

*TRAINING PARENTS IN BEHAVIORAL SELF-MANAGEMENT:  
AN ANALYSIS OF GENERALIZATION AND MAINTENANCE*

MATTHEW R. SANDERS AND TED GLYNN

UNIVERSITY OF QUEENSLAND AND UNIVERSITY OF AUCKLAND

This study examined the generalization and maintenance effects of three phases of parent training (Instructions plus Feedback and two Self-management Training phases) on levels of disruptive child behavior and the accuracy with which parents implemented programs. Data were collected from five families in three main settings: the initial training setting (the home), a variety of generalization settings in the community, and the family breakfast. A multiple baseline across subjects design was used. Instructions plus Feedback comprised instructing parents to use a range of behavior management procedures and provided home-based differential feedback concerning accuracy of program implementation. Self-management Training phases involved training parents in goal setting, self-monitoring, and planning skills, specific to their performance of appropriate parenting skills in generalization settings. Results indicated that the Instructions plus Feedback phase was sufficient to produce reduced levels of problem behavior at home and high levels of accurate implementation, but generalization effects out of home were equivocal. Self-management maintained reduced levels of problem behavior at home but, in addition, resulted in generalization effects in community settings for both children and parents. Maintenance probes 3 months following the program revealed the effects had been maintained.

DESCRIPTORS: parent training, self-management, generalization, preschool children

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Behavioral research has increasingly focused on developing training procedures that facilitate the generalization of targeted skills to different behaviors, settings, individuals, and times (Koegel, Glahn, & Nieminen, 1978; Koegel, Russo, & Rincover, 1977; Parsonson, Baer, & Baer, 1974). Evidence from the parent training field indicates that parents do not necessarily apply their skills to other untreated problem behaviors, other siblings, new settings, or when therapist contact terminates (e.g., Forehand & Atkeson, 1977; Miller & Sloane, 1976; O'Dell, Flynn & Benlolo, 1977; Patterson, 1974; Rosenthal, 1976).

Recent studies indicate that initial skill training to equip trainees to modify a range of target behaviors in nontraining settings may require

instruction in several different behavioral procedures (Koegel et al., 1977; Koegel et al., 1978). For example, Koegel et al. (1978) used multicomponent training procedures which included specific instructions, modeling, differential feedback and practice to teach parents of autistic children to apply generalized behavioral skills subsequently to a range of behaviors with different children in a classroom setting.

However, there is little systematic data indicating that parents use trained procedures when conditions vary significantly from initial training settings. Whereas a range of strategies has been suggested to promote situational generalization and maintenance (e.g., Forehand & Atkeson, 1977; Marholin, Siegel, & Phillips, 1976; Stokes & Baer, 1977), the naturally occurring stimulus conditions under which parents are required to implement procedures have not been well documented. Risley, Clark, and Cataldo (1976) argued that effective parenting in some

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Reprints may be obtained from Matthew R. Sanders, Department of Psychiatry, University of Queensland, Clinical Sciences Building, Royal Brisbane Hospital, Brisbane, Q. 4029, Australia.

settings may require different strategies from those that are effective at other times, and in other social contexts. Parenting settings, such as the home, community, and neighborhood may vary significantly in the availability of discriminative cues that initiate appropriate parental intervention and in their demands on parents. Some settings may be "high risk" occasions for program inaccuracy. Situations that require parents to engage in simultaneous activities that involve conflicting or incompatible responses (e.g., engagement in a conversation with a neighbor or visitor versus interrupting the conversation to deal with a fight outside) may influence the probability of program implementation. These factors have been largely ignored in research to date. Parents' ability to alter, control, and rearrange their own parenting environment so that the environment prompts and reinforces the continued application and extension of skills once therapist support is withdrawn may require different strategies from those currently used in training parents.

Self-management training (e.g., self-observation, self-selection of goals, problem solving and rearranging one's stimulus environment) designed to teach parents explicitly to plan, rearrange, and monitor their parenting environment may be more amenable to producing generalized and durable changes (Herbert & Baer, 1972; Loeber & Weisman, 1975; Sanders, 1978; Stokes & Baer, 1977), than expecting child behavior to cue relevant parent behavior or to construct elaborate contingencies to maintain parent behavior. However, there is little systematic data available to demonstrate the efficacy of self-management in parent training. The present study was designed to evaluate the generalization and maintenance effects of teaching self-management skills as part of a parent training program. The effects of Instructions plus Feedback, and Self-management Training procedures for teaching parents to use generalized behavioral skills based on incidental teaching concepts (Hart & Risley, 1975; O'Brien, Porterfield, Herbert-Jackson, & Risley, 1979;

Phillips, Phillips, Fixsen, & Wolf, 1974), were assessed.

## METHOD

### *Participants*

Five two-parent families in metropolitan Auckland participated in the study. Each family was either referred by a social agency (e.g., public hospital, child care agency) or self-referred. Families contained at least one preschool-aged child presenting persistent management difficulties for the parents. Home visits revealed that all children displayed high rates of disruptive, noncompliant, and demanding behaviors. Families were accepted for treatment providing both parents agreed to participate in the training program, and to have up to two observers in their homes.

Mothers who acted as primary therapists ranged in age from 23 to 29 yr (mean 26.8 yr) and fathers, 23 to 33 yr (mean 28.7 yr). All families were Caucasian and at level three on a 6-point socioeconomic index scale for New Zealand (Elley & Irvine, 1975). Target children (three boys and two girls) ranged in age from 2 yr 9 mo to 4 yr 8 mo (mean 3.5 yr).

