachers during baseline. Post Intervention measures averaged 5.67 trials per session. This represents an increase in the average number of trials during each session of 5.1 trials.
Effect intervention had on the environment or client behavior	Data showed improvements in all students. With one child meeting 100% criterion with correct responses and an echolaic child correctly responding to all presented tasks post intervention.
Measures of Sustainability	Yes. Two maintenance probes were performed per classroom between 6 and 18 days after intervention. Two of the three teachers maintained training effect during maintenance probes.
Staff and Community Acceptance	Measures were taken to assess teacher satisfaction with procedures and results from the intervention. Two of the three teachers reported liking the training and the results. One teacher expressed that it was impractical due to the amount of time it took to utilize the procedures.

Figure Captions

Table 1. Table of ranges and averages for inter-observer reliability observations.

Figure 1. Percentage of 3 second intervals in which teachers used target skills of physical prompting, oral instructions, modeling, use of behavior-specific praise or tangible reinforcement, or assistance with self-care tasks.

Figure 2. Height of the line represents the percentage of three-second intervals in which the clients were actively participating in a functional activity. The height of the bars represents the number of inappropriate behaviors (hitting others, hitting self, yelling, self-stimulatory behaviors, elopement, etc.) clients displayed within a 20-minute session.

Figure 3. The heights of the bars represent the average score for each question for teacher satisfaction with the intervention. The Rating Scale: 6= Very Satisfied, 5= Satisfied, 4= Slightly Satisfied, 3= Slightly Dissatisfied, 2= Dissatisfied, 1= Very Dissatisfied.

Figure 4. The heights of the bars represent the average case manager rating for each question about the center day program. The Rating Scale: 6= Very Satisfied, 5= Satisfied, 4= Slightly Satisfied, 3= Slightly Dissatisfied, 2= Dissatisfied, 1= Very Dissatisfied.

Figure 5. The heights of the bars represent the average case manager for each question about the home day program. On "Question 3" the case-managers reported not witnessing any inappropriate behaviors and thus did not record a score. The Rating Scale: 6= Very Satisfied, 5= Satisfied, 4= Slightly Satisfied, 3= Slightly

Dissatisfied, 2= Dissatisfied, 1= Very Dissatisfied.

