PEER PYRAMIDAL TRAINING:

EFFECTS ON DIRECT SUPPORT STAFF TEACHING SKILLS AND

GENERALIZATION OF TRAINER SKILLS

by

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Abstract

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by

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Training is important to ensuring that staff members have the skills they need to provide effective and quality services to individuals with intellectual disabilities, but human services agencies often have limited resources to devote to training. The experimenter used two concurrent multiple-probe-across-participants designs to assess the effectiveness of a peer pyramidal training program on staff performance in a day habilitation program for adults with psychiatric disorders and intellectual disabilities. In the first design, the experimenter assessed the teaching skills of peer trainers as they taught their co-workers to implement (1) responses in which the trainers received specific instruction in how to teach (training responses) and (2) responses in which the trainers had no instruction in how to teach to others (generalization responses). In the second design, the experimenter assessed the effect of the peer training program on the staff members' ability to use positive reinforcement and prompting procedures to teach consumers and to document behavioral incidents. Peer trainers improved their use of teaching skills while instructing staff on training responses as a function of the training program. Further, these effects generalized to the instruction of staff on the generalization responses. All staff improved their performance on all responses that the peer trainers taught them following implementation of the pyramidal training program.

All participants reported a high degree of social validity. These results extend the research on pyramidal training and suggest that, for human services agencies with widespread budgetary constraints, direct support professionals may be able to train one another effectively.

Dedication

This work is dedicated to my grandmother, Evelyn Benedict, and my mother, Teri Sonier, who always believed that I could accomplish anything. Because of them, this is one more accomplishment I have been able to achieve.

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Peer Pyramidal Training: Effects on Direct Support Staff Teaching Skills and Generalization of Trainer Skills

The American Association on Intellectual and Developmental Disabilities (AAIDD, 2002) has identified training as important to providing direct support professionals (DSPs) with the knowledge and skills they need to provide quality services to individuals with intellectual and developmental disabilities (ID/DD). DSPs who provide quality services are likely to effect positive change in the lives of individuals with ID/DD (Maes, Lambrechts, Hostyn, & Petry, 2007). This, in turn, may positively affect the DSPs who provide services as they observe the impact that their actions and skills have on the individuals with ID/DD.

Basic behavior management skills such as use of positive reinforcement, antecedent manipulation, and prompting are important tools to teach and support individuals with ID/DD. In one study, DSPs trained to effectively implement basic behavioral techniques reported subsequent improvement in the behavior of the service recipients with whom they worked and improvement in their own behavior management skills (Finn, Fried, & Poulson, 2004). Such perceptions may result in increased pride in work, thus increasing the likelihood that the DSPs would continue to use such techniques. Furthermore, Robertson et al. (2005) found that residential DSPs working with service recipients reported staff stress associated with a lack of training in behavior management techniques. These factors suggest that effective staff training in behavior management techniques could possibly increase job satisfaction and DSP retention.

Retention of DSPs is important in providing consistent treatment and services (Connor et al., 2003). High staff turnover compromises the quality of services delivered

to service recipients, negatively affects relationships between DSPs and service recipients, and increases the vulnerability of service recipients who rely on DSPs to provide many of their basic needs (U.S. Department of Health and Human Services [DHHS], 2006). Frequent vacancies often result in increased shifts and workload for existing DSPs, increasing stress and contributing to burnout (Hewitt & Larson, 2007). Further, high staff turnover has financial implications for human services agencies. They must fund increased overtime rates for DSPs, advertise for replacement staff members, and pay for increased training of new staff (DHHS, 2006).

Training new staff members is a challenging task. Unfortunately, human services agencies often have limited resources to devote to a comprehensive staff-training program. Agencies facing an increase in the cost of operations often cut funding to training programs (Hewitt & Larson, 2007). As such, DSP training is often one of many additional responsibilities assigned to managers and clinicians. In an effort to meet these training and other responsibilities, managers and clinicians often convey information via verbal instruction at in-service training sessions. Unfortunately, research has demonstrated that instructions alone are often not sufficient in improving staff performance (Demchak, Kontos, & Neisworth, 1992; Finn & Sturmey, 2009; Kuhn, Lerman, & Vorndran, 2003).

Agencies often use some type of pyramidal training to fulfill their DSP training goals. A typical pyramidal training model involves training conducted in a "vertical" hierarchy. For example, supervisors participate in training and subsequently train staff members. Peer pyramidal training involves training conducted "horizontally". It is a variation in which staff members, family members or others participate in training and

then subsequently train their peers. A peer pyramidal training program may initially require more expenditure of resources due to the need to train the trainers how to instruct others, however, it may reduce the time spent training and retraining staff. While supervisors may be involved in initial training of peer trainers, they can then delegate further training to staff members. Supervisors may then have more time to spend overseeing the provision of services and training more complex skills. To be a viable training option, a peer pyramidal training program must be effective in improving DSP performance, result in generalization and maintenance of skills for both the trainer and trainee, be acceptable and valuable by both DSPs and administrators, and result in generalization of both trainer and trainee skills.

Pyramidal training is versatile and can be used to teach a wide range of skills. Research has demonstrated that pyramidal training can effectively improve teaching and/or behavior management skills to individuals who provide services to others, including teachers (Bruder & Bricker, 1985; Jenson, Parsons, & Reid, 1998; Jones, Fremouw, & Carples, 1977) childcare providers (Demchak et al.,1992), family members (Adubato, Adams, & Budd, 1981; Ball, Coyne, Jarvis, & Pease, 1984; Kuhn et al., 2003; Neef, 1995; Symon, 2005); and direct-support professionals (Demchack & Browder, 1990; Fleming, Oliver, & Bolton, 1996; Kneringer & Page, 1999; Page, Iwata, & Reid, 1982; Shore, Iwata, Vollmer, Lerman, & Zarcone, 1995; Schlosser, Walker, & Sigafoos, 2006). Researchers have also found pyramidal training to be effective in teaching helping skills to community members (D'Augelli, & Vallance, 1982), voiding procedures to nursing home staff (Burgio et al., 1990), and safety-related (Van den Pol, Reid, & Fuqua, 1983) and interaction skills (Finn & Sturmey, 2009) to direct-support staff.

In addition to demonstrating the effectiveness of pyramidal training in improving skills, some studies have included various measures of generalization. Stokes and Baer (1977) defined generalization as "the occurrence of relevant behavior under different, non-training conditions (i.e., across subjects, settings, people, behaviors, and/or time) without the scheduling of the same events in those conditions (p. 350)." Programming common stimuli is one method for enhancing generalization (Stokes & Baer, 1977). This method entails including stimuli in training that are likely to be present in the generalization environment. Pyramidal training programs that use supervisors and/or peers to train staff members may be considered an example of programming common stimuli, as supervisors and peers are present in both training and generalization environments.

Some studies have demonstrated that trainer skills generalized across settings (Ducharme et al., 2001; McGimsey et al., 1995; Symon, 2005) and across trainees (Kuhn et al., 2003; Schlosser et al., 2006). For example, McGimsey et al. (1995) trained graduate students to use Time Out and then to train parents to do so. The training of the graduate students occurred in a private residence. The graduate students subsequently trained parents to use Time Out in their own homes. Similarly, Symon (2005) conducted parent training in a clinic setting. Training included instruction, modeling, practice, and feedback over five, 5h sessions. Parents provided videotapes of themselves and other caregivers teaching the family member with autism prior to the parent training. The experimenters videotaped parents teaching their child with autism on the final three days of training. After parent training, the parents trained a family member to use the teaching techniques. They provided videotapes of the family members teaching the child

with autism following their completion of family training. A multiple-baseline design across caregivers demonstrated a clear and systematic increase in correct implementation of teaching techniques following the caregiver training conducted by the parent.

Kuhn et al. (2003) and Schlosser et al. (2006) demonstrated that peer trainers effectively trained more than one trainee. Kuhn et al. (2003) trained three primary caregivers to implement behavioral treatment plans and to train others to do so. Each primary caregiver subsequently trained two more caregivers within the family. Schlosser et al. (2006) trained one cohort of DSPs to increase opportunities for communication with children with ID/DD and to train other staff to do so. This initial cohort of DSPs then served as trainers for a second cohort of DSPs and then a third cohort. A multiple-baseline design across cohorts of staff members demonstrated a functional relation between the training program and mean number of communication opportunities, indicating that the training generalized across trainees.

The most common measure of generalization in the pyramidal training research has been to assess the degree to which responses of trainees and/or trainers generalized to other tasks. These studies had mixed results. Page et al. (1982) found that the pyramidal training program improved staff use of instructions, prompts, and consequences when they taught consumers the task on which they received specific training, but these results did not generalize to an untrained task. They used two multiple baseline designs across responses to assess effect of training on DSP responses during two types of tasks. This allowed them to assess generalization of teaching skills across tasks. Baseline data collection began simultaneously for all three responses (instructions, prompts, and consequences) during both communication and gross motor skills activities. Supervisors

completed training on all three responses during the communication activity while baseline conditions continued for gross motor skills. The training resulted in improved staff use of instructions, prompts, and consequences during the communication activity, but this improvement did not generalize to the gross motor skills activity. Improved performance in the gross motor skills activity occurred only after direct training during the context of the gross motor skills activity. Thus, the effects of the pyramidal training program did not generalize to the untrained task. The difference in activities may help explain the lack of effect. It can be argued that teaching communication skills is quite different from teaching gross motor skills. While teachers were using the same techniques (instructions, prompts, and consequences), the fact that they used them to teach such different skills may reflect a substantial difference in skill set across the two types of activities.

Adubato et al. (1981) trained a mother to implement verbal and physical prompting techniques to teach her child with autism to dress himself. The mother subsequently trained her husband to use the same techniques when teaching their child to dress. Their data suggested that the initial training program provided to the mother increased effective use of teaching skills of both parents during a dressing task with their child. Adubato et al. (1981) also included a measure of generalization. They used multiple-baseline designs across the two groups of teaching skills to determine the effect of the program on their teaching skills during two untrained tasks—play and eating. Both parents increased their use of the new teaching skills during the generalization tasks after training in most cases, but a functional relation between the training and the teaching skills was not demonstrated during the generalization tasks.

A study conducted by Neef (1995) did demonstrate some generalization to novel tasks. Similar to Adubato et al. (1981), Neef (1995) provided parent training on effective use of various teaching skills, and training focused on how to use these skills when teaching one task to their children. Neef (1995) measured parent use of teaching skills during the training task as well as parent use of the teaching skills when teaching a new task to their child. Neef (1995) selected two or three skills for parents to teach based on the individual needs of each child. The skills for each child were not specified, but some examples included number and money concepts and household tasks. Parents successfully trained other parents to use various teaching skills, and the use of these teaching skills generalized to other teaching tasks to a limited extent. Some parents demonstrated much greater generalization than did others, but all demonstrated some improvement of teaching skills from baseline. The experimenter described two different types of tasks that the parents taught to their children, namely cognitive-based tasks (e.g., numbers, time concepts) and activity-based tasks (e.g., folding clothes). It is difficult to determine based on the data presented, but the parents with limited generalization may have reflected a difference in type of task taught.

