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PROCEDURES FOR THE
MAINTENANCE AND GENERALIZATION
OF ACHIEVED BEHAVIORAL CHANGE¹

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ABSTRACT

Procedures for the maintenance and generalization of achieved behavioral change in anti-social adolescents are reviewed. A review of follow-up studies which provides the rationale for the incorporation of such procedures in practice is initially elaborated. Specific items discussed are possible avenues to the maintenance and generalization of behavior: social networks, peers, and parents; training socially relevant behaviors; changing the conditions of training; gradually removing or fading the contingencies; delayed reinforcement; and self control procedures. Throughout the manuscript relevant case illustrations are reviewed.

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Introduction

The incidence of juvenile delinquency continues to occupy the attention of a number of social workers. Treatment evaluations of therapeutic practices based on traditional techniques are not encouraging. With the exception of programs based on the behavioral approach, little data exist to support practice efforts with delinquents (Braukmann and Fixsen, 1975; Burchard and Harig, 1976; Davidson and Seidman, 1974; Lundman, McFarlane, and Scarpitti, 1976; O'Leary and Wilson, 1975; Sarri and Selo, 1974; Shiremann, Mann, Larsen, and Young, 1972; Stumphauzer, 1973). Even with the various behavioral programs, however, there remains yet the unresolved problem of the maintenance and generalization of behavioral change once achieved.

Maintenance can be viewed as the length of time elapsed between the termination of therapy and the continuance of the behavior. Generalization refers to the extent the behaviors learned in the clinical context occur at appropriate times, and to socially relevant persons in the socially relevant settings. Thus, if the goal of a treatment program is for a child to develop adequate social and academic behaviors, then once these behaviors are acquired the crucial subsequent issues of maintenance and generalization must be addressed. The literature on maintenance and generalization indicates the processes will not occur by chance, and therefore any sophisticated treatment program must directly address them (Kazdin, 1975 and 1977; Koegel and Rincover, 1977; Stokes and Baer, 1977).

This manuscript elucidates the role of the social worker in the maintenance and generalization of behavioral change. Specific items discussed include training relatives or significant others in the client's environment; training behaviors that have a high probability of being reinforced in natural environments; varying the conditions of training; gradually removing or fading the contingencies; using different schedules of reinforcement; using delayed reinforcement and self control procedures, and so forth where relevant case examples are used to illustrate the procedures. Prior to discussion of these items, the literature on follow-up endeavors of three comprehensively based behaviorally focused treatment programs for delinquents is briefly reviewed. This review provides the rationale for the inclusion of the treatment components to ensure the maintenance and generalization of behavior in any treatment program.

Review of Follow-Up Findings

Programming Interpersonal Curricula for Adolescents (PICA) was the federally-funded and community-based applied research program conducted in a laboratory school. Procedures based on social learning theory were employed to improve basic reading, arithmetic, and interpersonal skills of selected students. These adolescents were designated by their teachers as having major academic and behavior problems in their original schools (Cohen, Filipczak, Slavin, and Boren, 1971).

Although no control group was used in the pilot laboratory study, the students did make large scale and important progress in attendance, reading, and arithmetic

skills as compared to data provided by normative samples. In most instances, achievement test gains for PICA students were greater than that of the "normal" junior high students, exceeding 1.0 grade levels per school year.

Other information corroborated the progress noted by the standardized tests. For example, students from the first program year were found to improve their grades in regular school classes (social studies and sciences) by 1.3 grade levels (from "F" to "C-"). One-year follow-up of these same students indicated the number of juvenile charges placed against them decreased to 12 percent of that found in the year before enrollment (from 17 charges to 2 charges).

The second follow-up occurred approximately five years after the students' participation in the original program. The attitudes and performances of fifteen of the original twenty-four adolescents were assessed on a range of self-report measures, incorporating such variables as their employment and educational status, evaluation of program participation, involvement in leisure time and community activities, relationships with friends and family, and anticipated adverse consequences of engaging in delinquent acts. Data resulting from this follow-up study did not demonstrate the long-term merits of a behavioral program with this population (McCombs, Filipczak, Friedman, and Wodarski, 1978).

