Psychoeducation procedures dominate the treatment used by occupational therapists in psychiatric rehabilitation. The underlying assumption of skills training is that the skills taught generalize, that is, they persist beyond the treatment session and are used by the client in the community. This paper surveys occupational therapy literature to evaluate the generalization of skills taught to adult psychiatric clients by occupational therapists. Of the 77 studies reviewed, only 13 (17%) mentioned anything related to generalization. Seven of these articles statistically evaluated the outcome of skills training, but only four specifically assessed generalization of therapy. It is concluded that occupational therapists in psychiatry predominantly do not assess generalization of therapy. Discussion focuses on how four classes of generalization strategies (modifying the community environment, modifying the therapy environment, altering the style of therapy, and promoting client involvement) can enhance the effectiveness of occupational therapists in psychiatry.

Attention to Generalization in Occupational Therapy Articles

The contents of nine occupational therapy journals published from 1977 to the end of 1990 were surveyed. The journals were the *American Journal of Occupational Therapy*, the *Australian Occupational Therapy Journal*, the *British Journal of Occupational Therapy*, the *Canadian Journal of Occupational Therapy*, the *New Zealand Journal of Occupational Therapy*, and the *American Journal of Occupational Therapy*. The surveys were conducted using an electronic search engine that provides a comprehensive database of journal articles. The findings indicate that occupational therapists in psychiatry predominantly do not assess generalization of therapy. Discussion focuses on how four classes of generalization strategies (modifying the community environment, modifying the therapy environment, altering the style of therapy, and promoting client involvement) can enhance the effectiveness of occupational therapists in psychiatry.
Seventy-seven articles met the above criteria. Of these, 64 (83%) were descriptive; that is, they were either exclusively theoretical or were descriptions of treatment programs that were not empirically evaluated. In seven (9%) articles, pretreatment and posttreatment, or treatment and control, outcome figures were presented but not statistically analyzed. In just seven (9%) articles some form of statistical analysis of outcome data was conducted, and in only four of these studies (5% of the total) was there assessment of whether trained skills generalized to, or were maintained in, the natural environment (Crist, Thomas, & Stone, 1984; Denton, 1983; Kielhofner & Brin­son, 1989; Taylor, 1983). These data highlight that there has been little systematic evaluation of the outcome of the use of skills training by occupational therapists in psychiatry, and even less systematic evaluation of occupational therapy effect on community functioning.

Of the 77 studies reviewed, only 13 (17%) mentioned the need to consider generalization or related concepts, such as transfer of training, the maintenance of skills, or the use of newly trained skills in the community. Although the majority of occupational therapy literature does not explicitly consider or assess generalization, a large percentage of therapists reported using treatment strategies identified by previous writers (e.g., Edelstein, 1989; Stokes & Baer, 1977) as useful in facilitating generalization. Treatment strategies described in articles as likely to promote generalization are presented in Table 1. In fifty-one (66%) of the articles, use of one or more of those treatment techniques was reported. Thus, occupational therapists seem to include some generalization enhancement procedures in treatment, but not to systematically program for generalization.

Stokes and Baer (1977) proposed that generalization strategies could be programmed into therapy. In 1977 they reviewed 270 behavior therapy studies relevant to generalization and defined a number of categories of generalization. Some of the categories were explicitly programmed by the researchers, whereas others were more haphazard. The most common category was Train and Hope, in which generalization was not explicitly programmed but was welcome if it occurred. From this survey of occupational therapy literature it appears that Train and Hope is the main generalization category used by occupational therapists as well. We used Stokes and

---

**Table 1**

<table>
<thead>
<tr>
<th>Generalization Strategies in Occupational Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategy</strong></td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Extra Therapy Environment</td>
</tr>
<tr>
<td>Involvement of significant other</td>
</tr>
<tr>
<td>Buddy system</td>
</tr>
<tr>
<td>Natural communities of reinforcement</td>
</tr>
<tr>
<td>Incorporating key stimuli in the training environment</td>
</tr>
<tr>
<td>Home assignment</td>
</tr>
<tr>
<td>Homework assignments</td>
</tr>
<tr>
<td>Multiple settings training</td>
</tr>
</tbody>
</table>

---

1A list of all articles included in the survey can be obtained from the first author.

