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PEER TRAINING OF HIGH-RISK LOW-FREQUENCY
STAFF BEHAVIORS IN AN INSTITUTIONAL SETTING

by

Richard Aart van den Pol

A Dissertation
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Doctor of Philosophy
Department of Psychology

Western Michigan University
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PEER TRAINING OF HIGH-RISK LOW-FREQUENCY
STAFF BEHAVIORS IN AN INSTITUTIONAL SETTING

Richard Aart van den Pol, Ph.D.

Western Michigan University, 1981

Four experienced and four newly employed psychiatric attendants were assessed on their performance of three high-risk low-frequency behaviors during simulated emergencies. The three skills measured were Convulsive Seizure Management, Fire Safety Procedures, and Self-Defense. Each of the behaviors directly affected the safety and well-being of staff and retarded residents of the facility. The experienced employees, labelled "Trainers", received a series of workshops on how to perform and teach the requisite skills to other staff. Following each workshop, according to a multiple baseline across skills experimental design, the Trainers each taught one new staff member, labelled "Trainee" how to perform the emergency skills. When all Trainees had mastered all skills and could perform them during simulated emergencies in their work areas, Trainees and Trainers were invited to continue to teach other newly hired employees, during an eighteen week Maintenance Condition. Maintenance Condition Trainers then taught only one of the three skills to the new Maintenance Condition Trainees. Results indicated that Trainers could learn and effectively teach complex emergency skills to newly hired Trainees. Trainees who in turn became Maintenance Condition Trainers were also able to effectively teach these skills to other less experienced Maintenance Condition Trainees. At the end of the eighteen week Maintenance Condition,

two of the three Maintenance Condition Trainers were able to perform only the skill that they had taught at an acceptable level. A discussion of the utility and cost-effectiveness of conducting training on the maintenance of the skill taught is included. Socially validated components of the study include experts' designation of appropriate target skills and mastery performance levels, and participants' verbal report of their satisfaction with the procedures. Verbal reports of participants' satisfaction are compared to their decisions to continue to participate during Maintenance Conditions.

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Richard Aart van den Pol

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IN AN INSTITUTIONAL SETTING

Western Michigan University

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INTRODUCTION

Recently applied behavior analysts have begun to examine controlling variables of safety related behaviors, and have developed interventions for reducing accidents. In industrial, community and residential human service settings the natural consequences of unsafe behaviors may be highly deleterious, but typically occur on an intermittent schedule or are substantially delayed in time. The long-term consequences of unsafe behavior for society include elevated mortality and morbidity, property damage, decreased work productivity and costly litigation. Given the severity of the consequences for unsafe behavior and the absence of powerful and immediate controlling variables for pro-safety behaviors, applied behavior analysis research focusing on safety-related behaviors seems appropriate and desirable. For example, behavior analysts have demonstrated accident reductions in industrial settings through the use of employee training and managerial feedback strategies (e.g. Komaki, Barwick and Scott, 1978; Sulzer-Azaroff, 1978).

Community-based research has evaluated methods to teach a variety of safety-related behaviors including street-crossing (Page, Iwata, and Neef, 1976; Yeaton and Bailey, 1978) and automobile driver performance (Parsons, 1976; Larson, Schnelle, Kirchner, Carr, Domash and Risley, 1980). Typically such investigations have attempted to directly modify the behavior of potential victims. For example, Sulzer-Azaroff and de Santamaria (1980) provided performance feedback to industrial workers on how well they were reducing occupational safety hazards. Risley and Cuvo

(1980) taught community-placed retarded adults how to make emergency phone calls in response to verbally described emergencies.

In many human service settings, the behavior of service-delivery agents must be modified in order to protect potential victims. For example, in institutional settings serving retarded persons the behavior of direct care staff must be modified when residents are unable to perform requisite emergency responses themselves, for reasons of orthopedic involvement or severe skill deficits. The effects of one emergency situation, fires, have recently proven tragic in more than one developmental disability facility (e.g. Associated Press, July 28, 1980). Many local and state agencies, as well as the federal government have attempted to provide some safeguards, by requiring staff training and fire evacuation drills, and funding efforts to develop model fire safety programs for developmental disability personnel and community fire fighters (TASH Newsletter, April, 1981).

A sizeable body of literature exists regarding the training of institutional staff. Among the training strategies which have been reported are traditional "inservice" or didactic interactions (e.g. Bensburg and Barnett, 1966) and behavioral studies relying primarily on the manipulation of the consequences of staff work behaviors (e.g. Gardner, 1973; Montegar, Reid, Madsen and Ewell, 1977; Greene, Willis, Levy and Bailey, 1978; and Koegel, Russo and Rincover, 1977). While behavioral interventions involving response consequences have proven effective in obtaining appropriate staff behaviors, few studies have reported cost-effective

procedures for maintaining staff skills.

The development of cost-effective behavior maintenance procedures is particularly important for certain safety-related behaviors in institutional settings (e.g. emergency procedures) which have high-risk consequences but a low frequency of occurrence. Opportunities for employee training and skill maintenance are limited by the frequency of the emergency situations and the effects of monthly or quarterly "drills" on skill maintenance are questionable. Since it is neither feasible nor ethical to create emergencies and passively take data during life-threatening situations, researchers have turned to analogue emergencies for the assessment and training of safety-related behaviors. For example, several recent studies (Jones and Kazdin, 1980; Jones, Kazdin and Haney, 1981) have used simulated fire emergencies to teach children to make emergency phone calls and emit a number of other safety related behaviors. Instructional procedures in analogue settings have generally consisted of a combination of instructions, practice, corrective feedback and praise.

In institutional settings, traditional emergency training often focuses on relatively weak antecedent variables such as classroom-based inservices, instructions and posted signs (e.g. Quilitch, 1975; Iwata, Bailey, Brown, Foshee and Alpern, 1976). Despite the development of effective staff training and management systems based on response consequences, the wide-spread adoption of such systems has been slow. Among factors which may affect decisions to adopt a training and management system (e.g. political considerations,

lack of qualified training personnel), the financial cost of such a system may be important (Steelman, 1976; Mathews, 1977). One of the major expenses in a staff training program involves personnel salaries. For example, Crawford (1979, Note 1) reports that each Indiana State Department of Mental Health hospital employs a mean of 8.36 professionals (range 2-25) in Staff Development departments with the majority drawing administrative level salaries. However, Iwata, et al (1976) report that direct care employees, who often comprise more than half of an institution's employees, can effectively teach a variety of skills to retarded residents. These staff also draw among the lowest salaries in an institution.