Preparation Through Responsive Educational Programs (PREP), a federally-funded and community-based applied research project similar in operation to (PICA) with the exception of its being housed in a public school, was based on social learning theory aimed at achieving a number of short-term and long-term goals with pre-delinquent children. Each goal attempted to expand the students' academic and social skills and permitted them to function more appropriately within their original academic environments. As outcome data suggest, there were significant differences between the experimental and control group scores favoring the experimental groups in academic areas such as vocabulary development, reading comprehension, language skills, arithmetic computation, mathematics application, disciplinary referrals, and class grades (Cohen and Filipczak, 1971; Filipczak, Friedman, and Reese, 1977; Filipczak and Wodarski, 1979).

Follow-up occurred approximately four years after the students participated in PREP. The behavior of forty of the originally randomly assigned sixty adolescents was assessed on variables such as their employment and educational status, evaluation of program participation, involvement in leisure time and community activities, self-esteem, aspirations and expectations, involvement in delinquent activity, relationships with family and friends, and anticipated adverse consequences of engaging in criminal acts. Twenty-one experimental participants and 19 control group participants were located. Statistical tests were performed to assess whether those experimental participants and controls who were not located for the follow-up study were significantly different from follow-up participants on 64 program evaluation variables available for the various social and academic behaviors. The analyses reveal that the children who participated in the follow-up investigation who were exposed to the experimental manipulation are representative of the entire

population of anti-social children who participated in the community-based program. Follow-up data comparisons between experimental and control group participants indicate no long-term merits of the behavioral program with this population (Wodarski and Filipczak, 1977).

The third community-based, residential treatment program (CRISIS) involved fifty-three pre-delinquent children with follow-up data. The immediate efficacy of the behavioral modification techniques was verified in terms of academic and social skills such as room cleaning, attending school, getting to bed on time, increasing problem solving and decision making skills, leading group discussion sessions, participating in staff meetings, preparation of discharge plans, practicing performances likely to be important in natural settings such as social and self-control skills, and so forth. However, follow-up results, including comparisons with a matched control group at three-month and nine-month intervals, indicate failure of the program to maintain desirable social outcomes for discharges. A number of variables were compared at follow-up: grades, attendance at school, juvenile court contacts for running away, truancy, incorrigibility, criminal acts, placement changes by juvenile courts and children and family service agencies, institutional placements, family placements, and changes in foster care placements (Davidson and Wolfred, 1977).

Thus data from all three follow-up investigations indicate that behavior modification programs can achieve significant behavioral changes in pre-delinquent and delinquent children. However, the maintenance and generalization of appropriate behaviors does not readily occur. The generalization question can be thought of in terms of do behaviors occur in different relevant social environments, in the presence of significant others and at appropriate times. For example, a program that teaches conversational skills such as association and clustering of words, duration of utterances, reducing the number of interruptions, asking clear questions, the ability to make interpretive, reflective and summary statements, and certain voice qualities such as appropriate tone, and non-verbal behavior such as posture, body motion, eye contact, touching, and so forth, would have a true test of generalization when a previously labeled "delinquent" approaches a possible employment interview, a teacher, or law enforcement officer and exhibits the appropriate conversational behaviors.

Possible Avenues to the Maintenance and Generalization of Behavior

Social Networks

Peers. Significant influencing agents in providing reinforcement for deviant or pro-social behavior are peers (Feldman and Wodarski, 1975; Rose, 1972 and 1977; Whaler, 1969; Wodarski, Feldman, and Flax, 1973). Even though this idea is well established, it is very difficult to develop procedures to modify the normative reinforcement structure under which peers operate. It appears, however, that group contingencies may be the most appropriate procedures for modifying the manner in which peers dispense reinforcers to each other.