February 1993, Volume 47, Number 2
Baer's (1977) classification system to organize strategies for programming generalization in occupational therapy settings.

Strategies for Generalization

Community Environment

The effect of therapeutic interventions on the client's world is seldom evaluated (Steffen & Karoly, 1980). Steffen and Karoly (1980) have suggested that any therapeutic intervention that is intended to endure must disrupt the life-style supporting it. When one considers that a client undertaking two 1½-hr therapy sessions per week is often spending the other 100 or so waking hours that week in contexts quite different from the therapy environment, it is not surprising that generalization after treatment is more the exception than the rule (Goldstein, Lopez, & Greenleaf, 1979). Both the client's physical and human environments are replete with sources of reinforcement for desired and unwanted behaviors (Baer & Roberts, 1981), and constitute what have been called 'natural communities of reinforcement' (Stokes & Baer, 1977, p. 354). These natural communities of reinforcement are the context in which the presenting problem exists; they often maintain the problem.

One solution to dealing with natural communities of reinforcement is to target behaviors in therapy that are reinforced in the community (Baer & Roberts, 1981; Galassi & Galassi, 1984; Liberman, McCann, & Wallace, 1976). For example, in social skills training, it is important to target social skills that are appropriate to the age, gender, and social network of the client. However, defining socially skillful behavior and assessing behaviors that will be reinforced in the community are difficult (Bellack, 1983). Clinicians usually must rely on their clients' and their own perceptions of what behaviors will be reinforced.

In some situations there are no natural short-term reinforcers for new behaviors that might receive reinforcement in the long term (Stokes & Baer, 1977). For example, a person who is unemployed may receive little reinforcement for getting out of bed in the morning, but the habit of sleeping in may prevent a return to work. In other words, the current environment is reinforcing behaviors that may prevent the person from gaining entry to a new social environment. In such situations it can be helpful to arrange transitional environments. A transitional environment can be defined as a setting in which reinforcement is available for approximations to the desired behaviors, often at a higher rate than will be available in the final target setting. For example, Jacobs (1988) described a vocational training process in which psychiatric clients attended a work training center. Initially, clients received pay for simply attending for the required hours. Over time, clients earned higher rates of pay by increasing work performance until it was equal to that required in the workplace. They were then helped to find jobs. The transitional work environments served to reinforce successive approximations to the final desired behavior, approximations that might not be reinforced in either the existing or the normal work environment.

Environmental contingencies can change over time. Baer and Wolf (1970) described a process they call behavioral trapping, in which a spontaneous shift in reinforcement contingencies when a new behavior is introduced to an environment results in the reinforcement of that behavior. Baer and Wolf (1970) illustrated trapping in a study of preschool children with poor peer relationships. Initially cooperative play behavior was reinforced only by the teacher, but as this behavior affected the isolated children's peers, the cooperation was eventually reinforced by those peers and maintained by the natural community of reinforcement of the other children at the preschool. Thus it may be necessary to arrange reinforcement initially, but the behavior may produce shifts in contingencies that trap the behavior in the environment.

It is possible to alter both the human and physical environments so that the desired reinforcement is more likely to occur (Galassi & Galassi, 1984; Liberman et al., 1976; Stokes & Osnes, 1989). Numerous studies have used parents, siblings, peers, and teachers to provide appropriate reinforcement in the natural environment to promote the generalization of the desired behavior (Galassi & Galassi, 1984; Marholin & Siegel, 1978; Stokes & Osnes, 1989). Education of significant others was employed in four (5%) of the survey articles. Buddy systems are another way of providing positive reinforcement to new skills in the extra-therapy environment (Galassi & Galassi, 1984). Three of the occupational therapy articles surveyed used this technique. In two articles, volunteers taught life skills and modeled and prompted desirable behaviors in community contexts (Moyer, 1977; Schofield & Patterson, 1979), and in another, more competent clients were paired with less competent clients to work on objectives together (Thomes & Bajema, 1983).