### *Settings*

Observations of family interaction were conducted in four different settings: (a) *Training setting*. All training took place in the family home which also served as a setting to observe parent-child interaction. (b) *Generalization settings (community)*. These comprised a range of community settings in which mothers interacted with their children (e.g., play centers, daycare centers, shopping, visiting with friends or relatives, visits to the beach and school). (c) *Generalization setting (breakfast time)*. The family early morning meal provided a second generalization setting. (d) *Additional problem settings (home and community)*. Parents kept an event record of additional settings in which targeted child behaviors occurred. These recordings were taken on two days per week when formal observation were not scheduled.

Home observations (other than breakfast) were usually conducted three times per week during the time parents reported persistent problems. Observations were conducted in the kitchen, lounge, and dining room areas. Two or three additional observations in community (generalization) settings were conducted per week. Because community contact for most families was irregular, observation times for data collection needed to be flexible across families. Family interactions at breakfast between father, mother, target-child, and siblings were sampled twice in each phase. On most occasions fathers were absent from the home and community observation settings. Parents' event recording of additional settings in which targeted problem behaviors occurred was entered on a home and community problem checklist. A research assistant telephoned each family at a regular time each week to collect this data.

During observation sessions, parents and children were asked to remain indoors during the observation, turn off television sets, confine their activities to the living room/kitchen areas (when possible), avoid making telephone calls during the observation, inform incoming callers that an observation was in progress, ensure that callers did not visit during the observation, and avoid conversing with observers once observation had begun. Observers were seated in the kitchen-lounge area and signalled to the parent when the observation was about to begin. Observers were instructed to avoid all eye contact with children and parents. Observers were also instructed to ignore the children if the children approached them.

For community setting observations, observers and parents met at an agreed location and then parents carried on with their usual activities. Observers were stationed as unobtrusively as possible and did not converse with participants. No observers were present at the breakfast session. Parents were asked to conduct their morning activities as usual, while audiotape recordings monitored the family interaction at the breakfast table.

### *Observation Procedures and Behavior Definitions*

Two different versions of a time-sampling instrument, the Family Observation Schedule (F.O.S.) were used to record mother-child interactions. F.O.S. (I) was used in both the training and generalization (community) settings, and F.O.S. (II) (a modified version for analyzing audiotaped verbal interactions) was used for the breakfast (generalization) settings. Parent-child interactions were sampled in observation blocks of 40 sec (25 sec for observation and 15 sec for recording). This observe-record cycle was repeated for 25 min. Thus parent-child interactions were sampled for a total of 16.6 min from each observation session. A tape recorder cued the observers to observe or record according to the schedule.

F.O.S. (I) measures six categories of disruptive child behavior, two categories of appropriate child behavior, and five categories of parent behavior. (Detailed category definitions for both observation procedures along with instructions for scoring and analysis are available from the senior author.)

*Disruptive child behavior. Non-Compliance* (refusal to initiate compliance with specific instructions within five seconds); *Complaints* (verbal complaints involving whining, screaming, vocal protests, or temper outbursts); *Aversive Mand*s (instructions directed to another person by the child scored as aversive or unpleasant, e.g., "Fix my lunch now!"); *Aggression* (actual or threatened attacks or damage to another person or destruction of an object or materials, e.g., punching, kicking, biting); *Non-Interaction* (absence of interactions with persons or play objects, repetitive object manipulation or self-stimulation, e.g., face slapping); *Oppositional* (other inappropriate behaviors that are not included above; e.g., breaking family rules, teasing, deliberate ignoring when spoken to). Only one of the six categories was scored in any interval. If several deviant behaviors occurred the one that occurred first was recorded. However,

noncompliance was the priority code and was scored each time it occurred.

*Appropriate child behavior.* Acceptable verbal or nonverbal behavior or activity lasting a full 25 sec (e.g., fantasy play, asking questions, singing, drawing pictures).

*Parent behavior: Accuracy of program implementation.* A procedure similar to that described by Koegel et al. (1978) was used to score accuracy of implementation. Each of the parent implementation categories was scored as either correct, incorrect, or not applicable in each interval parents interacted with children.

1. *Social attention.* Verbalizations, physical contact, or gestures directed toward the child were scored as correct providing the attention was nonaversive. Training instructions required parents to remain calm while correcting the child, to speak matter-of-factly without screaming or shouting, to avoid a high-pitched shrill tone of voice, and to avoid aggressive behavior implying disapproval (e.g., grabbing, pushing, or hitting the child).

2. *Prompt.* Prompts were defined as verbal or motor cues used by parents to teach or promote a new skill. These included verbal prompts (e.g., "and where does this one go?") and manual prompts (e.g., taking the child's hand and leading him to the bathroom for timeout). When prompts were used they had to precede and initiate the child's response (i.e., they had to be effective). Verbal prompts had to be discriminable (clear and specific) and given only when the child was attending to the parent or when that attention was to be initiated.

3. *Instruction.* Direct verbal commands had to be clear, brief, and specific, to contain a clear referent, to be consistent with previous instructions, and to be appropriate to the situation at hand (i.e., consistent with treatment procedures specified during training phases). Some verbal prompts were also scored as instructions (e.g., "Ask nicely if you want something"); however, not all instructions were scored as prompts. Some were not effective (e.g., the child disobeyed the request to ask nicely).