Group contingencies refer to reinforcements that are presented to all or most group members following the display of certain behaviors by the group or selected members. Such behaviors may be denoted by the group's accomplishment of certain tasks, such as planning job interviews or successfully resolving a problem, or by the accomplishments of specific members, such as more frequent pro-social behavior by one or two selected members. In either case a significant portion of the group's membership receives reinforcement following manifestation of the desired behavior by the entire group or by certain of its members.

Group contingencies modify behaviors most readily by producing the greatest group pressure (1) when all group members have to exhibit a given behavior at a certain criterion rate or (2) when one or two group members are required to exhibit a certain rate of pro-social behavior in order for each group member to receive reinforcement. The situation and the behaviors to be modified determine which of these contingencies the worker should structure. The effectiveness with which group contingencies modify behaviors decreases as the proportion of group members who receive reinforcement decreases.

If children have been through a treatment program and have acquired necessary academic and social skills, workers could structure group contingencies that would support such behaviors through peer reinforcement. For example, John is 14 years old and three years behind in math and he exhibits various destructive behaviors such as hitting others, damaging physical property, and making loud noises in class. He goes to a behavioral program such as PREP to increase his mathematic and social skills. After he achieves the desired levels of these behaviors his peers are informed that if he continues to maintain the behaviors at acceptable rates they will periodically gain desired reinforcers. Employment of group contingencies depends on the peers cooperating and the worker offering desirable enough rewards. Reinforcers that could be utilized might include trips, food, a party, utilization of desirable facilities in the community, tickets for special events such as rock concerts and sporting events, social praise, and so forth.

Another example of how peer reinforcement influences behavior is seen in the "buddy system." Here adolescents and a social group worker determine that the group should continue intact and serve as a support system for the members once formal treatment is completed. They therefore build a buddy system into the formal structure of group operations. Under such an arrangement, group members are taught to work in subgroups of two or three as part of the group process and as part of their homework assignments. Buddies may serve as monitors who track each other's social and academic behavior, as models for effective performance and as companions who provide important feedback and reinforcement in the absence of a professional therapist. Such procedures increase the probability that the relevant behaviors will be maintained and generalized to appropriate contexts.

It is important to emphasize that the use of the social network of peers in group treatment assumes the possibility for certain members to obtain reinforcement when members other than themselves are the enactors within the group. Thus, for

example, it is possible to structure a group contingency wherein all members will receive reinforcement, such as the opportunity to attend a professional sports event, if just one group member substantially improves his anti-social behavior during a given time period. Such a contingency is extremely potent for the lone enactor since all the group members will direct strong conformity pressures toward him in order to assure their own reinforcements. In contrast, if fewer members are promised reinforcements for progress made by a single member, the corresponding conformity pressures are likely to be much weaker.

For example, let us assume that a social worker has managed to make contact and develop a working relationship with a group of anti-social inner city adolescents who have been causing disturbances within the neighborhood. His goal in working with these youngsters may be to help them reduce their aggressive behaviors and to teach them more socially acceptable ways of problem solving and conflict management. In order to accomplish this, the social worker will have to possess valued resources which the group members desire but are unable to obtain without his assistance. These reinforcements may be, for example, the social worker's ability to have the group members gain access to a neighborhood swimming pool from which the youngsters previously have been barred because of their behavior, or the social worker's ability to secure a club room in the local community center for the group to use for meetings. In either case, the continued use of these facilities by all group members may be made contingent upon the enactment of specified pro-social behaviors by one or two of the group members or all group members. The use of group contingencies in such a manner definitely alters the reinforcing patterns exhibited by peers toward each other (Feldman and Wodarski, 1975; Wodarski and Bagarozzi, 1979).

Implementation of group contingencies is easier in institutional settings where the worker can exercise greater control over the reinforcers available to the group, can observe the reinforcing patterns of peers and thus plan corresponding interventions. However, effective use in open settings can occur if powerful enough reinforcers are isolated and used (Wodarski and Bagarozzi, 1979).