Altering or adapting the physical environment is more often referred to in articles on physical occupational therapy than in psychiatric occupational therapy. Therapists in psychiatry also need to devise solutions to overcome problems in their clients' home environments. For example, people with chronic schizophrenia are more likely to conduct their activities of daily living if their environments are altered to make these tasks easier to perform. Even the most sophisticated culinary skills will be dampened by a roaming house environment where there are no pots and pans, the stove does not work, and any food left in the kitchen is stolen. A minimal environmental change, such as provision of the client's own locked cupboard containing basic utensils, could enhance application of newly acquired cooking skills. Environmental change to promote generalization was not described in any of the articles reviewed.
In addition to attending to the community environment of the client, it is also crucial to consider the effect of the training environment on skill generalization. On the basis of the principle of stimulus generalization, the more the training environment and the natural environment have in common, the more likely it is that the newly trained behavior will generalize to the natural environment (Scott, Himandi, & Keane, 1983). Stimuli such as physical aspects of the environment, people, behaviors, and events (Goldstein et al., 1979) can be incorporated into treatment either by making the therapy environment like the natural environment (simulated instruction) or by taking therapy into the natural environment (in vivo instruction).

Both simulated and in vivo instruction have advantages. Simulating the natural environment in training often requires less time than in vivo training, and there is often greater control over what happens (Nietupski, Hamre-Nietupski, Clancy, & Veerhusen, 1986). However, sometimes complex community situations cannot be simulated adequately and in vivo training is more appropriate. Treatment may involve a combination of both simulated and in vivo instruction. For example, if a client is being trained in a relatively complex skill like supermarket shopping and the nearest supermarket is half an hour’s drive away, the training process could combine training in a simulated supermarket in the occupational therapy department with some in vivo practice. Some researchers have conducted relatively sophisticated task analyses of target environments and faithfully reconstructed the key features. Features have included not only the physical layout but also the typical cues and consequences associated with the venue (Nietupski et al., 1986). Significant others or pictures of significant others brought into the treatment settings can enhance generalization (Goldstein, Heller, & Sechrest, 1966; Kirschenbaum & Tomarken, 1982). Peers and peer tutors have been used extensively with children in training (Stokes & Osnes, 1989), and some family therapy can be thought of as incorporating stimuli from the natural environment in therapy (McPeak, 1979).

The articles reviewed suggested a strong preference by occupational therapists for in vivo instruction. In vivo training was mentioned in 22 of the articles, whereas only three of the articles mentioned simulated training. In vivo training in contexts such as shops (Campbell & McCreadie, 1983; Drouet, 1986), workplaces (Howe, Weaver, & Dulay, 1981), and banks (Kaseman, 1980) was the most frequently described of all the generalization strategies.

Homework assignments are a potentially cost-effective method of carrying training into the natural environment. In fact, some authors argue that systematic homework task completion is central to successful therapy (Shelton & Ackerman, 1974; Shelton & Levey, 1981). Homework tasks involve applying skills learned in therapy to target settings between treatment sessions. Ideally the task is carefully explained both orally and in writing. The client is often expected to provide a permanent product of the task completion, such as a written record of a conversation or a bus timetable as evidence of an inquiry about public transport. Feedback and reinforcement of the task need to be given at the next treatment session. Clear examples of well-structured homework tasks can be found in Shelton and Levey (1981). Homework assignments have been used extensively in skills training by occupational therapists. Almost one quarter or 17 of the articles surveyed mentioned using homework tasks, although only one related its application to generalization.