4. *Ignore.* Parents were scored as correctly using planned ignoring only if they removed all attention from the child when the targeted undesired behavior occurred (e.g., turned away and, if necessary, walked away), and continued ignoring the behavior until it had ceased for 5 sec.

5. *Consequences.* Parents were scored as correctly using consequences only if they were contingent (i.e., followed the occurrence of specific appropriate or disruptive behaviors), immediate (no later than 3 sec following the behavior) and were unambiguous (were clear to the observers).

Eight 2-h training sessions were held for the six observers prior to formal baseline data collection. Sessions involved the use of videotapes and written scenarios for practice recording, discussion of scoring procedures, instruction in their role as observers, and differential feedback on performance on training tasks. Each observer passed a mastery test on behavioral definitions and reached a criterion level agreement of 95% on each of the category codes on an unfamiliar videotape prior to field observation.

A modified version of the Family Observation Schedule, F.O.S. (II) was used to score family interactions at breakfast. A portable recorder was activated automatically and silently at a preset time appropriate to each family's morning schedule by an electrical timer, and it recorded continuously for 25 min. Each family was informed the tape would record on a particular morning but not of the exact time. The same general categories were recorded but were adapted to be suitable for scoring audiotaped data. Scoring of accuracy of implementation was simplified so that observers recorded the interaction as either correct, not applicable, or incorrect, but did not score subcategories separately. Tapes were analyzed by three trained observers who had served as primary observers and were, therefore, familiar with the voices of family members. Reliability data were gathered from an analysis of every third observation tape by a second observer.

### Measures

The following measures of the effects of training were used.

*Percentage of intervals of disruptive child behavior.* This was calculated by totaling each interval containing a disruptive behavior category, dividing by the total number of intervals, and multiplying by 100.

*Percent accuracy of implementation.* Those intervals in which management categories were scored as completely correct were summed, divided by the number of intervals containing parent management categories, and multiplied by 100.

*Measures of the frequency of problem settings.* Parent records of the number of different home and community settings in which problem behavior was reported provided an estimate child behavior change at times and locations not sampled by direct observation.

### Calculation of Interobserver Agreement

Interobserver agreement reliabilities were calculated separately on observational data in the training and community generalization settings and also for the breakfast setting. Interobserver agreement was sampled on 49 out of 131 observation days (37.4%) in the training setting, 56 out of 137 days (40.8%) in community generalization settings, and 22 out of 50 days (44%) in breakfast generalization settings. Reliability checks were conducted in each experimental phase for all families.

Percentages of interobserver agreement were calculated separately for disruptive child behavior and parent accuracy in program implementation, on an interval-by-interval basis. For both F.O.S. (I) and F.O.S. (II) data, occurrence reliabilities were calculated by the formula: number of intervals of agreement on occurrence divided by number of intervals of agreement on occurrence plus disagreement, multiplied by 100. Agreements were defined as follows: disruptive behavior—any interval in which both observers recorded the occurrence of the same

category of disruptive behavior; accuracy of program implementation—any interval containing parental behavior in which observers agreed the interaction constituted correct program implementation. If neither observer recorded an error (but circled management categories as correct "c"), this was taken as an agreement on the correctness of implementation.

### Experimental Design

Three phases of parent training were introduced sequentially to each of five families, within a multiple baseline across families design. Baseline data on parent accuracy were collected in only one of the generalization settings (breakfast).

### Procedure

*Baseline (A).* Observations were conducted in the training setting and the two generalization settings (community and breakfast time) for varying numbers of observation days within the multiple baseline format to establish basal levels for each response category. Parents were asked to handle any incidents that arose in their usual manner.

*Instructions plus feedback (B).* Following baseline, an evening appointment was scheduled with each family to instruct both parents in techniques of behavior modification. The senior author served as therapist for all families. During this 2-h meeting the following format was employed: First, baseline graphs of disruptive behavior and levels of parental social attention were discussed. Specific problem behaviors in both generalization and training settings were pinpointed and parents were asked if the levels of problem behavior matched their perception of the child's behavior during the observations. Next, an explanation of problem behaviors was provided in terms of the kinds of consequences parents had provided following different problem and appropriate behaviors. Examples from baseline sessions were discussed to illustrate current ineffective practices. Then the treatment program was explained. The therapist gave par-

ents examples of how to use descriptive praise and other contingent consequences (e.g., questions) to increase appropriate behavior. Five different management procedures for use with five disruptive behaviors in all settings (demanding, being aggressive, having tantrums, interrupting when parents were necessarily busy, and minor grizzling) were then explained and rehearsed.

A behavior correction procedure was used in the following manner. Parents were instructed to (a) gain the child's attention, (b) describe calmly what the child has done wrong, (c) describe and prompt the correct behavior, (d) give a further prompt if required, (e) speak up and praise the correct behavior if it occurs, (f) if the problem continues or worsens, deliver a firm verbal reprimand describing the incorrect behavior and back this reprimand up with a natural consequence (e.g., remove troublesome toy and give a brief explanation). If noncompliance with the reprimand occurs put the child in time-out (e.g., in the bathroom) for a 3-min period. In community settings, time-out (placing a child in a chair) may be used when practicable (e.g., friend's home) or delayed until returning home. This procedure was applied only to instances of demanding, having tantrums, being aggressive, and arguing and interrupting parents in an aversive manner. Minor grizzling was handled through an extinction procedure. Printed cards detailing specific instructions for each of the steps were given to the parents to read before the next scheduled observation. Parents were instructed to apply procedures in any setting where problems arose, i.e., both at home and in the generalization settings.