Demchack and Browder (1990) included measures of generalization across tasks and across consumers with positive results. Supervisors received training on use of prompts and praise when teaching a task to consumers. Demchack and Browder (1990) measured the use of prompts and praise responses when supervisors taught 1) a task to the service recipient with whom they practiced during training and 2) a different task to a novel service recipient. A multiple-baseline design across supervisors demonstrated an increase in use of prompts and praise during teaching of a novel task to the generalization

consumer as a function of the training program. These results indicated that supervisor training generalized to a novel task and a novel service recipient.

After supervisor training, supervisors subsequently trained DSPs on the use of the use of prompts and praise (Demchack & Browder, 1990). The dependent measures were the same for the DSPs as they were for the supervisors. Demchack and Browder (1990) used a multiple-baseline design across DSPs to assess their use of prompts and praise when teaching a task to the training service recipient and when teaching a different task to the generalization service recipient. There was a clear and systematic increase in effective use of prompts and praise with both service recipients with the implementation of the pyramidal training program. This suggests that a pyramidal approach can be used to increase the use of prompts and praise in residential members and their supervisors, and that the use of these responses can generalize to teaching novel tasks to novel service recipients. In this study, supervisors taught activity-based tasks in all cases (e.g., combing hair/brushing, setting/clearing table, hanging up coat).

Ducharme et al. (2001) used a quasi-pyramidal staff training approach specifically as a method to improve generalization. Residential supervisors received training on various teaching techniques to use when teaching adults with ID/DD. Teaching skills included preparation of training area, correct use of verbal and physical prompts, use of contingent reinforcement, data collection, and use of discrete training trials. Training consisted of modeling, role play, and performance feedback. Consultants modeled correct and incorrect use of teaching skills while supervisors played the role of serviced recipient. Supervisors then practiced the teaching skills while consultants played the role of service recipient. To enhance generalization of teaching skills to other stimulus

situations, specifically to additional consumers and programs, the experimenters used a general case training approach. General case training, also called general case analysis, is a method for enhancing generalization which involves systematic assessment and selection of a sample of training exemplars that include a broad range of stimulus variations and response requirements that is likely to be found in the generalization environment (Ducharme & Feldman, 1992). To accomplish this, the supervisors and DSPs compiled the training needs for consumers in the three group homes in which they worked. Ducharme et al. (2001) subsequently selected 24 program exemplars that sampled the full range of stimuli and response elements required by staff members when teaching skills to service recipients. Training focused on 12 of these program exemplars. Ducharme et al. (2001) used the remaining 12 exemplars to assess generalization. Program exemplars included both cognitive and activity-based tasks (e.g., folding towels, coin ID, telling time, sorting laundry).

In addition to training on teaching skills, supervisors also received supervisory training instructing them to use all 12 training exemplars on a rotating basis during staff training, spend an equal amount of time on each skill, use performance-based procedures, including feedback and reinforcement, and ensure that all staff received an equal amount of training. After completion of training, supervisors trained DSPs with minimal assistance from consultants to ensure quality control of the staff training.

The quasi pyramidal training approach and general case training was designed to enhance generalization of DSP teaching skills across stimulus situations. Ducharme et al. (2001) specifically included the supervisors as primary trainers to ensure a salient training stimulus common to the training and the work environments (Stokes & Baer,

1977). So the supervisor training incorporated a general case approach to enhance generalization of supervisor skills, but DSP training incorporated both general case training as well as the quasi-pyramidal training strategy.

Ducharme et al. (2001) evaluated supervisors and DSPs only on novel, untrained program exemplars not included in training sessions. All evaluation sessions occurred in residences with service recipients. This provided a measure of generalization across settings, as training occurred in a simulated environment. Multiple-baseline designs across supervisors and across residences demonstrated the effect of the training. A systematic increase in the use of correct teaching skills was evident with the introduction of training for all supervisors and all DSPs in all residences, indicating that this approach improved supervisor teaching skills and these skills generalized to other service recipients and program exemplars and other settings not used during training. Further, the stimulus control package that included general case-training and pyramidal training improved the teaching skills of all DSPs, and these skills generalized to other service recipients and program exemplars not used during training. This study was the first study in which the experimenters systematically identify and train staff to teach both cognitive-based and activity-based tasks. It is likely that the strong effect shown is a reflection of the specific programming for generalization conducted by the experimenters.

While several of these studies reported various measures of generalization for trainers as well as trainees, none measured the extent to which teaching trainers how to teach staff to perform one skill generalized to allow them to teaching a novel skill. A successful staff training program must result in improvement of staff performance, but a training program with such benefits for the trainers as well the trainees is likely to be

even more valuable to human services agencies. The time and expense involved in initially training the trainers would be justified if both trainers and trainees resulted in generalization of skills across situations. Therefore, the current study extended research on pyramidal training by (1) assessing peer trainer benefits in addition to peer trainee benefits, (2) systematically replicating previous research (Finn & Sturmey, 2009; Van den Pol et al., 1993) by determining the extent to which DSP peer trainers could train their peers to correctly implement various job-related skills, and (3) extended previous research by assessing the extent to which the DSP peer trainers could effectively train their peers to implement tasks in which the trainers had no previous instruction in training.

Method

Setting

The experimenter conducted the study in a group day habilitation program serving adults with intellectual and psychiatric disabilities. The facility had seven program rooms, each of which included 10-12 adult consumers, all of whom exhibited challenging behavior. Staff from three of the program rooms participated in the study. All of those rooms had 12 consumers each. Consumers had an age range of 29 – 78 years and functioned within a severe – moderate degree of intellectual disability. All consumers had a developmental disability and at least one secondary psychiatric diagnosis. Table 1 displays a list of psychiatric diagnoses and the number of consumers in the participating rooms diagnosed with each.

Table 1.

Psychiatric diagnoses of consumers in participating rooms and the number of consumers diagnosed with each. Note: some consumers were diagnosed with more than one psychiatric disorder.

Psychiatric Diagnosis	Number of Consumers Diagnosed
Anxiety Disorder, NOS, with OCD Features	1
Attention-Deficit Hyperactivity Disorder	1
Atypical Psychosis, NOS	2
Bipolar Disorder	1
Conduct Disorder, NOS	1
Impulse Control Disorder, NOS	1
Intermittent Explosive Disorder	4
Mood Disorder, NOS	2
Mood Disorder with Psychotic Features	1
Obsessive-Compulsive Disorder	1
Psychotic Disorder, NOS	16
Schizo-affective Disorder	1
Schizophrenia	7
Unspecified Psychosis	1

Consumers were scheduled to arrive at the program at 8:30 a.m. and leave between 2:30 p.m. and 3:00 p.m. each day, Monday through Friday, excluding holidays, and throughout the entire year. One habilitation specialist worked in each program room with at least one paraprofessional assistant. The habilitation specialists served as peer trainers to their paraprofessional assistants. Throughout this paper, habilitation specialists are referred to as instructors and paraprofessionals are referred to as staff.

Participants

Table 2 lists the titles and the roles of the individuals involved in the study. Three instructors (habilitation specialists) and three staff (their paraprofessional assistants) participated. Participants were all women, approximately 35 to 60 years old, and had worked in their current positions from 3 to 20 years. One instructor had a B.A. degree in adaptive physical education. The other two instructors had high school diplomas. All staff had high school diplomas or GEDs. Each instructor/staff pair worked together in the same program room at the beginning of the study. Instructors functioned as the "head" staff in the rooms, but they had no supervisory responsibilities. Instructors and staff worked together as peers. The experimenter selected instructor/staff pairs randomly from those employees who volunteered.

Table 2

Title, number, and roles of individuals involved in the study.

Title	Number	Role in Study
Habilitation Specialist	3	Instructor (trained staff)
Paraprofessional Assistant Habilitation Specialist	3	Staff (participated in training)
Director	1	Experimenter (trained instructors, conducted observations)
Program Supervisor	2	Training Assistant (assisted with instructor training, conducted observations)
Psychologist	2	Training Assistant (assisted with instructor training, conducted observations)

Dependent Variables

Instructors. The dependent variable for instructors was *correct instructor teaching responses.* Correct instructor teaching responding was defined by a series of steps that the instructor should follow when conducting the in-service with the staff and delivering performance feedback to the staff. There were two behavior checklists, one for conducting the in-service and one for delivering feedback (see Tables 3 and 4). Each step is described on the checklists. The experimenter measured correct instructor teaching responses as the percentage of steps on the behavior checklists completed correctly during a given session. The experimenter counted omissions and commissions as errors. The experimenter did not count any change in the sequence of steps as an error.

Table 3

Behavior Skills Checklist 1: The experimenter gave this checklist to each instructor trainer during the Train-the-Trainer stage of instructor training. Instructor used this checklist in practice sessions and subsequently when training staff.

	Conducting the In-Service
1.	State response
2	Give rationale for using target response
3	Read response definition
4	Provide suggestions to improve performance of skill during the course of the day
5	Ask if peer has any questions
6	Answer all questions
7	Describe criterion for mastery
8	Model response for 3-5 minutes or model 3-5 examples of response
9	Ask if peer has any questions
10	Answer all questions
11	Thank peer for participating

Table 4

Behavior Skills Checklist 2: The experimenter gave this checklist to each instructor during the Train-the-Trainer stage of instructor training. Instructors used this checklist in practice sessions and subsequently during with staff when collecting data and delivering feedback.

	Delivering Feedback
1	Make at least one positive general statement about the observation
2	Tell peer the specific aspect of the observation the you liked best
3	Show data sheet to peer
4	Read each step on data sheet to peer
5	Read each step that the peer completed correctly
6	Read each step that the peer completed incorrectly
7	Give suggestions as to how to complete these steps correctly in future.
8	State criterion required for mastery
9	Ask if peer has any questions
10	Answer all questions
11	Make at least one more positive statement about observation
12	Thank peer for participating

Staff. The dependent variables for staff participants were percentage of correct *token delivery, use of behavior-specific praise, prompting napkin use,* and *behavioral incident report writing.* The experimenter selected dependent variables by conducting informal observations of the staff and interviewing the program supervisors. The program supervisors identified a prioritized list of what they considered to be the greatest training needs for their staff. The experimenter selected the dependent variables from that list, in order of greatest priority, that all staff participating in the study demonstrated they could improve their performance. For example, the experimenter did not select several skills at the top of the prioritized list that involved working effectively within a group setting because one or more of the staff performed the skills well. Further, the experimenter selected prompting napkin use because of the wide range of consumer needs in each of the rooms. The supervisors had requested that staff learn to correctly use a prompt hierarchy. The experimenter identified prompting napkin use as the one area that many consumers in each room needed additional assistance. A definition of each staff response is described below.

Token delivery. The experimenter defined token delivery as (a) the staff member placing the token board on the table directly to the right and within arms' length of the consumer (if the consumers had a token board), (b) putting at least five tokens in staff pocket or on staff desk for use during the activity, (c) delivery of each token contingent only on consumer response targeted for increase in behavior plan, (d) withholding of token after consumer response targeted for decrease in behavior plan, (e) delivering at least five tokens during the activity, (f) delivering one token at a time, (g) starting token delivery for each token within one second of targeted consumer response, (h) delivering

each token by placing it in the hand of the consumer, and (i) verbally prompting consumer to put the token on the token board or in token jar, if the consumer did not do so independently (e.g., "put the token on your board" or "put the token in your jar"). The experimenter calculated the percentage of correct token delivery by dividing the number of elements completed correctly during the observation by the sum of the elements omitted or completed incorrectly.