One way to curtail the cost of staff training would involve the use of a participative or peer-implemented staff training system. Jones, Fremouw and Carples (1977) have evaluated a system of "peer-training" in which classroom teachers acquired behavior management techniques and then successfully taught these techniques to other teachers. In a similar study, Page, Iwata and Reid (1981, Note 2) have reported a "pyramidal staff training" system wherein institutional supervisors were trained to manage direct care staff effectively, with resultant resident improvements. Advantages that might result from peer-implemented training systems include decreased costs of trainers' salaries, minimized generalization problems since training would be conducted in the work environment, minimized time involvement for administrative personnel who would only need to conduct periodic probes of terminal repertoires, and,

possible enhanced maintenance of the target skills of trainers by virtue of training less skilled employees.

The primary purpose of the present experiment was to evaluate whether peer training of emergency skills by direct care staff would result in acceptable performance of the target behaviors in simulated emergency situations. The present study extends the work of Jones, et al (1981) by actually training and assessing skills in the settings in which a real emergency would occur. The work of Page, et al (1981) is also extended, in that employees' peers and not supervisors were responsible for conducting staff training. A second research question concerns the maintenance of emergency skills as a function of acting as a trainer for a peer. More specifically, would trained staff who were responsible for the subsequent training of peers show enhanced maintenance of skills that they taught? A final issue concerns the perceived acceptability of the peer training system by participants.

METHOD

Participants

Thirteen psychiatric attendants participated in various aspects of this study. Ages ranged from 18 to 60 years, and duration of employment at the Center ranged from just having completed orientation class to 21 years. Educational histories ranged from never having completed high school to the final semester of B.A. level college program. All employees had access to procedure manuals and had previously received instructions that described how to respond to emergency situations in their work areas. Job responsibilities included providing nursing care, feeding, and conducting behavioral self-help and pre-academic skills training for residents who were severely or profoundly retarded and multiply-handicapped.

Trainees. Four psychiatric attendants who had been at the Center for less than six months (probationary period according to state civil service regulations) were identified by supervisors as likely to benefit from additional training in emergency procedures. Each attendant was contacted by the Director of Staff Development (senior author) and invited to participate. It was explained that other more experienced attendants would be training new attendants in emergency skills, that this new system was being evaluated for possible use with all new attendants, and that participation was voluntary. All four employees agreed to participate. In maintenance conditions, Trainees who had mastered all emergency skills were invited to continue to participate in the project. These employees then served as "Maintenance Condition Trainers" and taught certain emergency skills to newly hired less experienced employees, hereafter referred to as "Maintenance Condition Trainees". Figure 1 provides a flowchart of major experimental events

and illustrates how Trainees became Maintenance Condition Trainers.

Normative Trainees. Two additional attendants served as Normative Trainees. While these attendants were identified at the same time and in the same way as other Trainees, the project was described as a series of assessments of skills covered in orientation class. Both employees agreed to participate. Periodic assessments were made on approximately the same schedule as other Trainees, but these employees did not receive peer training. Their performance data provided an approximate "community norm" for newly hired employees (Kazdin, 1977). Also, their performance provided a measure of the reactivity of assessments, the effects of repeated practice and other non-systematic influences on emergency skill performance.

Maintenance condition trainees. During maintenance conditions, three newly hired employees were identified in a similar manner as the original Trainees. All agreed to participate.

Trainers. Four attendants who had been employed at the Center for more than six months were identified by supervisors as responsible, organized and good resident trainers. Each attendant was contacted by the Director of Staff Development, advised of the nature of the project, as well as supervisor's recommendation, and invited to participate. All four initially identified Trainers agreed to participate.

Setting and Apparatus

The study was conducted in an eighty-four bed residential and out-patient developmental disabilities center. Workshops for Trainers were conducted in a Staff Development classroom. All other training (i.e., peer training and brief meetings with Maintenance Condition Trainers)

Figure 1: Flowchart of major experimental events and indication of participants' changing responsibilities. (Note: Dotted line indicates that no Trainers chose to continue to teach new staff during maintenance conditions.)