Twice weekly 10-min feedback sessions were begun in which the therapist visited during afternoon home observations and gave mothers feedback from observers' data about their performance of various management skills in that setting. Observers were not present. Feedback sessions followed immediately after the observation session. Parents were given written feedback about the percentage of appropriate child behavior observed, number of praise comments

recorded, and percent accuracy of implementation of procedures. Three samples of interaction involving the child and siblings were selected and discussed, illustrating correct use of procedures and three examples of incorrect usage were also discussed. Then, specific suggestions for the next observation were outlined. The senior author gave additional feedback on question asking, types of instructions given, and the availability of appropriate play activities to increase the probability that parents would be able to locate and reinforce play behaviors. No feedback on parent behavior in generalization settings was provided.

*Self-management training (C).* Parents were instructed to continue to apply procedures introduced in the previous phase and home feedback sessions continued as previously. In addition, a further evening visit for each family was scheduled to introduce parents to self-management skills. A rationale for self-management training was presented. An analogy was drawn between how children's behavior was influenced by the home (e.g., parents' reactions) and how parents' own behavior (ability to follow a program consistently) is also influenced by the environment. This phase trained parents to monitor and regulate their own behavior in those parenting situations (e.g., visiting) where difficulties in implementing treatment procedures were experienced. Self-management training consisted of teaching parents goal selection, self-monitoring, and planning or arranging their own stimulus environment, and specifically focused on the parents' behavior.

Self-management skills were taught sequentially in two phases, by first introducing goal selection, program design, self-monitoring, and planning skills (with prompts); second, by introducing goal selection, program design, self-monitoring, and planning skills (without prompts).

During Phase One parents were introduced first to goal setting and self-monitoring. Two initial goals were set. The first required parents to record on a self-change card whether or not

they had implemented the home treatment procedures that day by recording "Yes," "No," or "N.A." (not applicable), and second, to monitor whether or not they had followed management procedures in the generalization setting selected (e.g., handling disruptions at tennis). The therapist illustrated a problem solving method for one generalization setting. This setting was jointly selected by parent and therapist if the parent still considered the child a problem in the situation, and if it was a difficult setting in which to implement the procedures. In each case parents selected community settings. A checklist of specific management steps to be followed was devised and listed on separate self-monitoring card. Table 1 illustrates an example of the self-monitoring procedure used. Checklist steps were used to cue parents to planning the outing in advance, to prepare the child by discussing the expected behavior and consequences to be applied for both desired and

undesired behaviors, and to plan their time schedule to permit a directed (goal-oriented) discussion with their child to take place. These steps were presented as planning skills. The rest of the steps were the correction procedures used in the previous phase. Thus the contingencies applied by parents to child behavior remained the same as in the previous phase. Parents were asked to self-record whether they completed the required tasks. As soon as three completely successful implementations of the procedure had been reached, the next phase began.

Phase Two was comprised of parents selecting another community situation, devising their own management procedure, implementing the procedure, and monitoring whether they reached the goal set on three consecutive occasions without assistance. Parents then selected a third community setting and repeated the same procedure.

*Self-management maintenance training (C1).*

Table 1  
An Example of the Self-Monitoring Form used during Self-Management Training

**HANDLING DISRUPTIONS WHILE VISITING**

*Instructions:* Each time you take your child visiting, mark Date and Time, Yes, No or N.A. (not applicable) for each of the steps below.

Steps to be followed:					
1. Prepare the child for the outing by describing the expected behavior. Describe where you are going and how long it will take.					
2. When you arrive involve the child in an activity and make sure the child has something to do, and you have a snack available.					
3. Speak to, ask questions and praise the child for desired behavior every so often.					
4. If a disruptive behavior occurs (e.g. grizzling, demanding, tantrums) gain the child's attention immediately.					
5. Describe the problem (i.e. the undesired behavior) and state the correct behavior (e.g. waiting).					
6. If the child obeys, speak up and praise child for doing what he/she is told.					
7. If the problem continues give a direct terminating instruction.					
8. If child does not comply immediately provide back up consequence (i.e. a logical consequence, or time out).					
Number of steps completed correctly:					

During this phase all therapist prompts and cues that had been introduced as part of training were withdrawn. The home feedback sessions ceased and parents were asked to continue applying management procedures in all settings without using the self-change cards or self-monitoring checklists. No further feedback was provided about performance of parenting skills.

*Follow-up observations.* Two, three, or four further training setting observations and two to five community setting observations were conducted with each family after a 3-mo period.

## RESULTS

The major findings of the study demonstrate the efficacy of self-management training in producing generalized behavior changes in parent and child behavior in all settings.

### *Reliability of Observations*

In the training setting, mean levels of inter-observer agreement across subjects (occurrence agreement) were 79.3 (range 62.5-90.6) for disruptive behavior and 91.1 (range 81.5-96.3) for accuracy of implementation. Occurrence reliabilities in the community setting were 89.5 (range 78.3-93.3) for disruptive behavior, and 98.9 (range 96.6-100.0) for accuracy of program implementation. The respective mean percentages of agreement using F.O.S. (II) procedures for each category were 84.8 (range 70.2-92.7) for disruptive behavior and 92.7 (range 90.0-97.5) for accuracy of program implementation.