Behavior-specific praise. The experimenter defined behavior-specific praise as making statements of praise immediately followed by a description of the response for which the consumer was being praised. Statements must include three elements: first name of consumer, praise, and description of response. Statements must be made either during or within 2s following the targeted adaptive response and not be made within 2s of a targeted maladaptive response. The experimenter defined praise statements as any verbal statement made by the staff member to the consumer whereby the staff member expressed approval of the consumer behavior, e.g., "Mario, good; Beth, terrific, 'Oscar, I like it when you___". Observers recorded the number of correct behavior-specific praise statements emitted during the five-min interval. Observers did not record any praise statements that did not include all three elements. The experimenter measured use of behavior-specific praise as the rate of correct behavior-specific praise statements made per five-min interval.

Prompting napkin use. The experimenter defined prompting napkin use as correctly using a prompt hierarchy of least-to-most assistance to prompt a consumer to wipe his mouth with a napkin during lunch. Staff should begin with the least amount of assistance, systematically increasing the amount of assistance provided until the

consumer wipes his mouth with the napkin. Staff should wait 5 s between each prompt. If the consumer wipes his mouth within that 5-s interval, staff should provide no additional prompts. If the consumer does not wipe his mouth within that 5-sec interval, staff should provide the next level of prompt. The experimenter asked staff to deliver at least four prompts to any consumer or combination of consumers whom they deemed needed to wipe their mouth during each lunch session. Observers recorded data on the first four prompts provided during the lunch session. For each prompt, observers recorded which elements in the prompt sequence the staff completed correctly and which elements they completed incorrectly. The experimenter calculated a percentage of correct prompt delivery by dividing the number of elements the staff completed correctly on all four opportunities by sum of the number of elements the staff omitted and completed incorrectly, arriving at a total percentage of correct prompting of napkin use during that one observation session.

The staff should start by delivering a verbal prompt to the consumer that included all three of these elements: (a) stating the consumer's name, (b) making eye contact with the consumer, and (c) saying either "wipe your mouth" or "use your napkin." If a staff added additional words to the verbal prompt, such as "would you like to wipe your mouth?" or "please pick up your napkin and wipe your mouth", the prompt would be considered incorrect. If the consumer did not wipe his mouth after the verbal prompt, staff should repeat the verbal prompt while pointing at the napkin (gestural prompt). If the consumer did not wipe his mouth within 5 s of this prompt, staff should repeat the verbal prompt while placing a hand on the shoulder of the consumer. If the consumer did not wipe his mouth within 5 s of the hand-at-shoulder prompt, the staff should place her

hand on the elbow of the consumer and guided the consumer to pick up the napkin. Staff should not repeat the verbal prompt while providing this physical prompt. If the consumer did not wipe his mouth within 5 s on this hand-at-elbow prompt, the staff should hold the consumer's wrist and gently guide the consumer's hand to the napkin. If the consumer did not wipe his mouth within 5 s of this hand-at-wrist prompt, the staff should place her hand over the hand of the consumer and manually guide the consumer to pick up the napkin and wipe the consumer's mouth.

Behavioral incident report writing. The experimenter defined behavioral incident (BIR) report writing as correctly completing each element of the behavioral incident report according to the following guidelines. The experimenter measured BIR writing by dividing the number of elements completed correctly by sum of the number of elements completed incorrectly and the number of elements omitted.

Element 1. Staff should fully complete Part 1 of the behavioral incident report (BIR) including only correct information. Specifically, staff should (a) circle the agency site (CFCS), (b) write the date that the incident occurred (including correct month, date, and year), (c) write the time that the incident began, (d) write the entire duration of the incident (the amount of time that elapsed between the time the consumer began exhibiting challenging behavior and the time that the consumer resumed his/her regular activities), (e) write the location(s) that the incident occurred (the specific room in the facility or the location outside the facility), (f) write the first and last name of the consumer involved, and (g) write the first and last names of all staff members involved in the incident.

Element 2. If the consumer exhibited or attempted to exhibit physical aggression towards another person during the behavioral incident, staff should circle "physical aggression". If the consumer used the time out room, staff should circle "time out". If the consumer exhibited or attempted to exhibit self-injurious behavior, staff should circle "self-injury). If the consumer used the quiet room, staff should circle "quiet room".

Element 3. Staff should draw a circle around all verbal, non-verbal, and physical interventions staff used during the incident.

Element 4. If the time out room was used, staff should answer whether time out was used in accordance with behavior support plan" by circling "yes" or "no". Staff should circle "yes" if the consumer had time out in his plan and staff followed that plan. Staff should circle "no" if the consumer did not have time out in his behavior plan and/or staff didn't follow the plan. When checking no, staff should also check that the consumer displayed behavior that preceded extreme violence or other dangerous behavior and/or that the consumer requested to use time out but did not have it in the plan. Also, when checking "no", staff must describe the reason that TO was needed (on the lines below).

Element 5. Consumer must see the nurse whenever a restrictive intervention was implemented, the consumer exhibited self-injurious behavior, if the consumer complains of pain, or if anything occurred during the incident that could have caused an injury. Staff should indicate whether the consumer saw the nurse as a result of the incident by circling "yes" or "no". If the consumer saw the nurse, staff should get the nurse's signature. If consumer saw nurse, staff should also ensure that the nurse indicated whether there was any injury by circling "no" or "yes" on the appropriate area of the form.

Elements 6-9. Staff should describe the incident on the back of the BIR and include at least one antecedent, a description of behavior exhibited during the entire behavioral incident (including while in time out), the immediate consequences of the behavior, and the activity that the consumer began after the incident had concluded. Staff should describe what activity the consumer was engaged in prior to exhibiting the problem behavior. Staff should fully describe the actions of the consumer during the entire behavioral incident. Staff should also describe what consequences occurred as a result of the problem behavior.

Element 10. In the written description of the incident, staff should write the full, correct name of any physical interventions used during the incident.

Element 11. If physical interventions were used, staff should write the full names of all staff involved in implementing the technique.

Element 12. If restrictive interventions were used, staff should write the duration of the technique.

Element 13. If time out or the quiet room was used, staff should write how the consumer got to the time out or quiet room (independently, verbal prompts, physical intervention); the name of the staff member who prompted the consumer to use the time out room or quiet room; how long the consumer was in the time out or quiet room.

Element 14. If consumers other than the subject of the BIR are included in the description, staff should refer to them only by first and last initial.

Data Collection Procedures

Staff responses. The experimenter and/or a training assistant conducted observations of staff to collect data on token delivery, behavior-specific praise, and

prompting napkin use. Observation sessions occurred while the staff were working with consumers and were scheduled according to the preference of the staff being observed. Data collection for token delivery occurred in the program rooms of the staff when the consumers were completing morning in-seat activities. Observation sessions were 10-15 min in duration, beginning when the consumer gathered the task materials and ending when the task was complete and all materials were away or when there was no consumer responding for three minutes. Data collection for prompting napkin use occurred in the cafeteria or program rooms of the staff when the consumers were eating lunch. Observation sessions lasted approximately 10-15 minutes, ending after the staff prompted one consumer or any combination of consumers to use a napkin on four separate occasions. Data collection for behavior-specific praise occurred in the program rooms of the staff when the consumers were completing morning in-seat activities. Observation sessions were 5 min in duration. The experimenter collected data for BIR writing by collecting a copy of BIRs written by the staff before they had submitted it to their supervisors for approval.

Correct instructor teaching responses. The experimenter and/or a training assistant conducted observations of the instructors to collect data on correct instructor teaching responses. Observations of the instructors occurred when the instructors conducted the in-service component of training with the staff for all four staff-responses. Observations of the instructors also occurred when the instructors delivered feedback to the staff with regard to staff performance on all four staff responses. The experimenter measured instructor teaching responses only when the instructors conducted the in-

service component of training, observing both the in-service and the first feedback session.

Design

The experimenter used two multiple-probe experimental designs, both of which ran concurrently. The first was a multiple-probe design across the three instructors to determine if correct instructor teaching responses increased as a function of the peer-training program. The experimenter also used a multiple-probe design across the three staff to determine the degree to which their performance improved as a function of the peer-training program.

Materials

Observers used a watch with a second hand to time observations. Observers recorded data with pens and/or pencils on data sheets. Instructors used behavior checklists of correct teaching responses and written definitions of staff responses.

Procedure

An overview of the general procedure that was followed is displayed in Table 5. Before the study began, instructors and staff attended a meeting to discuss the project. The experimenter informed them that (a) the instructors would be participating in a series of brief, in-service training sessions, after which they would train the staff and (b) prior to, during, and after the training, the staff would be observed in their program rooms. The experimenter described the observation procedures, and the instructors and staff wrote a tentative weekly schedule of observations. The experimenter instructed them (a) to disregard observers during observations, (b) to refrain from speaking to and drawing attention to observers during the observation sessions, (c) that observers would not

function as support staff during observations other than during emergency situations, (d) to notify observers if their presence became disruptive to the room at any time during an observation, (e) to refrain from altering the schedule or activities of the room to benefit the observation, and (f) to speak audibly during the observation sessions. After this meeting, the experimenter conducted observations in each program room over the course of a two-week period to refine the behavioral definitions, decrease reactivity, and train observers on the observation procedures.

Table 5

Overview of general procedures.

Condition / Phase of Training	Instructor	Staff
Pre-baseline (instructions only)		All staff receive verbal/written instructions as to how to implement all four staff responses
Instructor Training (Response Training)	Experimenter trained all instructors to implement all four staff responses	
Baseline	Each instructor trained staff to implement all four staff responses	Instructors trained staff to implement four staff responses
Instructor Training (Train-the-Trainer)	Experimenter trained each instructor to teach two training responses in a staggered fashion	
Peer Training	Each instructor trained one staff on all four responses in a staggered fashion	Each staff participates in training on all four staff responses in a staggered fashion

Instructions only pre-baseline. At the beginning of this condition, the experimenter informed staff verbally and in writing (a) that the nature of the research was to investigate peer training and (b) how to implement the four staff responses. The experimenter then conducted observations of the staff in the manner previously described.

Instructor training. The experimenter trained each instructor in two stages: Response training and train-the-trainer. Instructors participated in response training as a group but, due to the constraints of the experimental design, participated in the train-the-trainer stage individually. Table 6 displays the instructor training sequence, including the number of sessions, duration, and training topics and tasks.

Table 6
Training sequence, number of sessions, total time required, and training topics/tasks for Instructor Training.