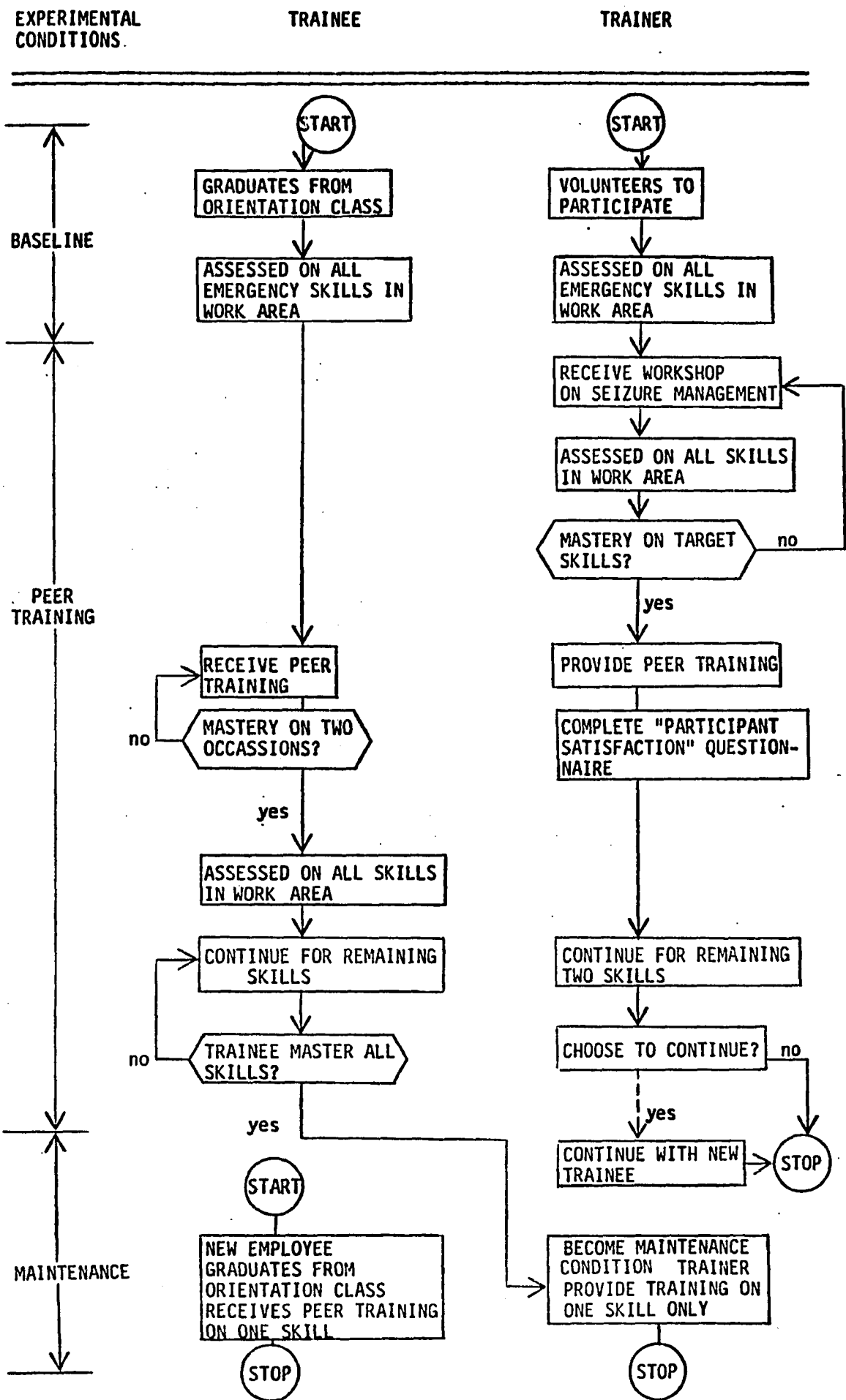


FIGURE 1: Flow Chart of Major Experimental Events

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and all assessments were conducted on the residential living units which were the regular work areas for the attendants and where they would be expected to use the emergency skills.

All equipment used during assessments and training was indigenous to the residential units. During Seizure Management assessments, staff were required to locate and identify oxygen tanks and a suction apparatus, and to move unit furniture away from the convulsing "victim". During assessment of the "armed resident attack" portion of Self-Defense, participants would hold a chair between themselves and the "resident". For Fire Procedures two small dolls (approximately five inches in height) initially served as analogue residents, but were discontinued during baseline assessments and staff were instructed to evacuate "imaginary" full-size residents. During evaluation of primary and secondary fire evacuation routes, the staff member and assessor used the fire evacuation map that was posted on that unit.

Training Sequence and Response Definitions

Identification of target emergency procedures was conducted by examining orientation class curricula and contacting various department heads and residential area supervisors. Target skills were identified by having supervisors indicate: 1) the potential need for attendants to be able to perform the behaviors independently; and 2) any observational data that Center employees were not performing these behaviors satisfactorily. Three high-risk low-frequency skills, Convulsive Seizure Management, Fire Procedures, and Self-Defense, were identified by evaluating data collected during drills (i.e., Fire Procedures), living area records of actual emergencies (i.e., Seizure Management, Self-Defense) and employee termination data due to physical abuse from, or directed

towards a resident (i.e., Self-Defense). A literature review suggests that similar situations are prevalent in other institutional settings. Richardson, Koller, Katz and McLaren (1981) report that 25% of retarded persons surveyed age 0 to 22 years suffer from epileptic-type disorders. Webster and Azrin (1973) have previously documented the need for alternatives to drugs and physical restraint in the treatment of retardates' aggressive behavior. Initial component analyses of the three emergency procedures were generated by analyzing existing Center policies and orientation class curricula.

To ensure the social validity (Wolf, 1978) of these component analyses, the department head responsible for that aspect of the Center's operations evaluated the component responses, and suggested modifications that might be helpful for an inexperienced employee. For example, the Director of Nurses evaluated Seizure Management techniques and suggested that all Trainees be taught to call a nurse immediately, whereas experienced attendants would instead monitor a victim for respiratory arrest or cyanosis of extremities before calling for a nurse.

Further, to provide a measure of the "clinical significance" (Kazdin, 1977) of each component analysis, the evaluator then identified "essential" responses for each procedure that must be performed. Then they established a proportion of the remaining behaviors that needed to be performed to achieve mastery. In order for a skill to be considered as "mastered," the employee would not only need to perform a certain percentage of component responses, s/he would also have to correctly perform certain specific essential behaviors. For example, during Seizure Management, the participant had to respond correctly on four performance items (i.e., assist victim to floor, turn on side, move nearby objects away, and locate oxygen

and suction apparatus) as well as two knowledge items (i.e., "should you physically restrain a convulsing victim?" and "should you provide liquids afterward if a victim asks for a drink?"). Of the remaining eleven "nonessential" items, nine (or 81.2%) had to be correct. Thus, of a total seventeen items, fifteen (or 88.2%) had to be performed correctly. However, an individual could still exceed this percentage level, but not master a skill, if one essential response was omitted. Tables 1-3 provide correct and incorrect response definitions for Seizure Management, Fire Procedures and Self-Defense. Also listed in the tables are "essential" items and the requisite proportions of remaining items used to determine mastery of each skill.

Assessments

Observer Training. Observers included two graduate student interns, the senior author and a Staff Development employee. The interns and the Staff Development employee were uninformed of which skills had been trained and which were untrained. Observers were provided with copies of data sheets and response definitions and initially scored verbal descriptions of analogue emergency assessments from an audio tape recording. These audio tapes were preserved throughout the course of the project and observers periodically scored the tapes to detect the occurrence of "observer drift" (Kazdin, 1977). When one or zero disagreements were obtained on audio tape scoring, the senior author and observers took turns serving as "victim" and mock participant, while the remaining observers scored the participant's behavior. When mock participants' behavior had been recorded and one or fewer disagreements had been obtained on all behaviors by an observer, s/he was considered trained. Throughout the course of

Table 1: Correct and incorrect response definitions for Seizure Management, including essential responses (indicated by *) and mastery criterion.