### *Accuracy of Parents' Implementation of Program*

Figure 1 presents the percentage of intervals parents accurately implemented treatment procedures in the training and community (generalization) settings. Inspection of each mother's results in the training setting during Instruction plus feedback reveals high levels of accurate implementation (mean 86.8,  $SD = 6.3$ ). The training setting data for Parent 4 reveal that

group mean level was deflated due to the fact that initial training was ineffective in teaching targeted skills to Parent 4. A further instructions plus feedback phase was implemented with this parent in which the importance of using time-out to handle tantrums was stressed and rehearsed. This immediately resulted in a marked increase in levels of accuracy. However, initially high levels of accuracy in generalization settings for parents 1, 2, 3, and 5 were not maintained and show considerable variability during the Instructions plus Feedback phase. The group mean level was 84.2 ( $SD = 6.4$ ).

Figure 1 shows also that levels of accurate implementation in the generalization settings were increased following the introduction of each of the self-management phases. The mean percent figures for self-management training, self-management maintenance training and follow-up were 93.6 ( $SD = 3.0$ ), 98.8 ( $SD = 2.6$ ) and 99.3 ( $SD = 1.5$ ), respectively. Inspection of the data for each parent under self-management maintenance and at follow-up reveals consistently high levels of accurate implementation with a stable trend and low variability, indicating the durability of treatment effects.

Table 2(a) shows the mean percent accuracy of program implementation for each parent in all settings. This table also presents data on the level of skills prior to intervention in the breakfast setting. During baseline all parents engaged in consistently lower levels of correct use of contingency management (mean = 81.7,  $SD = 7.8$ ). Parents' baseline strategies were clearly ineffective in altering disruptive behavior, given the levels of problem behavior observed (see Figure 2). Commonly observed tactics included the use of aversive instructions that were often nonspecific, aversive social attention, and a notable absence of praise and questioning. Slightly higher levels of accuracy were obtained in breakfast generalization settings under self-management training (mean = 98.2,  $SD = 3.9$ ), self-management maintenance (mean = 98.7,  $SD = 2.2$ ) and follow-up (mean = 96.0,  $SD = 2.8$ )



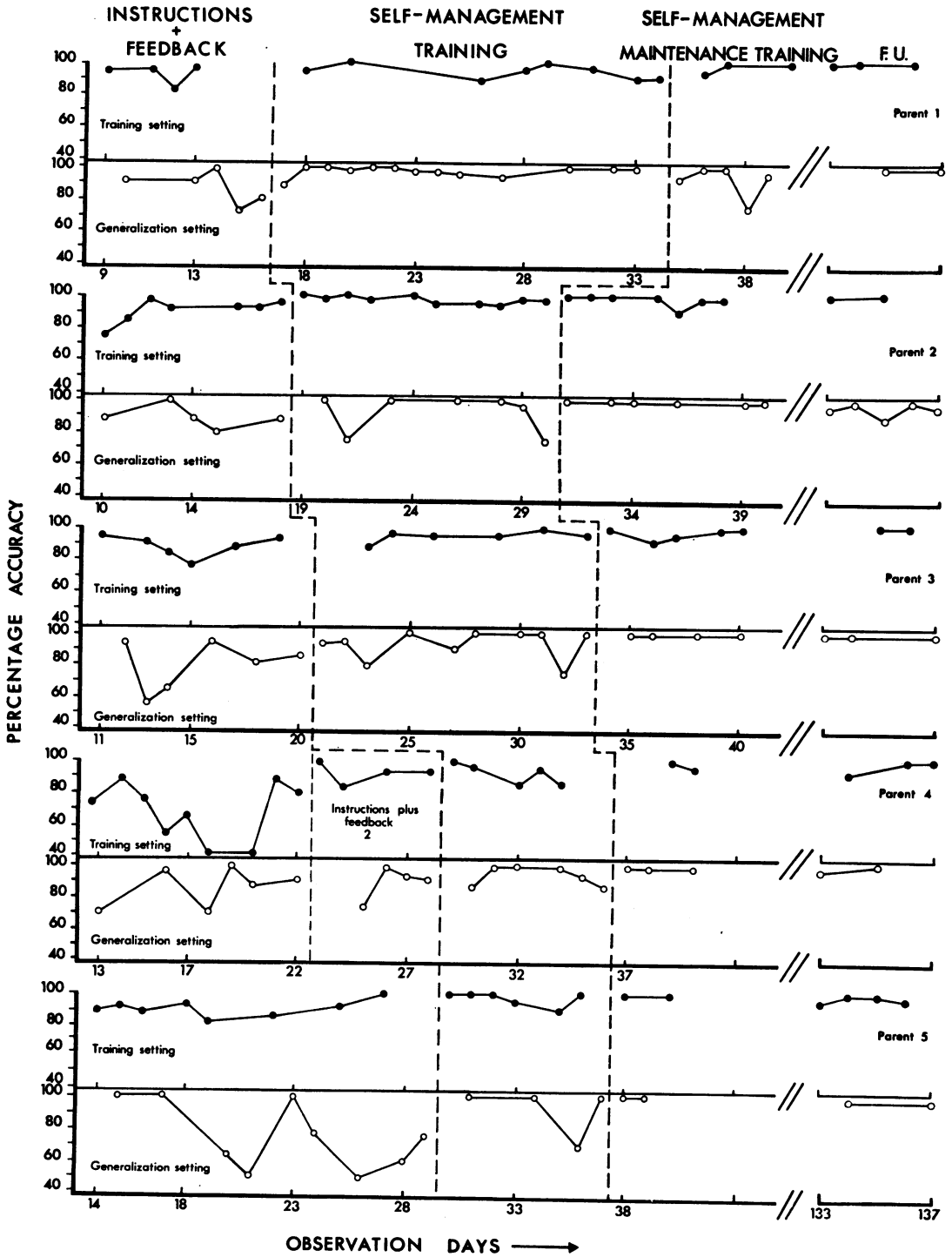


Fig. 1. Daily percentage of intervals treatment program accurately implemented in the training (home) and generalization (community) settings.