Instructor Response Training		
Number of Sessions	Total Time Required	Training Topics / Tasks
5	2.5 hrs	Group training: Writing Behavioral Incident Reports
2	1 hr	Group training: Using Behavior-Specific Praise
2	1 hr	Group training: Token Delivery
2	1 hr	Group training: Prompting Napkin Use
12-20 per instructor	1.5 – 2.5 hr per instructor	Individual practice/feedback sessions (all 4 staff responses)
Train-the-Trainer		
1	0.5 hr per instructor	Individual training: conducting in-service (first staff response); practice / feedback until criterion met
1-2	0.5 – 1 hr per instructor	Individual training: taking data, delivering feedback (first staff response); practice in-service, data collection, & delivering feedback until criterion met
1	0.5 hr per instructor	Individual training: conducting in-service (second staff response); practice/feedback until criterion met
1-2	0.5 – 1 hr per instructor	Individual training: taking data, delivering feed back (second staff response); practice in-service, data collection, & delivering feedback until criterion met

Stage 1: Response training. During the first stage of instructor training, the experimenter used behavioral skills training to train the instructors on four staff responses that they would later train to the staff. Training occurred at the end of the workday when all consumers had left the facility in a private conference room so the staff would not observe the training.

Training began with the experimenter stating the response and telling the instructors that the training will be conducted in the same manner that they will be using to train the staff. The instructors received a written definition of the response with a description of mastery criterion. The experimenter then read aloud a definition of the staff response, stated a rationale for the importance of emitting it, and described its use during the course of a typical day. For training on token delivery, behavior-specific praise, and prompting napkin use, the experimenter modeled the response with an instructor playing the role of a consumer for approximately 5 min. For training on BIR writing, the experimenter modeled writing one BIR with the group. The experimenter then distributed three mock BIRs with multiple errors and the corrected it with the group. The three mock BIRs included at least one error for each element of the definition for writing BIRs. Throughout the training, the experimenter answered any questions that the instructors asked. The experimenter described the criterion for mastery. Criterion for mastery for token delivery, prompting napkin use, and BIR writing was at least 90% correct responding during three consecutive practice sessions. Criterion for mastery for behavior-specific praise was emitting at least five correct behavior-specific praise statements during a five-minute interval during thee consecutive practice sessions. Each of the instructors then practiced the response with another instructor playing the role of

the consumer for 5 min or until the BIR had been completed. After each practice session, the experimenter provided immediate feedback. Feedback sessions followed the format that would later be taught to the instructors during Stage 2 (See Table 4.)

Practice and feedback sessions continued in this manner until each instructor met mastery criterion. Training sessions were no more than 30 min in duration. If the instructors did not meet criterion at the end of the training session, the experimenter resumed practice and feedback at the next training session. Once all instructors met criterion for one staff response, the instructors repeated the response training procedure for the next staff response. This continued until all instructors met criteria on practice sessions for all four staff responses. This component of training took 5.5 hrs over 11 sessions.

Once instructors met criterion for at least one staff response, the experimenter observed each instructor emitting the staff response while working with the consumers in her program room, providing feedback no later than 15 min after the observation. The staff were not present when the experimenter observed the instructor. The experimenter informed the instructor that she should not discuss any content of the training with the staff, but the experimenter did not tell the instructor not to perform the staff responses during the workday. As such, the staff may have observed the instructors performing the responses prior to their actual training on the responses.

These practice and feedback sessions continued until the instructor met mastery criteria for all staff responses. All instructors met the mastery criterion for each staff response within 3-5 practice/feedback sessions. After response training was complete, each instructor trained the staff on all four staff responses (see Baseline described below).

The experimenter told each instructor to follow the same format of the response training they had just completed and reminded them to use the written definition if they needed it. The instructors did not receive the behavior checklists at this point.

Stage 2: Train-the-trainer. Each instructor learned to teach only two of the four staff responses to the staff (training responses). The remaining two responses served to assess generalization of instructor responding. The experimenter counterbalanced the responses across instructors to control for order effects. Instructor A participated in training to teach token delivery and prompting napkin use (training responses), while behavior-specific praise and BIR writing measured generalization of trainer skills (generalization responses). Instructor B participated in training to teach behavior-specific praise and BIR writing (training responses), while token delivery and prompting napkin use measured generalization of trainer skills (generalization responses). Instructor C participated in training to teach token delivery and behavior specific praise (training responses), while prompting napkin use and BIR writing measured generalization of trainer skills (generalization responses).

The train-the-trainer stage consisted of 12-18 sessions, of 15-30 min duration, occurring either during or at the end of the workday. In the first training session, the experimenter taught the instructor the steps involved in conducting the in-service on the first training response with the staff. To do this, the experimenter first gave the instructor the Conducting the In-Service behavior-skills checklist (Table 3). The experimenter read aloud the checklist with the instructor, describing each step in detail. The experimenter modeled the in-service training process that would be used by the instructor when training the staff on the first training response, following all steps of the checklist. The

instructor then practiced conducting the in-service, with a training assistant playing the role of the staff. Upon completion of each practice in-service, the experimenter gave feedback on the performance of the instructor. Feedback followed the same format described on the Delivering Feedback behavior-skills checklist (Table 4.) The instructor continued practicing conducting the in-service until meeting the criterion for conducting the in-service. Mastery criterion was performing 90% of steps on the Conducting the In-service checklist accurately for two consecutive trials.

In the second training session, the experimenter taught the instructor to conduct observations, take data accurately, and deliver feedback. The experimenter again read aloud the operational definition of the staff response, showed the instructor the relevant data sheet, and verbally described how data should be collected. The instructor then practiced conducting the in-service again with a training assistant who played the role of the staff practicing the staff-response for 3-5 min while with another training assistant played the role of a consumer. The instructor observed this role-play practice session and took data with the experimenter. For this first practice observation session, the experimenter and instructor took data on the same datasheet, discussing any questions that the instructor had regarding the measurement system or occurrence/nonoccurrence of the response as it occurred.

The instructor then received the Delivering Feedback behavior-skills checklist (Table 4) to follow for each feedback session. The experimenter read the checklist aloud, describing each step in detail, and modeled the feedback process, delivering feedback to the training assistant about his performance during the role play. The instructor then practiced conducting the in-service again, after which training assistants role-played

another practice session. During this and subsequent sessions, the instructor and experimenter took data independently. Immediately after the role play, the instructor and experimenter compared data sheets, discussing all agreements and disagreements in data collection. The experimenter considered data to be in agreement when both the instructor and the experimenter recorded that an element of the response occurred or did not occur correctly. The experimenter considered data to be in disagreement if the experimenter recorded that an element of the response occurred and the instructor recorded that it did not occur correctly. After the role play session, the instructor practiced giving feedback to the training assistant by following each step of the behavior-skills checklist. Immediately after the practice feedback session, the experimenter provided feedback to the instructor on his or her performance in the same manner described above.

This pattern of practice conducting the in-service, role play observation sessions, comparing data sheets, practice feedback given by the instructor to the program supervisor, and feedback given to the instructor by the experimenter continued until (a) inter-observer agreement (IOA) reached at least 80% for two consecutive sessions and (b) the instructor performed all steps of the feedback checklist with 90% accuracy for two consecutive sessions. Training sessions were no more than 30 min in duration, so at the end of 30 min a session ended. If the instructor had not yet met criterion, practice and feedback sessions resumed at the next training session. After achieving mastery criteria for all elements of train-the-trainer for the first staff response, the entire train-the-trainer sequence was repeated with the second staff response. Once train-the-trainer was complete for the two designated staff responses, the instructor then trained the staff on all four staff responses.

Baseline. After response training was completed, each instructor trained the staff on all four staff responses. The experimenter observed these training sessions and took data on instructor performance, measuring *correct instructor teaching responses*. The experimenter then conducted a series of baseline probes for all staff and at this point, Instructor A began participating in the train-the-trainer component of training. Prior to each of the probes for Staff B and Staff C, Instructors B and C conducted additional brief in-services with the staff on all four staff responses. During these sessions training, the experimenter took probes of instructor teaching responses.

Peer training. The instructor used the same behavior-skills training format with the staff that the experimenter used to train the instructor. The experimenter was present for this component of the training program. After completing the in-service, the instructor conducted a series of observation and feedback sessions with the staff until the staff achieved mastery criterion. The instructor conducted each feedback session in the same manner described above. Instructor feedback to staff occurred as soon as possible after the observation session, and no later than the end of the work day. Mastery criteria were the same for staff as they were for instructors during instructor response training.

Instructors first trained staff on the first response they learned how to train during train-the-trainer. Once the staff met criterion on this first response, instructors trained staff on the second response they learned how to train during train-the trainer. Once the staff met the criterion on the second response, instructors trained staff on a generalization response. Once staff met the criterion on the first generalization response, the instructor trained the second generalization response. Table 7 displays the peer-training sequence, number of sessions, duration estimates, and instructor/staff tasks.

Table 7

Individual time estimate for peer training, including response, staff, type of training task, number of sessions, total time required for the training task, and whether response was an instructor-generalization task. Time estimate for training on BIR writing excludes actual time staff spent writing the BIR.

Response	Staff	Task	Number of Sessions	Total time required	Generalization Response
Tokens	A	In-service	1	15 m	
		Practice / feedback	3	30 m	
	B	In-service	1	15 m	Y
		Practice / feedback	3	20 m	
	C	In-service	1	15 m	
		Practice / feedback	3	35 m	
Napkins	A	In-service	1	15 m	Y
		Practice / feedback	4	40 m	
	B	In-service	1	10 m	
		Practice / feedback	11	120 m	
	C	In-service	1	15 m	Y
		Practice / feedback	3	20 m	
Praise	A	In-service	1	10 m	Y
		Practice / feedback	3	20 m	
	B	In-service	1	10 m	
		Practice / feedback	4	25 m	
	C	In-service	1	15 m	
		Practice /feedback	3	20 m	
BIRs	A	In-service	1	15 m	Y
		Practice/ feedback	4	20 m	
	B	In-service	1	20 m	
		Practice / feedback	3	15 m	
	C	In-service	1	10 m	Y
		Practice / feedback	3	15 m	

Once Instructor A completed train-the-trainer for token delivery and prompting napkin use, Instructor A trained Staff A on all four staff responses. When Instructor A began training Staff A, Instructor B began participating in the train-the-trainer stage for behavior-specific praise and BIR writing in the manner previously described. Once the instructor completed train-the-trainer and Staff A met criteria for all staff responses, Instructor B trained Staff B on all four responses. Once Instructor B began training Staff B, Instructor C participated in the train-the-trainer stage for token delivery and behavior-specific praise. Once Instructor C completed train-the-trainer and Staff B met criteria for all staff responses, Instructor C trained Staff C on all four staff responses.

Inter-observer Agreement

Observers conducted IOA sessions in pairs. They recorded data simultaneously and independently. IOA checks on agreement occurred during at least 25% of observations for each instructor and each staff during each experimental phase. The experimenter considered an agreement to be each instance when both observers recorded either that an element of the definition had been performed correctly or it had been omitted or performed incorrectly. For behavior-specific praise, the experimenter calculated percentage of agreement using the whole-session method (Repp, Deitz, Boles, Deitz, & Repp, 1976). The experimenter compared the number of behavior-specific praise statements each observer recorded during the five-min interval. The experimenter then divided the smaller number of behavior-specific praise statements by the larger number of behavior-specific praise statements and multiplying by 100%.