TABLE 1: Response Definitions for Seizure Management

Correct	Incorrect
*1. <u>S</u> assists R to floor, within 10 seconds, minimizes chance of injury.	Fails to assist; takes too long; R strikes floor hard enough to bruise.
*2. <u>S</u> lays R on side, so that mouth/nose points to floor. Does not insert anything in mouth.	Not on side; nose points up. Puts something in mouth.
*3. <u>S</u> clears objects out of R's reach (extended arms or legs).	Does not move objects; does not move far enough.
4. <u>S</u> checks time with 30 seconds of onset.	Fails to check; waits too long.
5. <u>S</u> calls for nurse (or describes) within 30 seconds of onset.	Does not call or describe, waits too long.
6. Within 30 seconds of question, <u>S</u> can describe paging for nurse if none on Unit.	<u>S</u> does not describe use of telephone page within 30 seconds of question.
7. <u>S</u> states "code 1" is page code, within 30 seconds.	<u>S</u> does not state "code 1" within 30 seconds of question. <u>S</u> states any other code first.
<u>S</u> states nurse will want to know:	Does not mention:
8. Seizure duration	Duration or time
9. Movements during seizure	Movements
10. Breathing difficulties	Breathing
11. Color changes (blueness)	Color
12. Possible cuts, bumps, bruises or other events requiring an accident report.	Possible injuries
In response to oral questions, <u>S</u> will state:	<u>S</u> states:
*13. "Not to hold limbs" (Note: may say "Put pad under head").	Says may restrain movements during seizure.
*14. Says "no liquids" immediately after.	Says may give liquids immediately after.
15. Says to take temperature.	Does not say to take temperature.
16. Says to record seizure (or tell nurse to record).	Does not mention record book.
*17. <u>S</u> can begin to locate and identify suction and oxygen equipment within 30 seconds.	Can't do either; takes too long; goes to wrong room first.

Mastery Criterion: Responses 1,2,3,13,14,17 and 9/11 of remaining behaviors.

Table 2: Correct and incorrect response definitions for Fire Procedure including essential responses (indicated by *) and mastery criteria.

TABLE 2: Response Definitions for Fire Procedure

Correct	Incorrect
*1. <u>S</u> removes residents from room (closest to fire first, or simultaneously), before reporting or fighting fire.	<u>S</u> reports or fights fire first, removes closest to door first.
*2. <u>S</u> identifies Unit fire alarm box verbally, or by pointing or touching, before using phone or fighting fire.	Does not identify Unit fire alarm box; phones or fights fire first.
3. <u>S</u> states must call Boiler Room (or Maintenance, Engineering or #129 or #160) after removing residents from room and pulling fire alarm, before evacuating ward and before fighting fire.	Does not state need to phone; states phone wrong party; wrong sequence.
4. <u>S</u> will describe and initiate closing doors (windows optional).	Does not describe or initiate door/window procedure.
*5. In response to a question, <u>S</u> can describe 1st, 2nd, and 3rd escape routes off ward. (Note: may look at map, does not have to describe route once off own ward.)	Describes incorrect route, hallway or rooms. Identifies incorrect sequence of alternative routes.
6. In response to question, <u>S</u> will describe waiting at evacuation point until evacuation signal given or fire is directly threatening, or drill is over.	<u>S</u> describes leaving building at end of ward evacuation.
*7. <u>S</u> describes counting residents at building exit.	<u>S</u> does not describe counting residents.
8. When requested, <u>S</u> can get nearest fire extinguisher.	<u>S</u> does not get. <u>S</u> gets hose or farther extinguisher.
9. <u>S</u> demonstrates or describes use of safety, trigger and pointing.	Omits any component.
10. <u>S</u> states what fire code # is (13).	Cannot say within 30 seconds; says wrong code #.

Mastery Criterion: Responses 1,2,5,7 and 4/6 of remaining behaviors.

Table 3: Correct and incorrect response definitions for Self-Defense, including essential responses (indicated by *) and mastery criteria.

TABLE 3: Response Definitions for Self-Defense

Correct	Incorrect
*1. S stands within reach of "Resident" within 5 seconds of hit.	Fails to stand within reach; takes too long.
2. Uses "Resident's " name and instructs incompatible response, within 10 seconds of the hit.	Fails to use name; says "no hitting" but does not instruct incompatible; takes too long.
*3. S physically prompts desired response within 10 seconds of instructions or 20 seconds of hit.	No physical prompt; takes too long.
4. S blocks punch with same-name arm, hand is fisted (thumb contacting fingers). Uses forearm (between wrist and elbow joint).	Wrong arm; open hand; uses hand or upper arm to block. Fails to block.
5. S blocks kick by raising same-name leg 6 inches and foot partially occludes support leg and torso is turned approximately 90° to the side.	Fails to block kick; uses wrong leg; fails to raise blocking leg; raised foot too far forward or back; fails to turn body.
6. S releases clothing grab by thumb pry, within 5 seconds.	Fails to release; does not use thumb pry. Is not gentle; too long.
7. S releases body part grab by thumb or rotating out, within 5 seconds.	Fails to release; inappropriate thumb pry; does not rotate; too long.
8. S lifts and holds chair between self and "Resident's" chair within 5 seconds.	Fails to lift chair; takes too long. Does not hold between.
*9. S states criteria for use of self-defense technique as per policy: to protect people (any), and property.	Incorrect paraphrase. Example: "may use when residents are disruptive"; specifically, says may not use when you actually may (e.g., "may not use to protect staff"). Omits either component.

Mastery Criterion: Responses 1,3,9, and 4/6 remaining behaviors.

the study, after each assessment, primary and secondary observers' records were compared on a per response basis, but observers were not given feedback regarding their session or cumulative percent accuracy.