Parents. The parents' role in influencing a child may not be negated. Extensive data exist to support the training of parents as significant reinforcement agents in the maintenance process. One simple rationale for training parents in behavioral procedures is the amount of time they spend with their children (Berko-witz and Graziano, 1972; Graziano, 1977; O'Dell, 1974). Moreover, parents can be trained easily to use stimulus control techniques to influence rates of behavior and to provide appropriate consequences for desired behavior. With minimal effort parents can be taught to identify motivators to facilitate the acquisition and maintenance of appropriate behaviors, how to use contingency contracting, how to change their own behavior, and so forth. In all of these instances where the training of parents or significant others is involved, once the behavioral procedures are mastered it is essential that significant others apply them consistently (Wodarski, 1976). Use of parents in maintenance of behavior is illustrated as follows.

Fifteen-year-old Stanley had difficulties completing his home work at night. His studying difficulties were affecting his academic performances at school and as these performances deteriorated his rates of anti-social behavior increased. Stanley's parents facilitated the study process by providing a context for studying, i.e., a physical situation that had a minimal number of stimuli to disrupt the studying process, and provided appropriate reinforcement for adequate durations of studying behaviors. Moreover, his parents also played a significant role in implementing various reinforcement systems developed with school social workers, such as vouchers indicating Stanley's daily and weekly academic and social performances. This facilitated the occurrence of appropriate behaviors at school with parents providing the reinforcement. Ongoing research tends to demonstrate that parents can play a significant role in modifying the following behaviors exhibited by their children: aggressive, delinquent, non-compliant, social, leadership, independence, and so forth (Rimm and Markel, 1977).

Possible difficulties in the use of parents in behavioral programs center around their frequent inability to refrain from attempting to modify their children's behavior while observing them during the baseline period. In such instances, the social worker may arrange to make home visits during which he can model the self-control behaviors for the clients, offer constructive feedback, coach them in the use of specific techniques and supervise their performances through providing guided practice instructions so that they can develop the skills necessary for making accurate behavioral assessments.

If parents find it difficult to locate sources of reinforcement which can later be used to reward their children, the social worker may have to make another series of home visits to help them overcome this difficulty. If another group member is skilled in behavioral observation and assessment, however, he may serve as a buddy who can help other group members identify those satisfying behaviors which frequently are engaged in by their children, such as watching particular television programs, eating certain types of foods and treats and playing certain games. Once these reinforcing behaviors have been identified, their use as incentives can be discussed and evaluated with the other group members at the next session.

Parents' involvement in such a manner facilitates the alteration of behavior. However, the worker must gauge the parents' motivation to implement the procedures consistently. Additionally, problems may be avoided if the peer reinforcement patterns correspond to the parents'.

Training Socially Relevant Behaviors

The choice of behaviors that have a probability of being reinforced is essential. Nothing beats acquiring skills such as vocational, academic and social that can help an individual gain reinforcement in the real world (Kazdin, 1977; Stokes and Baer, 1977). Treatment approaches based on developing understanding, insight, and so forth, may produce negative results because they do not teach the delinquent skills that secure reinforcement for them and thus are not maintained by the

natural reinforcement system in which the child operates once he leaves the therapeutic situation.

For example, Jane is sixteen years old and has difficulties in meeting and conversing with friends. This has contributed significantly to her development of a negative self-image. Moreover, the lack of attention from appropriate significant others played a significant role in her engaging in delinquent activities of truancy and thefts of students' and adults' possessions. Through the process of assertive training she is taught how to initiate and maintain conversations in terms of giving and receiving compliments and asking questions that elicit future interactions. Such behaviors bring her new rewarding experiences such as making new friends and gaining popularity. These experiences decrease her negative self-image and bring her the attention she desires.