For all other staff responses, the experimenter assessed IOA using two methods. First, the experimenter compared the observer responses on each element of the

dependent variable, calculating percentage of overall agreement by dividing the total number of agreements by the number of agreements + disagreements and multiplying by 100%. The following overall IOA ranges were calculated across participants: token delivery (91% - 100%), behavior-specific praise (87% - 100%), prompting napkin use (86% - 100%), BIR writing (89% - 100%), and correct instructor teaching responses (85% - 100%). Table 8 displays the IOA ranges and means of all responses for each participant.

Second, the experimenter compared the observer responses only for the elements of the response in which one or both of the observers recorded the occurrence of that element. The experimenter scored an agreement when both the observers recorded that the element occurred correctly and a disagreement when only one observer recorded that an element had occurred correctly and the other recorded that it occurred incorrectly or not at all. The experimenter calculated the IOA for occurrences by dividing the total number of agreements by the number of agreements + disagreements and multiplying by 100%. The following IOA ranges for occurrences of dependent variables were calculated across participants: token delivery (87% - 100%), prompting napkin use (80% - 100%), BIR writing (75% - 100%), and correct instructor teaching responses (50%-100%). The lower range of occurrence IOA for correct instructor teaching responses was due to one observation during which one observer recorded 0% correct instructor teaching responses and the other recorded 4% correct instructor teaching responses. The range of occurrence-only IOA for correct instructor teaching responses was 94.3%. Table 8 displays the IOA ranges and means for all staff.

Table 8

Ranges and means of overall and occurrence-only inter-observer agreement calculations for each staff and instructor. Means are included in parentheses.

	Tokens	Praise	Napkin Use	BIRs	Correct Teaching Skills
Overall Inter-observer Agreement					
Staff A	91.0% - 100% (98.9%)	87.0% - 100% (97.8%)	87.0% - 100% (94.0%)	89.0% - 100% (96.0%)	
Instructor A					85.0% - 100% (96.0%)
Staff B	100%	88.0% - 100% (98.5%)	86.0% - 100% (95.6%)	90.0% - 100% (97.0%)	
Instructor B					93.0% - 100% (98.7%)
Staff C	94.0% - 100% (99.0%)	93.0% - 100% (98.8%)	100%	90.0% - 100% (98.0%)	
Instructor C					93.0% - 100% (98.9%)
Grand Mean	99.1%	98.7%	95.7%	97.0%	97.2%
Occurrence-Only Inter-observer Agreement					
Staff A	87.0% – 100% (96.8%)		80.0% - 100% (93.0%)	75.0% - 100% (92.5%)	
Instructor A					80.0% - 100% (96.7%)
Staff B	100%		87% - 100% (95.8%)	86.0% - 100% (97.2%)	
Instructor B					50.0% - 100% (87.5%)
Staff C	88.0% - 100% (96.0%)		89.0% - 100% (97.8%)	80.0% - 100% (92.0%)	
Instructor C					78.0% - 100% (93.3%)
Grand Mean	97.7%		95.4%	93.8%	94.3%

Social Validity

Wolf (1978) recommended evaluating the social validity of the goals, procedures, and effects of the research. This study included a measure of social validity in all three areas.

Goals. Prior to beginning the study, the experimenter gave questionnaire to two program supervisors, the program director, three psychologists, a psychiatrist, a social worker, and the associate executive director of the agency. The questionnaire assessed their views on the goals of the study. (See Appendix A.) It consisted of eight questions about the importance of training and the staff responses answered using a 5-point Likert scale. A score of 1 for each question indicated that the respondent thought that the topic was not important or beneficial at all, and a score of 5 indicated that the respondent thought that the topic was extremely important or beneficial. Responses were anonymous.

Procedures. After the study was completed, the experimenter gave a questionnaire to the staff and instructors. The questionnaire was designed to assess the acceptability of the training procedures. (See Appendix B.) It consisted of five questions about the acceptability and value of the training program. The first three questions were answered using a 4-point Likert scale. The fourth question was only for the instructors to complete, asking if they would like to participate in future training. The fifth question was only for the staff to complete, asking if they would like to be trained by a peer in the future. Responses were anonymous.

In addition, the facility psychologist verbally asked the instructors and the staff individually if they would be interested in participating again in a similar project. The

psychologist also asked the instructors if they would be willing to serve as a peer trainer for newly hired staff.

Effects. A clinician who worked primarily at another site in the agency provided a rating to help judge the effects of the study. The experimenter trained this clinician on data collection procedures for all four staff responses. A training assistant then served as an expert. The clinician conducted three observations of the training assistant working with a group of consumers. The clinician collected data on one staff response for each observation. These data provided a basis for establishing mastery criterion levels and comparing the performance of the staff after training.

Results

Instructors

Figure 1 displays the percentage of correct instructor teaching responding emitted when training staff on the training and generalization responses as a function of the instructor-training program (train-the-trainer) in a multiple-probe-across-participants design. A systematic increase in the percentage of correct instructor teaching responding was seen during training on training responses and generalization responses across all three instructors with the introduction of the instructor-training program. When instructors trained staff during the baseline phase, they generally included a brief description of the response and stated how to perform it correctly. They often provided at least one example or demonstration of the response. In some cases they also provided a rationale for the importance of performing the response correctly. They did not, however, encourage the staff to practice any steps of the response or ask if they understood the instructions. Training of each response in baseline lasted no more than several minutes.

Observation sessions are displayed on the abscissa of Figure 1. The ordinate on the left side of the graph for each instructor presents the percentage of correct instructor teaching responding emitted when the instructor trained staff on the staff responses. The first solid phase line indicates the point at which the instructor began the train-the-trainer stage of instructor training. The second solid phase line indicates the point at which the instructor completed the train-the-trainer component of instructor train and began training staff again. Solid black circles represent teaching responses emitted when the instructor was teaching staff to perform training responses. White circles with a black border

represent teaching responses emitted when the instructor was teaching staff to perform generalization responses.

Figure 1.

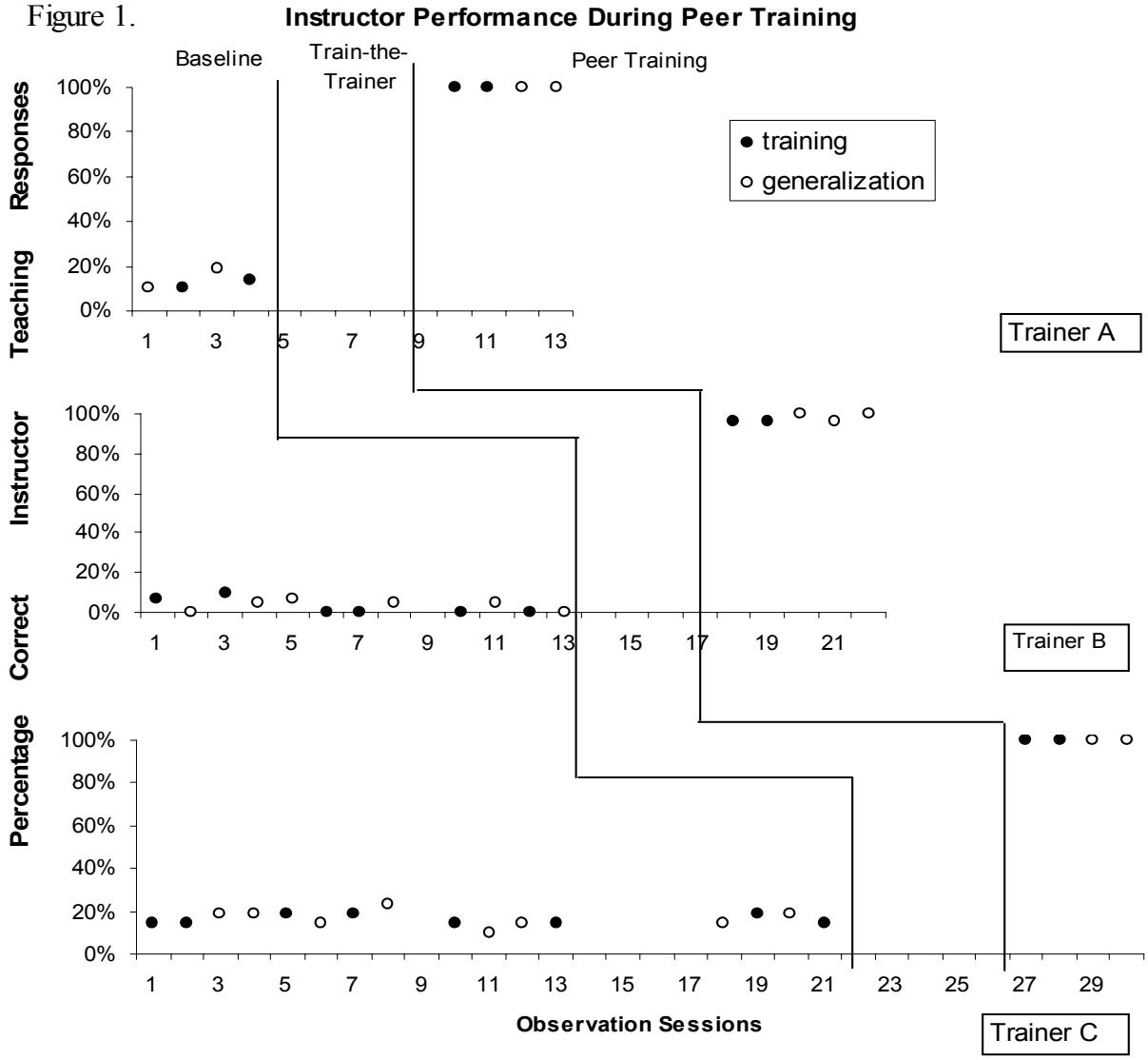

Figure 1. Percentage of correct instructor teaching responses during peer training sessions in a multiple-probe-across-participants design. Data are displayed for peer training that occurred after instructor response training and after the instructor completed the train-the-trainer component. Black solid circles represent instructor teaching responses when teaching staff training skills. White circles with a black border represent instructor teaching responses when teaching staff generalization skills.

Instructor A. Prior to completing the train-the-trainer stage of instructor training, the percentage of correct instructor teaching responding of instructor A had a range of 10% - 19%. Percentage of correct instructor teaching responding increased to 100% immediately following completion of train-the-trainer and remained at 100% for both training and generalization staff responses.

Instructor B. Prior to completing the train-the-trainer stage of instructor training, the percentage of correct instructor teaching responding of instructor B had a range of 0% - 10% dropping slightly with the next series of probes to a range of 0% - 7%, and then dropping again with the final series of probes to 0% - 5%. Percentage of correct instructor teaching responding increased immediately following completion of train-the-trainer to a range of 96% - 100%, for both training and generalization staff responses.

Instructor C. Prior to completing the train-the-trainer stage of instructor training, the percentage of correct instructor teaching responding of instructor C had a range of 10% - 23%. Percentage of correct instructor teaching responding increased immediately following completion of train-the-trainer to 100% for both training and generalization staff responses.

Staff

A systematic improvement in staff performance was seen across all three staff on both training and generalization skills with the introduction of the peer-training program. Figure 2 displays the percentage of correct staff responding on training skills emitted as a function of the peer-training program in a multiple-probe-across-participants design and Figure 3 displays the percentage of correct responding on generalization skills emitted as a function of the peer-training program.