Table 1

Ranges and Averages for Inter-Observer Reliability Observations

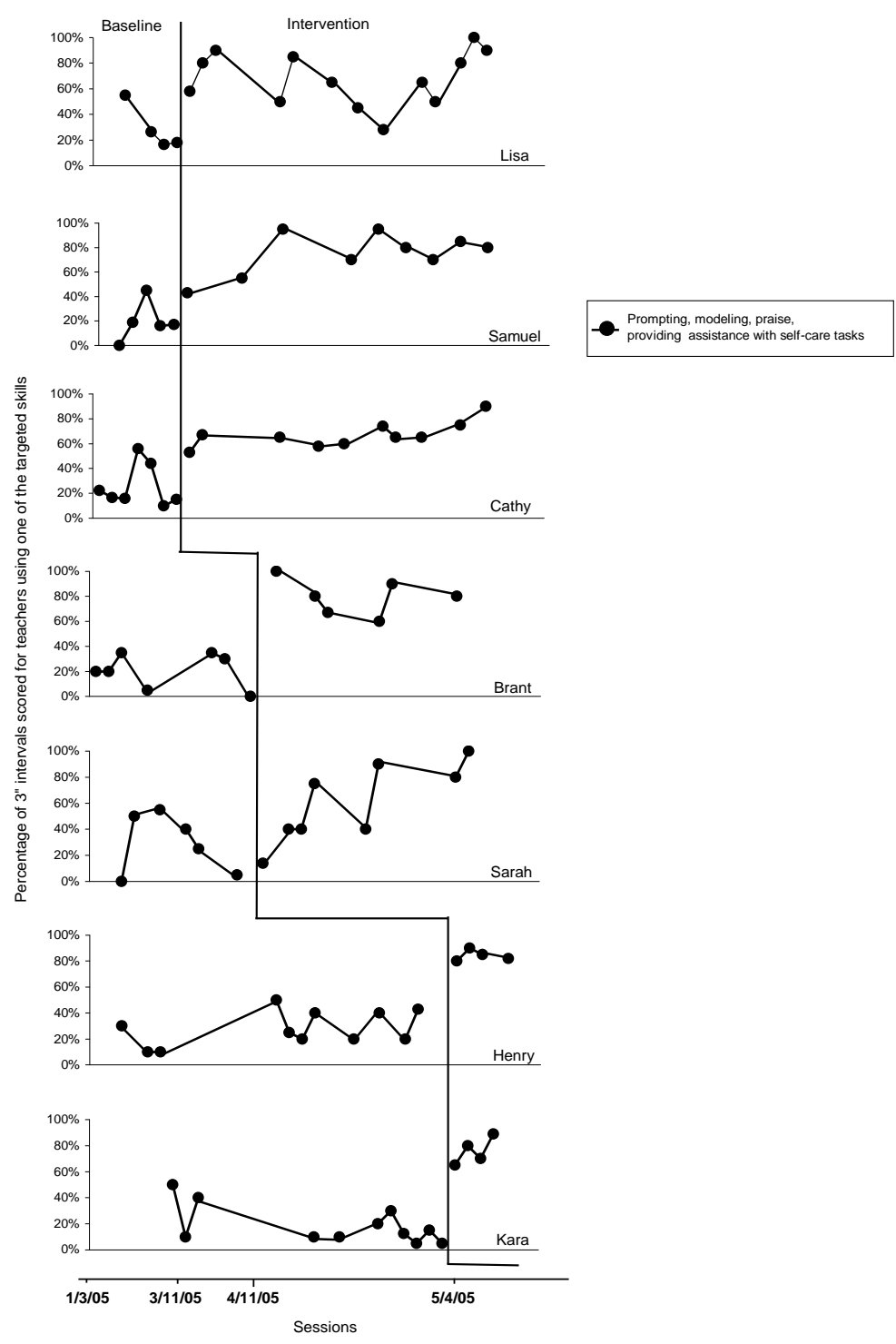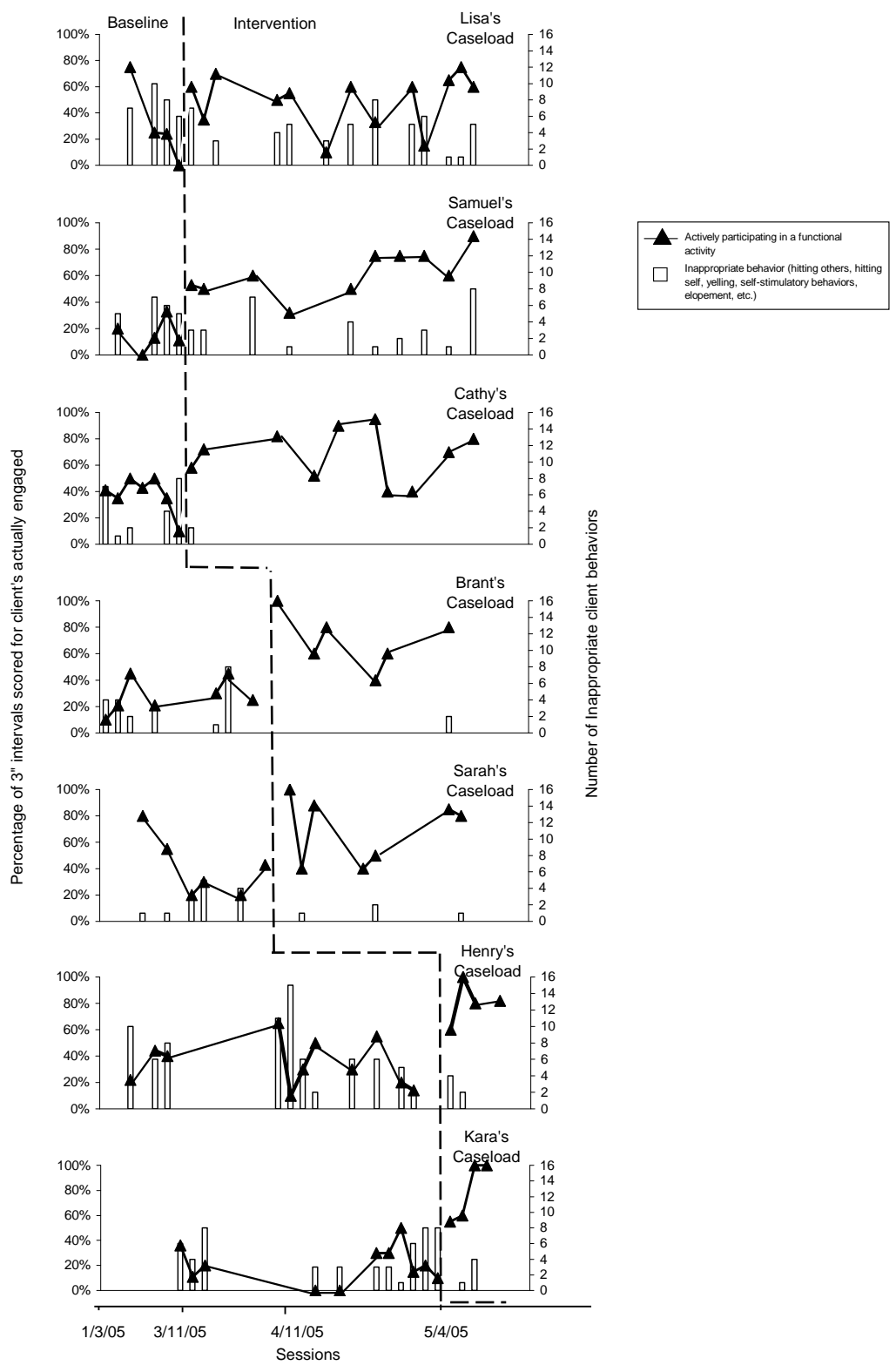|	What activity was the client engaged in?	What level of engagement did the client display?	What was the teacher doing?	Was there a copy of client's daily activity schedule	Was the client on schedule?
Range for Inter-observer Reliability	75% - 100%	73% - 100%	73% - 100%	100%	100%
Average of Inter-observer Reliability	90%	87%	83%	100%	100%

Figure 1

Figure 2

Figure 3

Figure 4

Casemanager Satisfaction sith Center Day Program

Figure 5

Casemanager Satisfaction sith Home Day Program

Q.#1: Were the clients engaged in meaningful tasks?

Q.#2: Did teachers interacted with clients appropriately and postively?

Q.#3: Were you comfortable with the way the teacher dealt with inappropriate client behaviors?

Q.#4: How effectively did the teacher supervise and monitor the clients?

Q.#5: Did the teachers take advantage of teaching opportunities during the schedule?

Q.#6: Did the teachers share their time across all the clients on their caseload?

Q.#7: How satisfied were you with the overall quality of the clients' experience during their day?