Baseline. For obvious ethical reasons, it is not possible to create or take data during bonafide emergencies. Assessments of analogue scenarios were conducted by having an assistant or observer "play the part" of a resident. Participants were asked if they could afford to interrupt their tasks for five to ten minutes. Experimental assessments, like real emergencies, were not scheduled with staff in advance, but typically occurred during "slow" times of day. (On one occasion only an employee requested that observers return in 15 minutes.) Participants were taken to an unoccupied living, dining, bedroom or office on the unit. Assessments began when the participant was asked to demonstrate and describe how they would respond in a seizure (or fire, or self-defense) situation. The "resident" would then begin convulsing if it were a seizure management assessment or would "attack" another (imaginary) resident (to assess instructions, prompts and protection of residents) and then attack the participating attendant (to assess actual self-defense maneuver topographies). For example, during Self Defense, an experimental assistant would play the role of an assaultive client and would begin to hit an "imaginary" resident. The staff participant would need to separate the two "residents", say "Fred, go sit down" (or other incompatible behavior) and physically prompt the appropriate response within time limits. The participant would then describe and demonstrate how to protect oneself from various hand strikes, kicks, grabs and objects. The participant also had to specify what the Center policy said concerning appropriate circumstances for the use of Self Defense techniques. During Fire Procedures, staff would be asked to

"pretend" a fire was burning in that room, and that several residents were present.

A correct response was scored if participants both performed and described the correct action. An incorrect response was scored if either a verbal or performance component was incorrect. An incorrect response was also scored if a participant began to perform an incorrect response but then self-corrected. For example, during Fire Procedures, if a participant began evacuating to an incorrect door and then went to an appropriate exit, an incorrect response would be score. This conservative assessment strategy was selected due to the critical features of the component responses in each emergency procedure. Staff were never provided feedback on the overall correctness of any assessment or individual response.

Peer training and maintenance. All assessments in peer training and maintenance conditions were conducted in the same manner as baseline assessments. No feedback was provided to participants regarding "correctness" of any procedure, nor for any component response of a procedure.

General Training Procedure

Trainer workshops. A total of three workshops, one for each procedure, were provided to the original group of Trainers. Workshops included the following activities: verbal instruction in an emergency procedure, practice of the procedure, feedback on correct and incorrect responses, and suggestions on how to schedule and provide training to employees (e.g., conduct training after resident bed times, use procedures like those for training verbal residents, try to use more "praise" than "corrective" statements). Instructions were provided as to where Trainers should turn in completed data sheets (indicating correct and incorrect responses). "Skill acquisition" criteria were set at two training assessments at mastery.

Following each workshop, assessments of all three skills were conducted in each Trainer's work area. Contingent upon mastery-level generalization to the work area, each trainer was assigned a Trainee and instructed to begin training at their earliest convenience. (All trainers generalized all emergency skills at mastery levels from the classroom to their work areas immediately after each workshop.) Assignment of Trainee to Trainer was based upon their working in a similar residential area, and was arranged to maximize the the number of days that both employees were scheduled to work. Workshops ranged in duration from 30 to 60 minutes each.

When data sheets were handed in that reflected two sessions at mastery levels of performance for any Trainee, assessments were performed on all skills for that participant by experimental observers. When all Trainees had received peer training on one skill and had been assessed on all skills, a second workshop was provided to Trainers. When all Trainees had received peer training on the second skill and assessments on all skills, the third workshop was provided to Trainers. Trainers were encouraged to review previously taught skills, but not to train any skill that had not been covered in a workshop (thus permitting an assessment of functional control via a multiple baseline across behaviors design). In the second and third workshops, Trainers were asked to complete Participant Satisfaction Questionnaires. (See Social Acceptability Questionnaire Section.) Aside from the skills taught and the absence of Participant Satisfaction Questionnaires in the first workshop, the three workshops were identical in content and activities.

Peer Training. Trainers and Trainees were asked to devote ten to twenty minutes for peer training on those evenings when both participants' normal work duties were completed, and assigned residents were in bed

and supervised, but such time was not formally programmed into official work activities schedules. Data sheets provided to Trainers included blank spaces for session onset and offset times, in order that trainer-reported cumulative session durations could be calculated. Trainers were told to practice analogue scenarios that were both similar to and different from formal experimental assessments, and to solicit questions from their respective Trainee. However, no direct observations or process measures of training techniques were conducted.

Maintenance Condition Trainer Instructions. All original Trainers, and all Trainees (who previously mastered all procedures) were invited to participate as Maintenance Condition Trainers. All participants had recently received training (either workshops or peer training) and had demonstrated skill mastery. Because the group workshop format demanded delaying training until the slowest Trainee mastered the target skill, a series of brief individual meetings was conducted with each Maintenance Condition Trainer. These brief meetings included instructions in the use of data sheets, where to turn in completed data sheets, how to schedule training sessions, and how to provide peer training. No discussion of actual emergency procedures occurred. That is, brief meetings did not discuss the performance of any emergency skill but rather, how to teach a complex skill to another staff member.

When the maintenance condition began, one original Trainer had terminated employment at the Center and one was on medical leave. Of the remaining two original Trainers, both declined to participate as Maintenance Condition Trainers. Of the four original Trainees, one had terminated employment. The remaining three chose to participate, and were each assigned to train one new employee. Each Maintenance Condition Trainer instructed

his/her respective Trainee in a different one of the three emergency procedures.

Social Acceptability Measures

Applied behavior analysis research has recently identified the "desirability of treatment" as an important dimension of successful interventions (Kazdin, 1980). Original Trainers completed anonymous self-report questionnaires during the second and third workshops. Participant satisfaction questionnaires had 5 point Likert-type scales for responding to 4 statements: Do Trainers have adequate skills?, Being a Trainer is enjoyable., Were Trainees usually willing to be trained?, Would you like to continue training additional staff? A fifth question required a written response: What is the most difficult aspect of being a staff trainer? The self-report data are compared over time, and to Trainers' actual responses to invitations to continue training during the maintenance condition. These comparisons provide a tentative indication of the validity of verbal report of acceptability versus actual behavioral measures. That is, verbal report of desirability of participation may be multiply controlled and may not correspond with what a participant actually does when given an opportunity to continue involvement in "extra" work activities.

Reliability

Independent observations were made by a second observer for all subjects in baseline and post training. Independent reliability checks were made by Staff Development personnel or graduate students who were not informed as to the experimental conditions in effect or results to date. Observers' records were compared on a per response basis, and interobserver reliability scores were computed by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. This formula was

used to compute agreement percentages for occurrences of correct responses, nonoccurrences of correct responses and occurrences plus nonoccurrences. Reliability checks on 37.3% of baseline assessments yielded mean scores of 79.4%, 81.0%, and 89.5% for occurrences, nonoccurrences and occurrences plus nonoccurrences, respectively. Reliability checks on 21.9% of peer training and maintenance condition assessments yielded scores of 94.6%, 54.1%, and 95.7%. Low mean scores for nonoccurrences during peer training reflect very low error rates of participants in this condition.