Figures 2 and 3 are organized in a similar fashion to each other. Observation sessions are displayed on the abscissa. The ordinate on the left side of the graphs displays the percentage of correct responding for token delivery (tokens), prompting napkin use (napkin), and/or writing behavioral incident reports (BIRs). On those graphs with two ordinates, the ordinate on the right side of the graph indicates the rate of behavior-specific praise statements (praise) emitted during each five-min observation session. Solid black circles represent token delivery. White circles with a black border represent prompting napkin use. Solid black squares indicate writing behavioral incident reports. White squares with a black border represent behavior-specific praise statements.

The first solid phase line on both figures indicates the point at which the instructor completed the response training stage of instructor training. Data prior to this phase line indicate an instructions-only pre-baseline. Data after this line indicate the point at which the instructors completed response training and subsequently trained staff (baseline). The second solid phase line in the first graph indicates the point at which the instructor completed the train-the-trainer component of instructor training for the two training skills and began staff training. The third solid line indicates the point at which staff met criteria

for all four staff responses.

The lower two graphs in both Figures 2 and 3 also contain additional dotted phase lines. These indicate the point at which the instructors re-trained the staff on all responses (prior to participating in the train-the-trainer stage).

Figure 2. **Staff Performance on Instructor Training Responses**

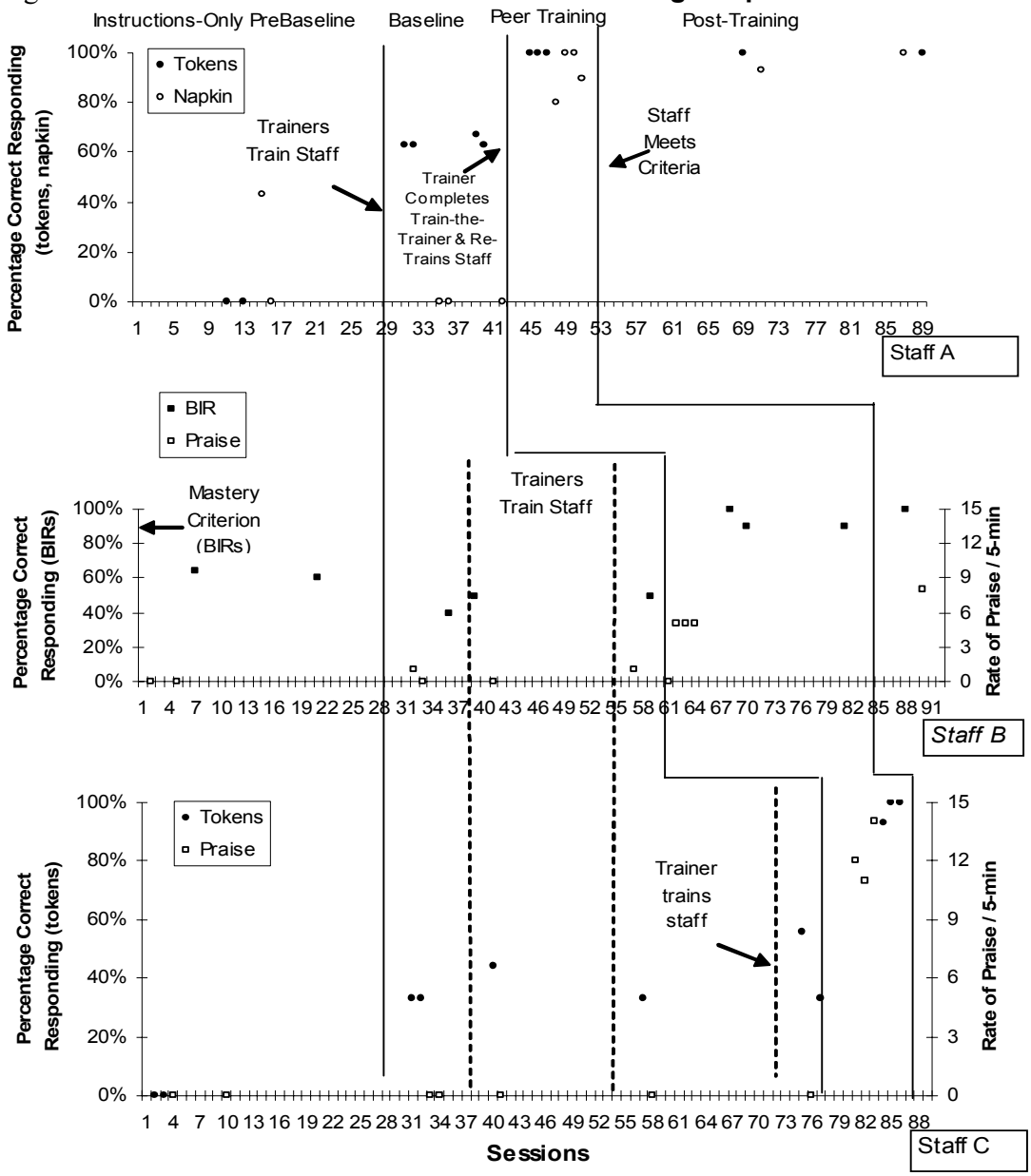

Figure 2. Percentage of correct staff performance on two training responses in a multiple-probe-across staff design. Data are displayed for instructions-only pre-baseline, baseline, peer training, and post-training conditions. Mastery criteria for token delivery (tokens), prompting napkin use (napkin), and correct writing of BIRs (BIRs) is 90% for 3 consecutive sessions. Mastery criterion for use of behavior-specific praise (praise) is 5 statements per 5-min interval for 3. consecutive sessions.

Figure 3. **Staff Performance on Instructor Generalization Responses**

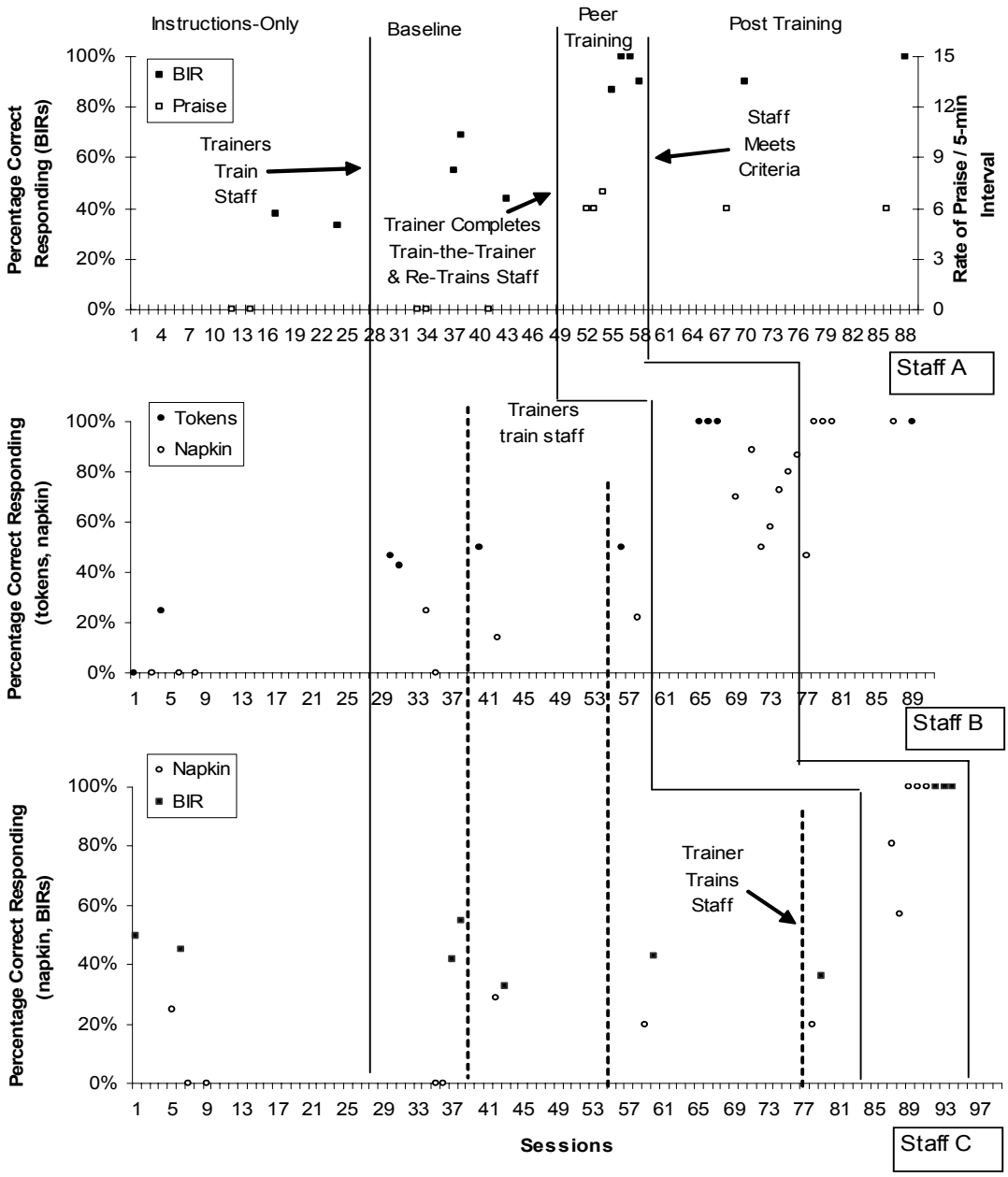

Figure 3. Percentage of correct staff performance on generalization responses in a multiple-probe across staff design. Data are displayed for instructions-only pre-baseline, baseline, peer training, and post-training conditions. Mastery criteria for token delivery (tokens), prompting napkin use (napkin), and correctly writing BIRs (BIRs) is 90% for 3 consecutive sessions. Mastery criterion for use of behavior-specific praise (praise) is 5 statements per 5-min interval for 3 consecutive sessions.

Instructor Training responses.

Staff A. Training responses for Instructor A were token delivery and prompting napkin use. During the instructions-only pre-baseline, token delivery was 0%. After the first initial training (baseline), percentage of token delivery emitted by Staff A increased to 63% correct for two sessions. After the instructor completed train-the-trainer and subsequently began peer training, percentage of token delivery emitted by Staff A increased immediately to 100% correct for three consecutive sessions, at which point Staff A met criterion for token delivery. Token delivery remained at 100% for the two post-training probes.

Percentage of prompting napkin use decreased from 43% - 0% correct during the pre-baseline condition. In the baseline condition, prompting napkin use remained at 0%. With the introduction of the peer-training condition, prompting napkin use immediately increased to 80% correct, followed by three consecutive sessions with a range of 90% - 100%. Percentage of prompting napkin use remained within this range during the two post-training probes.

Staff B. Training responses for Instructor B were behavior-specific praise and writing BIRs. During the instructions-only pre-baseline, the rate of behavior-specific praise emitted by Staff B was 0. After the first initial training (baseline), behavior-specific praise increased initially to 1 statement per interval and then subsequently decreased to 0, remaining at a range of 0-1 statements per 5-min interval during the two remaining baseline probes. After the instructor completed train-the-trainer and subsequently began peer training, behavior-specific praise remained at 0 for one session and then increased to 5 statements per interval for three consecutive sessions at which

point Staff B met criterion for praise. Behavior-specific praise increased to 8 statements per interval for the final post-training probe.