It has also been suggested that for generalization to occur the behavior must be trained in relation to a variety of situations (Baer & Roberts, 1981; Goldstein et al., 1966). Behavioral theorists recommend training with sufficient exemplars (Stokes & Osnes, 1989). This has been achieved in numerous ways, such as training clients across a variety of settings, having more than one therapist involved in therapy, and practicing a variety of different applications of new behaviors or skills (Stokes & Osnes, 1989). Additional people have included other therapists, fellow participants in group therapy, peers, family members, and teachers (Goldstein et al., 1966; Marholin & Siegel, 1978). Multiple exemplars were used by two of the survey articles in role plays. Maslin (1982) used several different therapists, and Thomas and Bajema (1983) involved a variety of people from the community.

What constitutes sufficient exemplars is unclear. Stokes and Baer (1977) have concluded that “the number of exemplars found to be ‘sufficient’ for a desirable level and durability of generalization varies widely, probably determined primarily by the nature of the task and the subject’s prior skills relevant to it” (p. 357), but that there needs to be “sufficient diversity of exemplars to reflect the dimensions of the desired generalization” (p. 357).

It is possible to assess the degree of generalization throughout the course of therapy and to use this information to define sufficient exemplars (Edelstein, 1989). For example, a client who wants to learn to travel by train to several different places in his or her community may not know how to locate the train station, the ticket seller, and the correct platform. The client may be taught how to perform these activities at one train station and then asked to apply the same skills in a second. If success is achieved in the second train station, then sufficient exemplars have been used. If the attempt is unsuccessful, then further training in the other train stations is needed.

In summary, if it is desired that the newly trained behavior is manifest in a variety of different forms with a variety of people, in a variety of settings, it must be trained with sufficient variety for that to occur. The more those various training elements resemble real life, the
more likely it is that the client will generalize learning. The extent of generalization can be assessed during therapy to ensure that training effects are optimized.

**Style of Therapy**

There is a strong link between the way a skill is taught and the likelihood of generalization. Aspects such as the quality and amount of training used and the type and schedules of reinforcement operating in therapy are influential (Baer & Roberts, 1981). Above all, it is important to assess whether targeted skills have been acquired in the training setting. Studies on the efficacy of coping skills training generally fail to determine whether the skills being assessed initially were learned correctly (Hall, 1980). Just because someone has gone through the motions of being taught a skill does not mean that he or she has actually learned that skill. Two of the articles surveyed attended to the need to use repetition and review to ensure that skills had been learned adequately (Davison, 1987; Maslin, 1982).

Goldstein et al. (1966) wrote of the need to consider response availability, which they defined as the principle that, “other things being equal, the response which has been emitted most frequently in the past will be emitted on subsequent occasions” (p. 236). For example, according to this principle, a person who usually responds aggressively is likely to continue with this response after assertion training if aggression is still his or her most frequently reinforced response. The majority of the research on response availability is on verbal responses in laboratory settings, but the principle has general implications for therapy. It suggests that the most desired extratherapy responses should receive greatest practice and reinforcement so that they will be the responses most likely used by the client. A person with an aggressive response repertoire would therefore need many practices and reinforcement of assertive responses.

When new behaviors are being trained, reinforcement needs to occur at a higher density than is required for maintenance (Marholin & Siegel, 1978). This may require providing reinforcement after every response initially. However, behavior reinforced all of the time is more susceptible to extinction than behavior that has received intermittent reinforcement (Goldstein et al., 1966). Liberman et al. (1976) recommended that therapists gradually fade reinforcement so that the schedule of reinforcement finally approximates naturally occurring reinforcers. Gradually reducing the level of therapist social reinforcement is one way of achieving this (Kopel & Arkowitz, 1975). A gradual reduction in the amount of therapist input in group home settings has been advocated in occupational therapy articles (Schofield & Patterson, 1979; Voisey, 1988).