Thus, increasing academic, vocational, and social behaviors that will help the individual secure reinforcers in the future increase the probability of maintenance and generalization of behavior.

However, a crucial question to be asked is what ethical obligations does the worker have if such behaviors are acquired and the client's environment does not provide sufficient reinforcement.

Changing the Conditions of Training

When therapeutic services are provided in only one context, generally the therapist's office, and by only one worker, generalization of behavior is impeded. According to social behavioral theory, various stimuli of the therapeutic context become discriminative stimuli for the behavior. These discriminative stimuli then control the amount of generalization that can take place in the behavior. Thus, therapy provided by only one worker and in only one context substantially narrows the number of discriminative stimuli that control the behavior and thus reduces the maintenance and generalization of achieved desirable behavioral changes (Holmes, 1971; Kazdin, 1977; Waters and McCallum, 1973).

To facilitate the generalization and maintenance of behavior we should utilize multiple workers and/or varied training situations. For example, Jack, age sixteen, is seen by two different workers, one a male and the other a female. One of his difficulties related to his talking back to his parents, i.e., when they refused his requests, he raised his voice, muttered unintelligible statements, was unable to state problems in an inoffensive manner, and he could not state options and negotiate them in a reciprocal way so that reinforcers for both parties were exchanged. In addition to varying the therapist, therapy sessions were held in some instances at either worker's home. These two processes facilitated the maintenance and generalization of behavior and helped ensure that behaviors acquired were not limited only to a narrow range of discriminative stimuli.

The social worker's role at the close of treatment is to help facilitate transfer and maintenance of relevant behavior to a variety of different stimuli. A variety of techniques can be used toward this end:

1. Repeating practice of newly acquired skills so that they are overlearned, that is, connected to a greater variety of stimuli and thus becoming more resistant to extinction.
2. Holding treatment sessions in a variety of environmental settings, finding different relevant locations where newly acquired behaviors can be practiced, and using a variety of workers to increase the number of discriminative stimuli to which the behaviors are connected.
3. Using role plays which present unpredictable, stressful and novel situations to the adolescents which they may encounter once they leave therapy.
4. Helping the adolescent join already existing community groups which will foster the maintenance of new behaviors, e.g., joining "Y" sports programs, Weight Watchers and other such natural groups which provide a social system that reinforces the behavior.
5. Using multiple models who exhibit the desired terminal behavior not only to facilitate the acquisition of the behavior but also to increase the number of discriminative stimuli which control the behavior, thus increasing the potential for the generalization of the behavior to desired contexts.

Once treatment has terminated follow-up interviews, telephone calls and mailed questionnaires should be used by the therapist in order to assess whether changes are being maintained or to determine whether new difficulties have cropped up. Follow-up procedures of this type also serve as additional supports for maintaining behavioral gains. This is especially true if follow-up meetings are held and the adolescent knows that maintenance of behavioral gains will be reinforced by other group members.

Gradually Removing or Fading the Contingencies

Variable Schedules of Reinforcement. As behaviors are being acquired workers will want to reinforce them every time they occur. Once the behaviors reach the appropriate levels we want to reduce the amount of reinforcement that we give children. Here workers will want to use some type of a schedule of variable reinforcement, that is, not reinforcing the behavior every time it occurs.

For example, fifteen-year-old Mary has difficulties preparing to go to school, i.e., getting dressed, collecting necessary items such as lunch money and her notebook, and fussing about why she has to go to school, why certain clothes are necessary, and so forth. These difficulties usually cause arguments with her parents on an average of three times a week. The school social worker in graphing her performances at school on academic and social tasks, found a direct relationship between the altercations and school performance. Once the behaviors to be changed decreased to appropriate levels following a behavioral change program, the school

social worker instructed the parents not to reinforce the child every time appropriate behaviors occurred.