Experimental Design

This study utilized a multiple-baseline across skills design (Baer, Wolf & Risley, 1968). Workshops were provided to Trainers on Seizure Management. When all Trainers performed at mastery on Seizure Management, each was instructed to begin training his respective Trainee. When all Trainees were assessed on Seizure Management, Workshop 2 on Fire Procedures was provided to Trainers. The same procedure was followed for the third skill, Self-Defense.

Maintenance and Follow-Up

One brief meeting was provided for all Maintenance Condition Trainers (N=3)(formerly labelled "Trainees") who then taught newly hired employees (Maintenance Condition Trainees; N=3) one of the emergency skills. Assessments conducted during this phase were eighteen weeks beyond the third workshop. Thus, the long term effects of training other staff can be tentatively evaluated by comparing each Maintenance Condition Trainer's performance on the skill trained with her/his own performance on the two skills s/he did not train.

Because skill maintenance might be enhanced as a function of providing training, one issue concerns the effectiveness of Maintenance Condition

Trainers. Post training data of all three procedures were collected for Maintenance Condition Trainees. Some indication of the effectiveness of peer training by Maintenance Condition Trainers can be obtained by comparing the level of performance for Maintenance Condition Trainees on skills that they trained, versus those that they did not train.

RESULTS

Trainees

Figure 2 depicts the performances of the four Trainees on Seizure Management, Fire Procedures and Personal Defense. Because task analyses for the three skills yielded different absolute numbers of component responses, all performance data are reported as the percent of responses performed correctly. The abscissa units are calendar days, to permit visual analysis of trends over real time.

Baseline data show that one Trainee (RB) performed at mastery on the first five assessments, but that no other Trainee performed at mastery levels (mastery is designated by open data points) on any skill prior to peer training. Mean baseline performance collapsed across all observations and Trainees yielded 42.1%, 53.1%, and 42.6% for Seizure, Fire and Self-Defense, respectively. Following peer-training, all Trainees improved their performances of all skills. Mean post-training performances assessments across all Trainees for Seizure, Fire and Self-Defense were 94.6%, 100%, and 94.5%. After receiving peer training, each Trainee improved and performed at mastery levels on every skill at least three times. Comparisons of individuals' baseline and post-training means reflect a range from a maximum improvement of 63.3% for Trainee VC on Self-Defense to a minimum of 35.0% for Trainee RB on Fire Procedures.

Normative Trainees

Performances of the two "normative" (i.e., not peer-trained) Trainees did not evidence any systematic increases over time. For

Figure 2: Trainees' performances on three emergency skills during baseline, peer training and maintenance conditions.