BIR writing had a range of 60% -64% correct, with a slightly decreasing trend during pre-baseline. In baseline, percentage of BIR writing decreased to a range of 40%-50% correct. With the introduction of the peer-training condition, BIR writing immediately increased to 100% correct for three consecutive sessions at which point Staff B met criterion for BIR writing. Percentage of BIR writing remained at 100% for the final post-training probe.

Staff C. Training responses for Instructor C were behavior-specific praise and token delivery. During the instructions-only pre-baseline and all baseline probes behavior-specific praise for Staff C was 0. After the instructor completed train-the-trainer and subsequently began peer training, behavior-specific praise immediately increased to a range of 11 – 14 statements per interval for three consecutive sessions at which point Staff C met criterion for praise. Percentage of token delivery was 0% during the pre-baseline condition. In baseline, percentage of token delivery was variable with a range of 33% - 56% correct. With the introduction of peer-training, percentage of token delivery immediately increased to 100% correct for three consecutive sessions at which point Staff C met criterion for token delivery.

Instructor Generalization Responses.

Staff A. Generalization responses for Instructor A were behavior-specific praise and BIR writing. During instructions-only pre-baseline, behavior-specific praise for Staff A was 0 per interval and remained at 0 per interval through baseline. After the instructor completed train-the-trainer and subsequently began peer training, behavior-praise

statements emitted by Staff A increased to a range of 6-7 per interval for three consecutive sessions, at which point Staff A met criterion for use of behavior-specific praise. Rate of behavior-specific praise statements remained at 6 per interval for the two post-training probes.

Percentage of BIR writing had a range of 33% - 35% correct during the pre-baseline condition. In the baseline condition, percentage of BIR writing had a range of 44% - 69% correct. With the introduction of the peer-training condition, the percentage immediately increased to 87% correct, followed by three consecutive sessions with a range of 90% - 100%, at which point Staff A met criterion for BIR writing. Percentage of BIR writing remained within this range during the two post-training probes.

Staff B. Generalization responses for Instructor B were token delivery and prompting napkin use. During the instructions-only pre-baseline, token delivery emitted by Staff B had a range of 0- 25% correct. After the first initial training (baseline), percentage of token delivery increased to a range of 43% - 50% correct. After the instructor completed train-the-trainer and subsequently began peer training, percentage of token delivery increased to 100% correct for three consecutive sessions at which point Staff B met criterion for token delivery. Token delivery remained at 100% for the final post-training probe.

Percentage of prompting napkin use was 0 during the pre-baseline condition. In the baseline condition, prompting napkin use increased to a range of 0% - 25% correct. With the introduction of the peer-training condition, percentage of prompting napkin use immediately increased to 89% correct. Data were highly variable for eight sessions with a range of 47% - 89%. The percentage increased to 100% correct for next three

consecutive sessions at which point Staff B met criterion for prompting napkin use. Percentage of prompting napkin use remained at 100% correct for the final post-training probe.

Staff C. Generalization responses for Instructor C were prompting napkin use and BIR writing. During the instructions-only pre-baseline the percentage of prompting napkin use emitted by Staff C was 0%. For the first two probes in the baseline condition, prompting napkin use remained at 0%. Prompting napkin use had a range of 20% - 29% correct for the last three probes in the baseline condition. After the instructor completed train-the-trainer and subsequently began peer training, percentage of prompting napkin use immediately increased to 81% correct, dropped to 57% for the second session of peer training, and then increased to 100% for three consecutive sessions at which point Staff C met criterion for prompting napkin use.

BIR writing had a range of 45% - 50% correct during pre-baseline. In baseline, data for BIR writing were variable with a range of 33% - 55% correct. With the introduction of the peer-training condition, BIR writing immediately increased to 100% correct for three consecutive sessions at which point Staff C met criterion for BIR writing.

Social Validity

Importance of goals. Table 9 displays the actual responses of nine employees who rated the social validity for the responses and social validity ratings from participants. The mean score from the respondents was high on all questions, ranging from 3.9 to 4.7.

Table 9
Number of respondents who selected each answer on social validity questionnaire, and mean score for each question.

	Not (1)	**Slightly (2)**	**Moderately (3)**	**Very (4)**	**Extremely (5)**	**Mean Score**
How important is staff training?	0	0	0	2	7	4.7
How beneficial would it be for staff to train each other?	0	0	0	5	4	4.4
How important is it for staff to correctly use tokens?	0	0	1	4	4	4.3
How important is it for staff to use praise effectively?	0	0	1	4	4	4.3
How important is it for staff to correctly complete incident reports?	0	0	1	2	6	4.6
How important is it for staff to correctly use prompting procedures to teach?	0	0	3	4	2	3.9
How important is it for staff to teach consumers to use a napkin when eating?	0	0	2	5	2	4.0
Totals	0	0	8	26	29	4.3

Acceptability of procedures. According to the results of the acceptability questionnaire, all participants uniformly indicated that they liked participating in the training program very much, found the training program very helpful, and that the skills they learned will be very helpful for the consumers. All instructors indicated they would like to continue to be a peer trainer at work. All staff indicated that they would like to participate in future training conducted by a peer.

When the psychologist individually asked instructors and peer whether they would be interested in participating in a similar project in the future, all responded positively. All instructors indicated that they enjoyed the program and would be interested in participating in a similar project in the future. One instructor qualified this by stating that she would be interested only if she were relieved from her routine job responsibilities during the training. She indicated that the program itself was informative and enjoyable but that she found it stressful managing her other responsibilities while participating in the program. All staff indicated enthusiastically that they would want to participate in a similar program. All stated that the program was helpful and that they learned a great deal. One staff member indicated that it was "really fun", and another indicated that she loved it. One staff member said she used the skills she learned when she was working at her other job in a residence and that, during a recent state audit, she was the only staff member whom the auditor complimented on her work performance.

There was also anecdotal evidence supporting the acceptability of the training program. After the completion of the study, three staff members who had not volunteered to participate approached the experimenter and asked whether they could

participate in any similar training programs that may be offered. They all indicated that they had heard that the training was "fun" and "helpful".

Effects. The clinician who took data on the performance of the expert when he performed the staff dependent variables reported the following scores: token delivery (100%), use of behavior-specific praise (6 statements per 5 min interval), prompting napkin use (100%), writing behavioral incident reports (100%). Staff responding after training was similar to this level of responding.

Discussion

A systematic increase in the percentage of correct instructor teaching responses was seen across instructors with the introduction of the complete instructor-training program, thus, one may conclude that this training program caused the change in this response. These results suggest that this training program was an effective means to increase the percentage of correct instructor teaching responses emitted by trainers when teaching responses to staff that the trainers had instruction in how to teach. Moreover, they suggest that the effects of instructor training generalize to correct instructor teaching responses emitted by trainers when teaching responses to staff that the trainers had no previous instruction in how to teach.

A systematic improvement in all staff responses was seen across staff with the introduction of the peer-training program, thus, one may conclude that this training program caused this change in performance. These results are consistent with the previous research on pyramidal training that also found improvement in performance of direct-support staff as a function of a peer-training program (Finn & Sturmey, 2009; Van den Pol et al., 1983). Staff improved their performance somewhat from instructions-only pre-baseline to baseline, when the instructors initially trained the staff, before the instructors participated in the train-the-trainer instruction. This suggests that staff may achieve modest improvements in performance without an instructor participating in any train-the-trainer type of instruction. This, too, is consistent with previous research that demonstrated improvement in performance when trainers had very brief train-the-trainer components (Bruder & Bricker, 1985; Schlosser et al, 2006; Van den Pol et al. 1983) or no train-the-trainer component at all (Adubato, et al., 1981; Csapo, 1979; Demchack &

Browder, 1990; Hendrickson et al., 1993; Kneringer & Page, 1999; Selinske et al., 1991; Symon, 2005). None of the staff in the present study, however, improved their performance in any of the staff responses to mastery level until the trainers had completed the train-the-trainer stage of instructor training. One may conclude that the train-the-trainer component was necessary to produce the full transfer of training from instructor to staff.

Similar improvements were seen in staff performance of training responses as in staff performance of generalization responses, suggesting that instructors were as effective in training responses they had specific training in how to teach as they were in training responses they had no training in how to teach. The effects of the complete instructor-training program generalized to enable instructors to effectively train staff to perform novel responses.

This study demonstrated strong generalization effects for the trainers. The training they provided to the staff resulted in similar staff performance improvements for skills that the trainers had specific instruction in how to train to others as well as for skills that they had no instruction in how to train to others. This generalization occurred despite the fact that the four staff responses represented rather different skill sets. Token delivery and behavior-specific praise could be considered similar skills, but using a prompt hierarchy to prompt napkin use and writing behavioral incident reports are quite different. While the method of this study did not include extensive programming for generalization such as that used by Ducharme et al. (2001), the response training component of instructor training included comprehensive training on all four staff responses. This training followed the same format that the experimenter later taught to

the experimenters. This modeling was not sufficient by itself to improve instructor teaching responses, but it may have helped aid generalization after the instructors learned to use the teaching responses. The instructors observed and actively participated in the training of four different types of tasks. Also, the experimenter conducted the response training component of instructor training in a group. During this training, each instructor was exposed to a variety of different questions and errors made by the other instructors in the group. They also observed multiple examples of the experimenter delivering feedback during training of all four responses. These factors may have provided the instructors with sufficient exemplars to permit them to train the generalization responses once they completed the train-the-trainer component.

There were four major limitations to the study. Perhaps the most substantial limitation was the fact that the instructors did not receive the behavior-skills checklists prior to the train-the-trainer component when they first trained the staff. The instructors did receive written definitions with mastery criterion listed for each of the four staff responses prior to train-the-trainer, and during the response training component, the experimenter informed them that they would be training the staff using the same format that was used during response training. The absence of the checklists during this condition, however, makes it difficult to determine whether the checklists alone were sufficient to enable the instructors to effectively train the staff.

A second limitation was the absence of data on the effects of the training on the consumers. Many previous studies of pyramidal training have included some measure of consumer behavior (Adubato et al., 1981; Bruder & Bricker, 1985; Csapo, 1977; Demchak & Browder, 1990; Demchak et al., 1992; Fleming & Sulzer-Azaroff, 1992;

Hall et al., 1980; Hendrickson et al., 1993; Kuhn et al., 2003; McGimsey et al., 1995; Neef, 1995; Page et al., 1982; Selinske et al., 1991; Schlosser et al., 2006; Shore et al., 1995; Symon, 2005). Including a measure of consumer behavior would be a direct measure of the effect of the training program on the consumer.

The third limitation was that there was no measurement of staff behavior in the absence of an observer. It is possible that the presence of an observer served as a discriminative stimulus for emitting the responses and that responding did not occur in the absence of an observer. Because the instructors conducted many of the observations, their presence may also have served as a discriminative stimulus for responding. If this occurred, it would not necessarily present a problem, as instructors and staff continued to work together following the peer training program. Unfortunately, the lack of data of this type of data do not permit such inferences to be made.