Various procedures are available to thin reinforcement schedules. Parents may choose to gradually and proportionately reduce the days reinforcement can be secured. They can alternate reinforcement of various behaviors and the types of reinforcers used, that is incorporating more and more of the rewards available in the client's natural environment, and so forth. In Mary's case once behaviors achieved desirable levels, reinforcement was provided every other day. The behaviors of getting to school on time and not being negative were not rewarded simultaneously and the parents shifted from material rewards to praise. Many behavioral programs are characterized by an approach where parents are taught behavioral principles. However, the direct application of variable schedules of reinforcement is not adequately covered.

Delayed Reinforcement

Various procedures can be utilized to increase the maintenance of behaviors through the use of delayed reinforcement. Once a behavior is established at the desired level, tokens which initially were provided every time a behavior occurs can be provided instead at the end of the day, every other day, weekly, and so forth. The idea is that longer and longer periods should elapse between when a behavior is exhibited and when a reinforcement is provided for that behavior. This process reduces the behavior's dependence upon reinforcement. Likewise, as behaviors are established at desirable levels, rewards that are available in the environment where the behavior naturally occurs should be incorporated.

By varying the process of reinforcement administration the ability of the person to discriminate when reinforcement will be available for the performance of the behavior decreases, and this increases the performance of desired behavior.

Data indicate that initially all behaviors should be reinforced in the treatment plan. As the client acquires target behaviors fewer behaviors are reinforced. For example, the behavioral change program may call for the alteration of the following behaviors: poor conversational skills, non-participation in setting vocational objectives, failure to follow reasonable requests, inadequate academic performances, disruptive behaviors in school such as hitting others, damaging physical property, running away, making loud noises, using aggressive verbal statements, throwing objects such as paper, candy, erasers, and chairs, and poor job interviewing skills. As the behaviors decrease or increase to the desired levels, the worker may alternate the behaviors chosen to be reinforced. Initially behaviors may be reinforced immediately after they occur. After the desired frequency has been attained the behavior may be reinforced once daily, weekly, and so forth.

Self-Control Procedures

Advancement of this particular area in the field of behavior modification has been substantial (Thoresen and Mahoney, 1974). Self-control techniques help social

workers ensure that the treatment plans discussed in office interviews are actually carried out in the client's environment. Furthermore, they may enable a client to design a modification plan without the aid of the therapist when other problems are encountered after therapy (Wodarski, 1975). Clients can be trained to define behaviors, record behaviors, to consequent the behaviors, to utilize stimulus control procedures, and so forth. When such processes are implemented by the client, the number of learning trials and the contexts in which desired behaviors are practiced are increased, thus increasing the probability that the behaviors will be maintained and generalized (Staats, 1975).

For example, a sixteen-year-old female delinquent referred for treatment by the juvenile court as a result of excessive absences from school, general idleness, and lack of academic skills, desired to reduce her weight since it brought her negative criticism from significant peers. She was taught how to covertly positively reinforce herself by eating only at meals and for refusing requests for additional food at other times. Other self-management procedures also were incorporated into the treatment plan. Since feeling anxious increased her eating, she was also taught progressive relaxation to reduce her general level of tension. During the sixteen interviews she began to lose weight and her general level of tension decreased. Concurrently, she started to develop better social relationships with her peers and her academic performance at school improved. A follow-up interview four months after treatment termination indicated the teenager continued to be successful in relaxing herself and continued to lose weight.

Implications for Practice

The reason many behavioral programs show initial positive results and a subsequent lack of generalization and maintenance is likely due to lack of proper attention to procedures for maintenance and generalization in the planning stages of the program.

In summary, it is emphasized that due to the available mechanisms for delivery of services, such as home visits and work within the client's total environment, social workers are well equipped to provide services necessary to ensure the maintenance and generalization of behavior. In addition, with new training they will be able to evaluate how significant others reinforce the client and how these individuals can be trained to maintain certain desirable behaviors exhibited by the client. This will add to the theoretical knowledge necessary to understand how natural reinforcement systems operate to facilitate the maintenance of behavior.

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