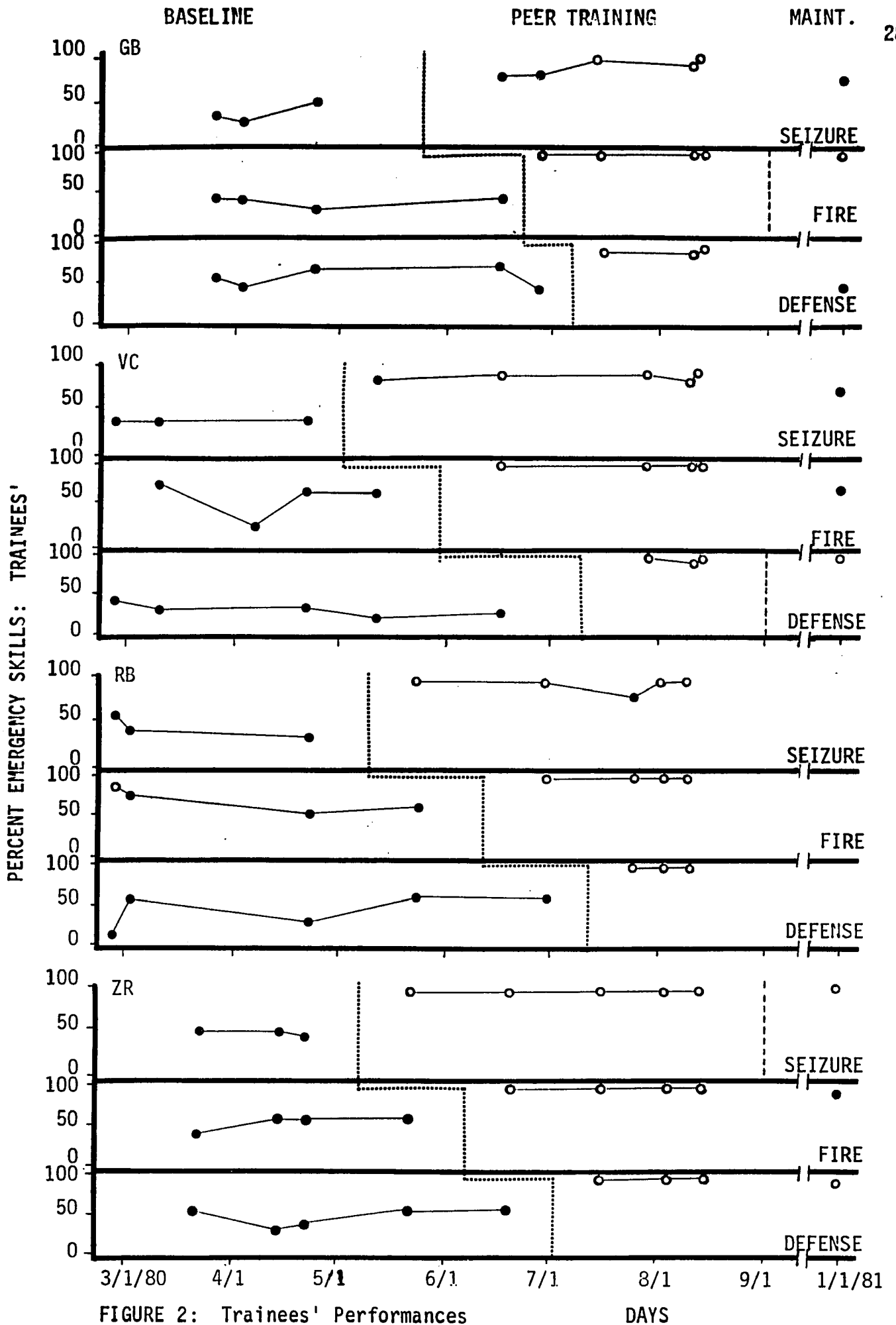


FIGURE 2: Trainees' Performances

DAYS

Normative Trainee RC five assessments were conducted before she resigned from the Center. Minimum and maximum performances were: Seizure 59% and 65%, Fire 40% and 50%, and Self-Defense 44% and 44%. For Normative Trainee VS, seven assessments were conducted. Minimum and maximum performances were: Seizures 59% and 65%, Fire 40% and 80%, and Self-Defense 22% and 33%. Neither Normative Trainee achieved mastery performance on any skill during any assessment.

Trainers

Figure 3 depicts the baseline and peer training performances of the four Trainers on Seizure Management, Fire Procedures, and Self-Defense. No Trainer ever performed at mastery levels prior to receiving a workshop. Mean baseline performances collapsed across all assessments yielded 52.5%, 53.4%, and 29.1% for Seizure, Fire, and Self-Defense, respectively. Peer training means collapsed across all Trainers and assessments yielded 96.3%, 93.8%, and 94.5% for Seizure, Fire and Self-Defense, respectively. Comparisons of individuals' baseline and post training means reflect a range from a maximum improvement of 74.4% for Trainer QB on Self-Defense, to a minimum improvement of 22.0% for Trainer AR on Fire Procedures. All Trainers performed at mastery levels on each skill at least two times during peer training assessments.

Maintenance Condition

Figure 2 shows performance of the three Maintenance Condition Trainers eighteen weeks after the previous assessment and after providing peer training on one skill only to one Maintenance

Figure 3: Trainers' performances on three emergency skills during baseline and peer training conditions.

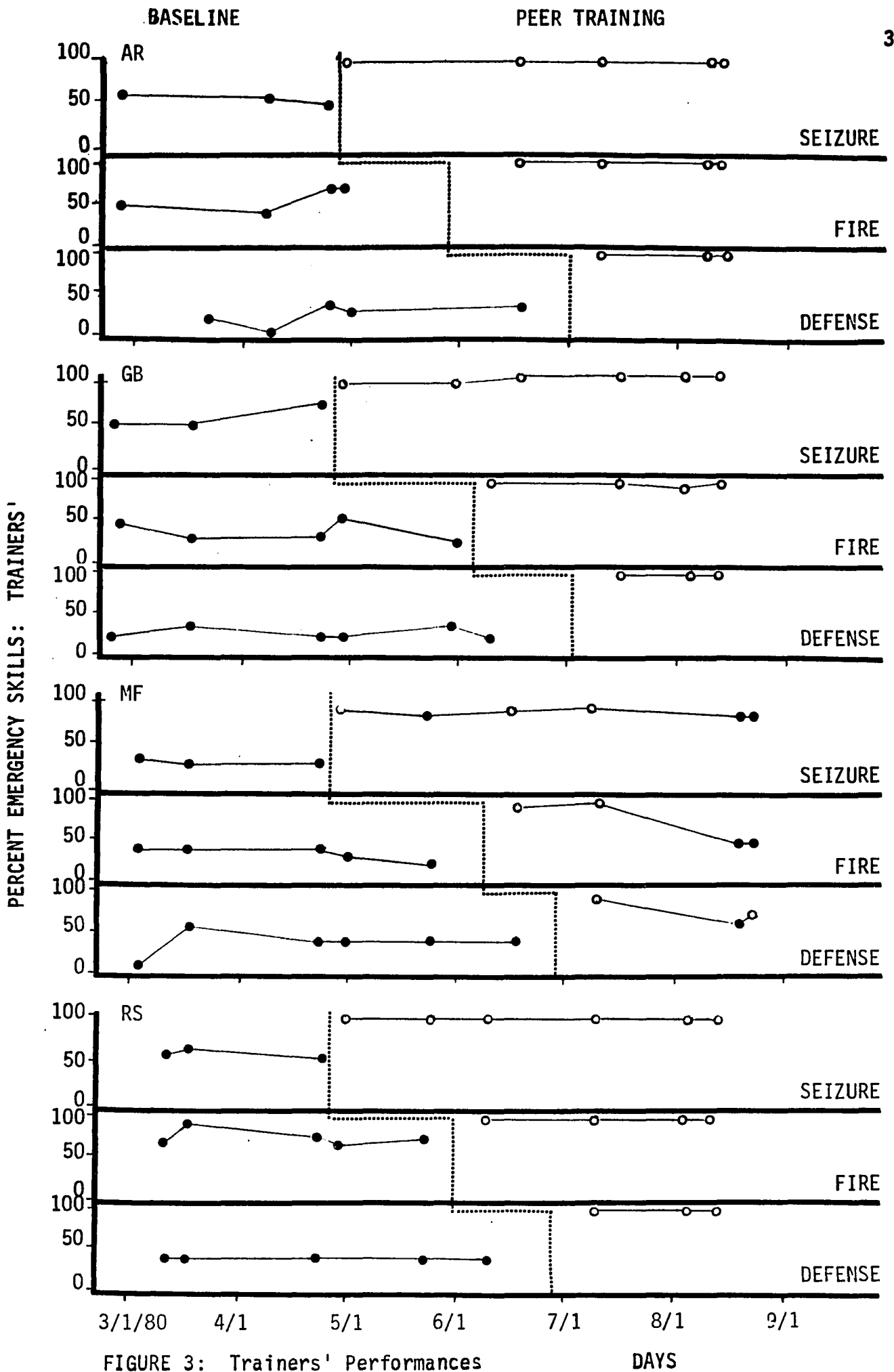


FIGURE 3: Trainers' Performances

DAYS

Condition Trainee. Table 4 displays the numerical value of each follow-up data point for Maintenance Condition Trainers and compares their performances with those of the Maintenance Condition Trainees. In Table 4 the target skill for each Trainer-Trainee pair is indicated by an arrow and mastery level performance by a capital "M" after the assessment score. Table 4 and Figure 2 show that each skill taught by each Maintenance Condition Trainer was performed subsequently at mastery levels during Follow-Up by Maintenance Condition Trainers and Trainees. Furthermore, with the exception of Trainer ZR's performance on Self-Defense, no other skill area was performed at mastery levels by any Trainee or Trainer. Although Follow-Up data reflect a decrease in Trainers' performances of untaught skills, all of their follow-up performances exceed their baseline means.