The fourth limitation was that there was no measurement of instructor behavior in the absence of an outside observer. Anecdotal evidence suggested that some of the instructor/staff pairs practiced these responses together throughout the day. While this does not minimize the effects of the study, it does limit one's ability to determine the full duration of the training or to evaluate the actual procedures used by the instructors. The experimenter being present for all of the formal training provided data on instructor teaching responses, but that also made the training more artificial. A peer-training program that does not require the presence of a supervisor would be more time efficient than one that does. This study does not allow evaluation of the effects of a peer-training program in the absence of the experimenter.

Effective training remains an essential component to providing quality services to individuals with ID. A primary benefit of a pyramidal training program is that it may be more time efficient than more traditional training programs. Due to the constraints imposed by the specific environment as well as the experimental design and methodology, the complete peer training program was time consuming. Instructors participated as a group for instructor response training, but they participated in the train-the-trainer component individually. In practice, these procedures may be made more time efficient by training instructors in groups.

Despite these limitations, this study extends the research on the pyramidal training paradigm, providing evidence that direct-support staff can effectively train each other. Further, both staff and instructors reported enjoying and benefiting from the program and volunteered to participate again. More importantly, it has demonstrated that once the time and effort is invested in training instructors, the results can generalize to allow them to train novel responses. Widespread budgetary constraints of programs serving individuals with ID can result insufficient training. Pyramidal training may be a more time-efficient and cost-effective alternative to a traditional training program that relies on professional trainers.

Appendix A.

Questionnaire on the Importance of Training Goals

Please answer the following questions based on your own personal views. When you are finished, place the questionnaire in the envelope and give it to the Office Manager.

1. How important is staff training?
    a. Not important at all.
    b. Slightly important
    c. Moderately important
    d. Very important
    e. Extremely important.
2. How beneficial would it be if staff members could effectively train each other?
    a. Not beneficial at all.
    b. Slightly beneficial.
    c. Moderately beneficial.
    d. Very beneficial.
    e. Extremely beneficial.
3. How important is it for staff to correctly use tokens to reinforce consumers?
    a. Not important.
    b. Slightly important.
    c. Moderately important.
    d. Very important
    e. Extremely important.
4. How important is it for staff to use praise effectively when working with consumers?
    a. Not important at all.
    b. Slightly important.
    c. Moderately important.
    d. Very important
    e. Extremely important.

5. How important is it for staff to correctly complete behavioral incident reports?
    a. Not important at all.
    b. Slightly important.
    c. Moderately important.
    d. Very important.
    e. Extremely important.
6. How important is it for staff to correctly use prompting procedures to teach consumers?
    a. Not important at all
    b. Slightly important
    c. Moderately important
    d. Very important
    e. Extremely important.
7. How important is it for staff to teach consumers to wipe their mouths with a napkin when eating?
    a. Not important at all
    b. Slightly important
    c. Moderately important
    d. Very important
    e. Extremely important.

Appendix B.

Questionnaire on the Acceptability and Value of the Training Program

Please answer the following questions based on your own personal views. When you are finished, place the questionnaire in the envelope and give it to the Office Manager.

1. How much did you like participating in the training program?
   a. I did not like it at all.
   b. I liked it a little bit.
   c. I liked it somewhat.
   d. I liked it very much.
2. How helpful was the training program?
   a. Not helpful at all.
   b. A little bit helpful.
   c. Somewhat helpful.
   d. Very helpful.
3. How much will the skills you learned help the consumers?
   a. My new skills won't help them at all.
   b. My new skills might help them a little bit.
   c. My new skills will be somewhat helpful.
   d. My new skills will be very helpful.
4. Answer this question only if you were the peer trainer: Would you like to continue to be a peer trainer at work?
   a. Yes
   b. No
   c. Unsure
5. Answer this question if you were not the peer trainer: Would you prefer future training to be conducted by a peer or by a supervisor/director?
   a. I would like future training to be conducted by a peer.
   b. I would not like future training to be conducted by a peer.

Bibliography

Adubato, S. A., Adams, M. K., & Budd, K. S. (1981). Teaching a parent to train a spouse in child management techniques. *Journal of Applied Behavior Analysis, 14,* 193-205.

Ball, T., Coyne, A., Jarvis, R., & Pease, S. (1984). Parents of retarded children as teaching assistants for other parents. *Education and Training of the Mentally Retarded, 19,* 64-69.

Bruder, M. B., & Bricker, D. (1985). Parents as teachers of their children and other parents. *Journal of the Division for Early Childhood, 9,* 136-150.

Burgio, L. D., Engel, B. T., Hawkins, A., McCormick, K., Scheve, A., & Jones, L. (1990). A staff management system for maintaining improvements in continence with elderly nursing home residents. *Journal of Applied Behavior Analysis, 23,* 111-118.

Connor, D. F., McIntyre, E. K., Miller, K., Brown, C., Bluestone, H., Daunais, D., et al. (2003). Staff retention and turnover in a residential treatment center. *Residential Treatment for Children and Youth, 20,* 43-53.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2007). *Applied behavior analysis* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

Csapo, M. (1979). The effect of self-recording and social reinforcement components of parent training programs. *Journal of Experimental Child Psychology, 27,* 479-488.

D'Augelli, A. R., & Vallance, T. R. (1982). The helping community: Issues in the evaluation of a preventative intervention to promote informal helping. *Journal of Community Psychology, 10,* 199-209.

Demchak, M., & Browder, D. M. (1990). An evaluation of the Pyramid Model of staff training in group homes for adults with severe handicaps. *Disabilities and Gifted Education, 25,* 150-163.

Demchak, M., Kontos, S., & Neisworth, J. T. (1992). Using a pyramid model to teach behavior management procedures to childcare providers. *Topics in Early Childhood Special Education, 12,* 458-478.

Ducharme, J. M., & Feldman, M. A. (1992). Comparison of staff training strategies to promote generalized teaching skills. *Journal of Applied Behavior Analysis, 25,* 166-179.

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.

Finn, L. L., Fried, A., & Poulson, C. L. (2004, March). *Improving staff interactions with adults with dual diagnoses.* Poster session presented at the Behavior Analysis in Developmental Disabilities conference, Queens College, NY.

Finn, L. L., & Sturmey, P. (2009). The effect of peer-to-peer training on staff interactions with adults with dual diagnoses. *Research in Developmental Disabilities, 30,* 96-106.

Fleming, R. K., Oliver, J. R., & Bolton, D. M. (1996). Training supervisors to train staff: A case study in a human service organization. *Journal of Organizational Behavior Management, 16,* 3-25.

Fleming, R., & Sulzer-Azaroff, B. (1992). Reciprocal peer management: Improving staff instruction in a vocational training program. *Journal of Applied Behavior Analysis, 25,* 611-620.

Hall, M., Grinstead, J., Collier, H., & Hall, R. (1980). Responsive parenting: A preventative program which incorporates parents training parents. *Education and Treatment of Children, 3,* 239-259.

Hendrickson, J. M., Gardner, N., Kaiser, A., & Riley, A. (1993). Evaluation of a social interaction coaching program in an integrated day-care setting. *Journal of Applied Behavior Analysis, 26,* 213-225.

Hewitt, A., and Larson, S. (2007). The direct support workforce in community supports to individuals with developmental disabilities: Issues, implications, and promising practices. *Mental Retardation and Developmental Disabilities Research Reviews, 13,* 178-187.

Jensen, J. M., Parsons, M. B., & Reid, D. H. (1998). Supervisory training for teachers: Multiple, long-term effects in an education program for adults with severe disabilities. *Research in Developmental Disabilities, 19,* 449-463.

Jones, F. H., Fremouw, W., & Carples, S. (1977). Pyramid training of elementary school teachers to use a classroom management skills package. *Journal of Applied Behavior Analysis, 10,* 239-253.

Kneringer, M. J., & Page, T. J. (1999). Improving staff nutritional practices in community-based group homes: Evaluation, training, and management. *Journal of Applied Behavior Analysis, 32,* 221-224.

Kuhn, S. A., Lerman, D. C., & Vorndran, C. M. (2003). Pyramidal training for families of children with problem behavior. *Journal of Applied Behavior Analysis, 36,* 77-87.

Maes, B., Lambrechts, G., Hostyn, I., & Petry, K. (2007). Quality-enhancing interventions for people with profound intellectual and multiple disabilities: A review of the empirical research literature. *Journal of Intellectual and Developmental Disability, 32,* 163-178.

McGimsey, J. F., Greene, B. F., & Lutzker, J. R. (1995). Competence in aspects of behavioral treatment and consultation: Implications for service delivery and graduate training. *Journal of Applied Behavior Analysis, 28,* 301-315.

Neef, N. A. (1995). Pyramidal parent training by peers. *Journal of Applied Behavior Analysis, 28,*333-337.

Page, T. J., Iwata, B. A., & Reid, D. H. (1982). Pyramidal training: A large-scale application with institutional staff. *Journal of Applied Behavior Analysis, 15,* 335-351.

Parsons, M. B., & Reid, D. H. (1995). Training residential supervisors to provide feedback for maintaining staff teaching skills for people who have severe disabilities. *Journal of Applied Behavior Analysis, 28,* 317-322.

Repp, A. C., Deitz, D. E., Boles, S. M., Deitz, S. M., & Repp, C. F. (1976). Differences among common methods for calculating interobserver agreement. *Journal of Applied Behavior Analysis, 9,* 109-113.

Robertson, J., Hatton, C., Felce, D., Meek, A., Carr, D., Knapp., M., et al. (2005). Staff stress and morale in community-based settings for people with intellectual disabilities and challenging behaviour: A brief report. *Journal of Applied Research in Intellectual Disabilities, 18,* 271-277.

Schlosser, R. W., Walker, E., & Sigafoos, J. (2006). Increasing opportunities for requesting in children with developmental disabilities residing in group homes through pyramidal training. *Education and training in Developmental Disabilities, 41,* 244-252

Selinske, J. E., Greer, R. D., & Lodi, S. (1991). A functional analysis of the comprehensive application of behavior analysis to schooling. *Journal of Applied Behavior Analysis, 24,* 107-117.

Shore, B. A., Iwata, B. A, Vollmer, T. R., Lerman, D. C. & Zarcone, J. R. (1995). Pyramidal staff training in the extension of treatment for severe behavior disorders. *Journal of Applied Behavior Analysis, 28, 323-332.*

Stokes, T. F., & Baer, D. M. (1977). An implicit technology of generalization. *Journal of Applied Behavior Analysis, 10,* 349-367.

Symon, J. B. (2005). Expanding interventions for children with autism: Parents as trainers. *Journal of Positive Behavior Interventions, 7,* 159-173.

U.S. Department of Health and Human Services. (2006). *The supply of direct support professionals serving individuals with intellectual disabilities and other*

developmental disabilities: Report to Congress. Retrieved March 19, 2008, from http://aspe.hhs.gov/daltcp/reports/2006/DSPsupply.htm.

Van den Pol, R. A., Reid, D. H., & Fuqua, R. W. (1983). Peer training of safety-related skills to institutional staff: Benefits for trainers and trainees. *Journal of Applied Behavior Analysis, 16,* 139-156.

Wolf, M. W. (1978). Social validity: The case for subjective measurement or how applied behavior analysis is finding its heart. *Journal of Applied Behavior Analysis, 11,* 203-214.