Table 2

A. Mean percent accurate implementation and disruptive child behavior across experimental phase.

Settings	PARENT ACCURACY						DISRUPTIVE BEHAVIOR				
	Children	B.L.	I + F	S.M.T.	S.M. M.T.	F.U.	B.L.	I + F	S.M.T.	S.M. M.T.	F.U.
Training	1.	—	91.4	95.2	98.1	100.0	44.1	8.5	10.6	5.4	8.3
	2.	—	89.5	97.3	97.9	100.0	30.0	11.0	8.3	7.3	5.0
	3.	—	87.4	94.9	97.9	100.0	29.6	10.4	3.3	3.0	3.7
	4.	—	75.7	90.7	97.5	97.2	32.2	33.9	14.5	3.8	3.3
	5.	—	89.9	97.9	100.0	98.6	23.6	11.27	3.1	0.0	1.8
	Mean	—	86.8	95.2	98.3	99.2	31.9	15.0	7.9	3.9	4.4
S.D.	—	6.3	2.8	0.9	1.2	7.5	10.6	4.9	2.7	2.4	
Community	1.	—	86.7	97.6	94.1	100.0	21.3	30.5	14.5	13.0	6.2
	2.	—	88.7	92.3	100.0	96.6	24.1	13.5	7.9	3.3	8.0
	3.	—	80.0	92.7	100.0	100.0	25.8	21.6	4.8	0.0	5.8
	4.	—	90.3	95.6	100.0	100.0	35.0	27.5	13.9	4.2	5.0
	5.	—	75.2	90.0	100.0	100.0	27.9	15.8	4.4	5.0	3.7
	Mean	—	84.2	93.6	98.8	99.3	26.8	21.8	9.1	5.1	5.8
S.D.	—	6.4	3.0	2.6	1.5	5.2	7.3	4.8	4.8	1.6	
Breakfast	1.	80.0	85.0	91.2	95.0	95.0	30.0	32.5	13.00	12.5	10.2
	2.	85.5	98.5	100.0	98.7	92.5	18.7	7.5	2.0	1.2	1.0
	3.	82.0	96.0	100.0	100.0	97.5	15.0	6.0	0.0	0.0	0.0
	4.	91.2	100.0	100.0	100.0	95.0	24.7	0.0	2.5	0.0	0.0
	5.	70.0	85.0	100.0	100.0	100.0	23.7	7.5	0.0	0.0	0.0
	Mean	81.7	92.9	98.2	98.7	96.0	22.4	10.7	3.5	2.7	2.2
S.D.	7.8	7.35	3.9	2.2	2.8	5.8	12.6	5.4	5.5	4.5	

B. Mean Number of Problem Settings Reported Per Phase

Settings	HOME						COMMUNITY				
	Children	B.L.	I + F	S.M.T.	S.M. M.T.	F.U.	B.L.	I + F	S.M.T.	M.T.	F.U.
1.	8.33	3.0	1.0	0.0	0.0	1.0	2.0	0.5	0.33	0.0	1.5
2.	4.5	1.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0	1.0
3.	4.0	1.5	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
4.	7.5	6.0	0.5	0.0	0.0	0.0	1.0	0.67	0.5	0.0	0.0
5.	2.33	0.33	0.0	0.0	0.0	0.0	1.0	0.25	0.0	0.0	0.0
Mean	5.33	2.36	0.5	0.0	0.4	0.4	1.6	0.28	0.17	0.0	0.5
S.D.	2.5	2.25	0.5	0.0	0.54	0.54	0.89	0.29	0.24	0.0	1.3

B.L. = Baseline. I + F = Instructions plus Feedback. S.M.T. = Self-management Training. S.M.M.T. = Self-management Maintenance. F.U. = Follow-up.

than under instructions plus feedback (mean = 92.9,  $SD = 7.3$ ).

These findings imply that although instructions plus feedback produced accurate implementation at home, self-management training further increased accuracy of implementation in out-of-home settings, and maintained these levels in both the home setting and community setting.

*Changes in Disruptive Child Behavior*

Figure 2 shows the effects of the parent training program on the disruptive behavior of each child in the training setting. The instructions plus feedback condition effectively decreased levels of disruptive behavior for each child in the training setting compared with baseline levels. The means for percent disruptive be-

havior for all children during baseline and instructions plus feedback were 31.9 ( $SD = 7.5$ ) and 15.0 ( $SD = 10.6$ ), respectively. Further reductions occurred during self-management training (mean = 7.9,  $SD = 4.9$ ) and self-management maintenance training (mean = 3.9,  $SD = 2.7$ ). Follow-up observations revealed levels of disruptive behavior remained at a low level for all children (mean = 4.4,  $SD = 2.4$ ).