Time Efficiency Measures

A total of 52 training sessions were reported by original Trainers via the established method of forwarding data sheets to the Staff Development Department. Of these, 46 sessions, or 88.4% had appropriately completed session start and stop times. The mean session duration reported was 3.35 minutes, with a reported range of 0.5 to 15 minutes. The maximum number of total training sessions was nine. If mean session duration (3.35 minutes) is multiplied by the reported maximum number of sessions to mastery (nine), then a conservative estimate of 30.15 minutes total peer training time per skill results.

Table 4: Percent correct emergency skills of Maintenance Condition Trainers and Trainees. (Note: Arrows indicate skills which were peer taught. An "M" indicates the skill that was mastered.)

Maintenance Condition Trainer	Emergency Skill	Percent Correct	Maintenance Condition Trainee	Emergency Skill	Percent Correct
GB	Seizure	82	BS	Seizure	82
	Fire	100(M)		Fire	100(M)
	Defense	56		Defense	22
VC	Seizure	71	ZI	Siezure	59
	Fire	70		Fire	50
	Defense	100(M)		Defense	100(M)
ZR	Seizure	100(M)	LM	Seizure	94(M)
	Fire	90		Fire	40
	Defense	78(M)		Defense	56

Social Acceptability Measures

A total of eight anonymous evaluations were turned in by the four original Trainers during Workshops II and III. On question 1 (Do Trainers have adequate skills?) and question 2 (Being a Trainer is enjoyable.) a total of eight "agree" responses were received. On question 4 (Were Trainees usually willing to be trained?), four "yes" and four "sometimes" responses were received.

On question 3 (Would you like to continue training additional staff?) all eight questionnaires were returned "agree". However, two out of two Trainers who were later asked, declined to train other staff during Follow-Up. On question 5 (What is the most difficult aspect of being a staff trainer?), four questionnaires cited interpersonal difficulties and five cited "time and scheduling" as a problem.

DISCUSSION

Trainees' results indicate that peer training can be an effective means of teaching high risk low frequency skills to psychiatric attendants. One Trainee demonstrated mastery performance prior to peer training on only one skill. All displayed mastery performance, at least three times on each skill subsequent to peer training. Normative trainee attendants who did not receive peer training did not improve in spite of repeated assessments and the presence of written procedure descriptions in their work areas.

Results for Trainers demonstrate that a combination of receiving workshops and providing training enhances and helps maintain mastery-level performance. No Trainer demonstrated mastery performance in baseline assessments on any skill. All Trainers demonstrated mastery at least twice on all skills subsequent to the workshops. One Trainer's performance decreased over time, as might be expected given that baseline data reflect that no effective contingencies were serving to maintain emergency skill performance. After each workshop, all Trainers showed generalized mastery on each emergency skill in their respective work areas. Comparisons of the first post training data points with the second post training data points provide a measure of the effects of workshops versus workshops plus providing peer training. Inspection of all post training data points suggests that for three Trainers the combination of workshops plus providing peer training did maintain skills at mastery levels, suggesting that peer training may help maintain the skills of the trainer. These results should be considered tentative, in that one Trainer's performance did deteriorate and because data reporting systems do not unequivocally report the occurrence of any peer training sessions wherein reviews of

previously mastered skills were conducted.

The issue of skill maintenance is more directly evaluated in the maintenance condition wherein peer trained attendants taught other newer employees one of the three procedures. All Maintenance Condition Trainers performed at mastery levels on the skill which they taught, but only one Trainer maintained mastery level performance on any skill which s/he did not teach. Peer training by these Trainers appeared to be effective in teaching newer staff, who mastered only the skills taught to them. This is noteworthy in that instructions to these Trainers lasted a maximum of 10 minutes, versus 30 to 60 minutes for workshops provided to the original group of Trainers. Also, effective training in emergency procedures was only provided by the respective peer trainer, not by Staff Development personnel. Thus, if peer training was provided to more than one Trainee, who in turn served as Trainer for two or more additional employees, a kind of "pyramid" effect could occur resulting in efficient and cost-effective training and skill maintenance for all employees, as described in Page et al (1981).

Data from the Participant Satisfaction Questionnaires are also noteworthy. Across two administrations of the instrument (i.e., second and third workshops) all eight questionnaires indicated participants wished to continue training. However, when asked to actually continue, the two remaining Trainers declined. These results suggest a lack of correspondence between self report and behavioral indices of preference.

Time efficiency measures indicate that a conservatively estimated total training time is about one-half hour (30.15 minutes). However, all training was conducted on a voluntary basis and "as time permitted".

Thus, training was not "massed" in a traditional sense, but was distributed across several weeks. Future research might examine total training time durations, effectiveness, and cost-efficiency of including peer training as a formally scheduled regular work activity and examine the maintenance issue in a more rigorous fashion.

In summary, this experiment extends the initial work of Jones, Kazdin and Haney (1981) along several dimensions. In the present study, caregivers' behaviors were modified rather than attempting to train potential victims. Assessments of responses to three different emergency simulations were conducted in the actual setting where the emergencies would be likely to occur, as opposed to artificial training environments. The initial study of Jones, Fremouw, and Carples (1977) has also been extended by having less academically sophisticated Trainers teach an infrequently practiced skill. Trainees then assumed the roles of Trainers, and in turn taught these emergency procedures to other less experienced psychiatric attendants. This study also systematically replicates some of the procedures used by Page et al (1981) and demonstrates that they are sufficiently robust as to be utilized effectively by institutional direct care staff as well as supervisors.

Finally, this experiment suggests a cost efficient method for maintaining staff skills. Such a methodology can provide an important contribution to applied behavior analysis research strategies, and is particularly important when target behaviors have high-risk but low-frequency features.

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