However, the effects of instructions plus feedback on child behavior in community generalization settings were equivocal. Evidence for generalization from home to community was not convincing. Although there was a reduction in mean levels of disruptive behavior for four of five children (Children 2, 3, 4, and 5) inspection of the individual data for Children 1, 2, and 5 reveals an ascending trend towards the end of the instruction plus feedback phase. Disruptive behavior in the generalization setting for Child 3 remained at baseline level. Child 4 was the only child whose generalization level of disruptive behavior was clearly reduced during the instructions plus feedback phase. The mean percent disruptive behavior in the community setting for baseline and instruction plus feedback were 26.8 ( $SD = 5.2$ ) and 21.8 ( $SD = 7.3$ ), respectively.

The introduction of self-management training resulted in generalization effects and further reduced disruptive behavior in community settings when compared with both baseline and instructions plus feedback phases. The mean percent disruptive behavior during self-management training decreased to 9.1 ( $SD = 4.8$ ) and a stabilized trend occurred for each subject. Reduced levels of disruptive behavior were maintained in generalization settings with the introduction of self-management maintenance training (mean = 5.1,  $SD = 4.8$ ). These low levels continued during follow-up maintenance probes after a 3-mo period had elapsed (mean = 5.8,  $SD = 1.6$ ).

Inspection of data for Child 4 reveals that the further instruction plus feedback phase imple-

mented with the parents of this child immediately resulted in a marked decrease in levels of disruptive behavior.

Table 2(a) also summarizes the mean percentage of disruptive behavior for each child in each phase in all settings. The breakfast data in Table 2 indicate that instructions plus feedback was sufficient to produce generalization effects to this additional home setting in four families. The respective mean levels of disruptive behavior during breakfast for baseline and instructions plus feedback were 22.4 ( $SD = 5.8$ ) and 10.7 ( $SD = 12.6$ ). However, further reductions in levels of disruptive behavior were noted during the self-management training phase (mean = 2.7,  $SD = 5.5$ ) and at follow-up (mean = 2.2,  $SD = 4.5$ ). Group trends were paralleled in individual results, with the exception of Child 4, whose disruptive behavior reached a low level during the instructions plus feedback phase and was maintained at that level during subsequent self-management phases.

#### *Changes in Settings for Disruptive Behavior*

Table 2(b) summarizes data on the mean number of problem settings involving disruptive behavior recorded by parents. Because parent event records were conducted only on days other than when time-sampled observations had been scheduled, these data provide an independent check on the validity of results obtained through time-sampling procedures.

For all participants, training reduced the number of different community and home settings in which problems occurred. In each case the instructions plus feedback condition reduced the number of settings reported as involving problem behavior both in the home and in the community. The respective mean levels during baseline and instruction plus feedback in the home setting were 5.3 ( $SD = 2.5$ ) and 2.4 ( $SD = 2.2$ ) and in community settings 1.6 ( $SD = .8$ ) and .28 ( $SD = .29$ ). Self-management training resulted in a further decrease in problem settings in the home for all participants (mean = .5,  $SD = .5$ ) and an additional slight reduction

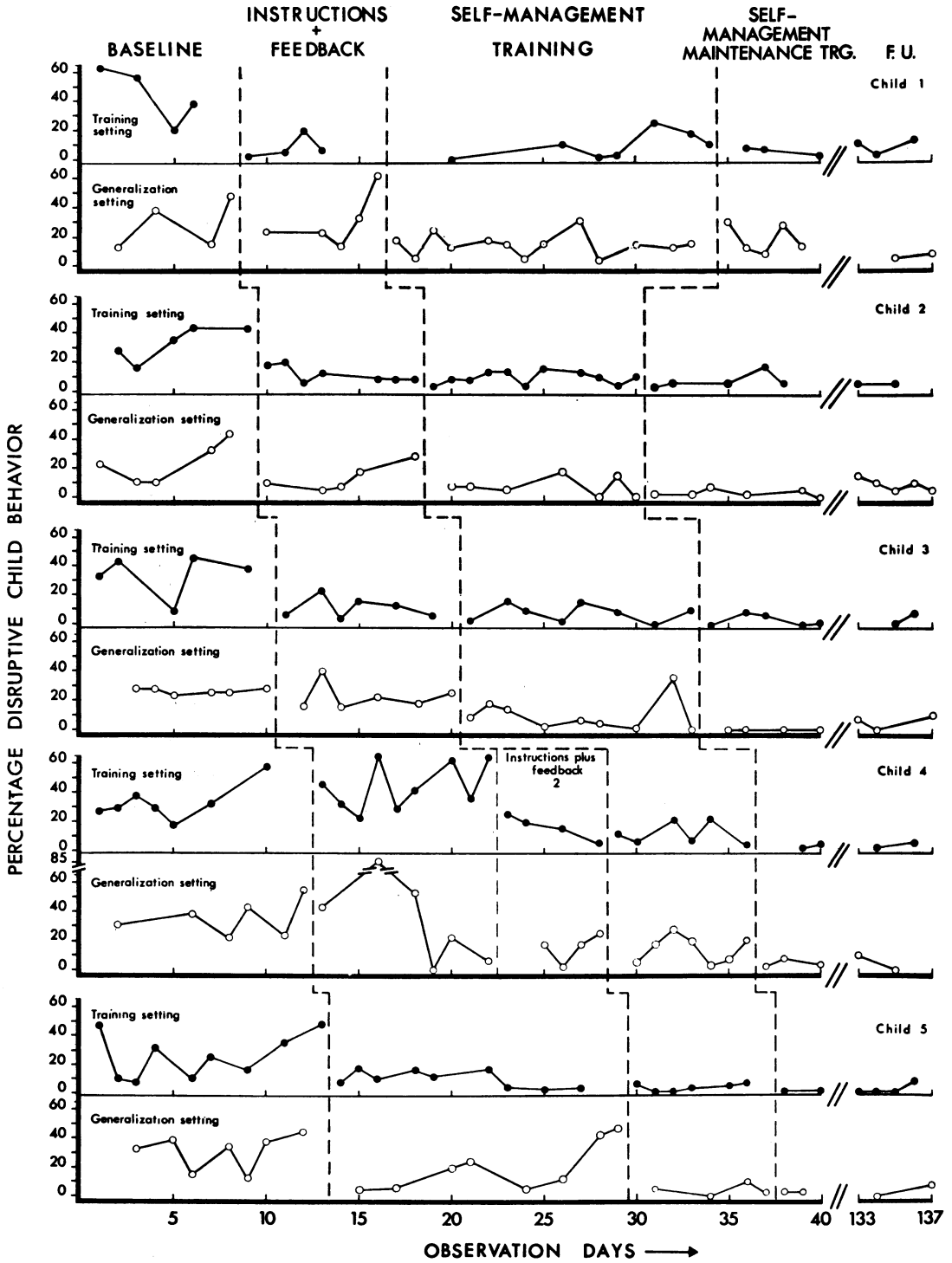


Fig. 2. Daily percentage of disruptive child behavior in the training (home) and generalization (community) settings.

in the mean number in community settings (mean = .17, *SD* = .24). These data indicate that generalization effects were not confined to the stimulus settings sampled by either the time-sampling procedures in which observers were present (training setting) or the audiotape procedure where observers were absent (breakfast). Training phases resulted in a progressive narrowing of the social and family contexts within which problems were reported.

## DISCUSSION

This study demonstrated that teaching parents self-management skills following initial training in behavior modification skills facilitated the generalization of program implementation to a range of social settings and that those generalization effects were maintained over time.

Methodologically, to demonstrate setting generalization, the training and generalization settings must differ in the availability of salient discriminative stimuli present in the training setting (Drabman, Hammer, & Rosenbaum, 1979). In this study both the breakfast and community settings involved the absence of the therapist, the presence of other adults (e.g., fathers, other parents, other children) and a different physical environment (e.g., community vs. home) and thus constitute a fairly stringent test of setting generality. The durability of across settings effects during self-management maintenance and follow-up suggests the utility of combining instructions plus feedback and self-management procedures in programming for maintenance of parental behavior.

During the instructions plus feedback phase while parents accurately implemented procedures at home, they had difficulty consistently applying procedures in community settings. Home feedback sessions involved the use of data from examples of interaction involving not only the target child but also siblings so that parents could receive feedback on their use of skills with a variety of behaviors and a range of children. Nevertheless, this was insufficient to

maintain initial changes in target child or parent behavior in community settings. This finding points to the potential utility of identifying settings in which program implementation is inconsistent and teaching parents specific skills to manage their own behavior in those settings. Children may well discriminate the situations in which parents provide inconsistent consequences and, as a result, child behavior change may not generalize.

However, it is unclear which were the critical components of the self-management package in producing additional generalization to the community. Because self-management training was an adjunctive procedure, which was combined with home-based feedback, generalization may have resulted from the interaction of the instructions and feedback procedure and self-management skills, rather than self-management alone. Clearly, further research is required to identify the individual contribution of both components. Nevertheless, the combination package of instructions, feedback, and self-management skills appeared to produce stronger generalization effects for both parent and child behavior than instructions plus feedback alone.

Several factors may account for the changes in parent behavior in the various generalization settings during self-management training: (a) Parents were prompted initially by the therapist, then by the self-monitoring cards to perform behaviors such as planning ahead, discussing rules, question asking, self-recording, and involvement of the children in activities; (b) Parents were alerted to the importance of applying skills in all settings in which they interact with children; and (c) Parents received differential feedback through self-monitoring.

Where the response cost for program following is greater than the response cost for using previously reinforced aversive techniques, parents may revert to the tactics they have previously used. Therefore, the self-management maintenance phase aimed explicitly to fade out all artificial prompts and discriminative stimuli so that parent implementation would be under

less direct stimulus control by the therapist. Planning skills, question asking, prompting, and administering consequences would then be cued by the social setting itself, and by the child's behavior. Any time-consuming recording procedures used to teach self-management skills may require explicit fading so that the end point in treatment approximates as closely as possible the stimulus conditions occurring that parents are expected to meet once therapist contact ends.

The multicomponent multiple baseline design used cannot rule out the possibility of treatment order effects. However, the alternative procedure of counterbalancing order of treatments across families was impractical in the present study because pilot work revealed that self-management training conditions were difficult to implement without some prior exposure to the basic behavioral procedures introduced during the instructions plus feedback phase. This finding suggests that the use of self-management skills to program for generalization may require an initial period of training in basic behavioral skills of prompting, instruction giving, and use of contingent consequences.

This study confirms earlier findings that generalization across settings and over time requires systematic programming (e.g., Miller & Sloane, 1977; Patterson, Cobb, & Ray, 1973; Wahler, 1975). It extends previous research by demonstrating that parents do not uniformly apply treatment contingencies regardless of social context. The specific naturally occurring contingencies in family and community settings that can support or conflict with continued application of behavioral skills may need to be explicitly identified and targeted for intervention to produce parental behavior change in multiple settings.

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