Therapist input after the main body of therapy has been completed can aid maintenance. Periodic booster sessions in a follow-up period have been used by some therapists (Curran, Monti, & Corriveau, 1982; Whisman, 1990). The most effective booster sessions involve clients monitoring their implementation of skills and setting goals for managing current difficulties situations (Whisman, 1989). Fishman and Lubeckin (1980) recommended that booster sessions be timed to fit with the needs of the client, rather than scheduled arbitrarily. They also describe a program of yearly checkups to promote generalization. Occupational therapists have described the use of “top up” sessions (Campbell & McCreadie, 1983) and yearly refresher classes (Kaseman, 1980). In some cases, therapist intervention may need to continue indefinitely. Klassen (1989) recommended the use of long-term and continuous follow-up in community occupational therapy. Sometimes clients can significantly improve a skill or behavior that can be maintained only with a minimal amount of therapist prompting (e.g., Sanders & Parr, 1989). However, the process of recovery from severe psychiatric disorder can extend over many years (Harding, Zubin, & Strauss, 1987), and a low level of therapist support to maintain functioning is still preferable to relapse with a renewed need for high levels of therapy care.

Our key recommendation is that, after the desired skill or behavior is established with a dense schedule of reinforcement, this reinforcement needs to be gradually reduced to resemble the less frequent, less powerful, and sometimes delayed reinforcement that the person is likely to find in the natural environment. Without intervention, the natural reinforcement that clients experience often is insufficient to maintain the skills and behaviors that occupational therapists are training.

**Style of Client Involvement**

When clients are active in the selection of therapeutic goals and develop a shared understanding of the rationale for treatment with the therapist, this enhances therapeutic change both inside and outside the therapy setting (Goldstein et al., 1966; Goldstein et al., 1979; Kanfer & Scheffe, 1988). An understanding of the overall scheme of what is happening increases the participants’ ability to use the material provided and focus on appropriate issues. This understanding can be achieved by individualized, systematic assessment of client needs and a structured assessment feedback and goal setting session (Kanfer & Scheffe, 1988; Liberman et al., 1976). Occupational therapists appear to use client involvement in goal setting and program planning extensively. Fourteen of the survey articles referred to individualized program planning or client involvement in goal setting or both.

One of the most basic generalization strategies is to simply ask clients to use the skills in their day-to-day lives (Stoles & Baer, 1977). Four of the survey articles mention discussing with clients the application of their skills outside of therapy (Kramer & Beidel, 1982) or urging their
use in the community (Boswell, 1989; Bradlee, 1984; Nickel, 1988). Such requests seem obvious, but often are overlooked.

Self-management strategies have been proposed as a way of introducing reinforcement into the environment via the client. Clients have been taught to monitor their own behavior (Baer & Roberts, 1981; Stokes & Baer, 1977), provide self-instruction and commands (Marholin & Siegel, 1978) and reward their own behavior to provide range application of behavior change (Marholin & Siegel, 1978). The rewards have been delivered directly by the person to themselves in the form of positive consequences or as self-praise (Marholin & Siegel, 1978), or via a therapist after a positive self-report (Baer & Roberts, 1981). Rewards can also take the form of a physical stimulus, such as a written self-report of the behavior (Stokes & Baer, 1977). Three of the survey articles used the self-management strategy of self-monitoring in their treatment programs. Self-monitoring was used in relation to vocational training (Howe et al., 1981), stress management (Courtney & Escobedo, 1990), and health education (Davison, 1987).

In summary, evidence suggests that active participation by clients in therapy is desirable for treatment generalization. In particular, treatment is more likely to be successful if clients are informed about therapy, contribute to its planning, and believe that it will result in a positive outcome for them. Clients can also be called upon to provide their own instruction and reinforcement.

Conclusion

Generalization of skills trained in therapy to the community must occur if therapy is to be judged successful (Edelstein, 1989). Behavioral theorists believe that generalization is not a passive phenomenon that just happens, but something that can be facilitated by generalization strategies programmed into therapy (Stokes & Baer, 1977). Traditionally, however, strategies for promoting generalization have fallen within the domain of psychologists rather than occupational therapists. In the majority of articles surveyed for this paper, Train and Hope appears to be the main generalization strategy used by occupational therapists.

Many occupational therapists already use techniques that have been identified as useful for facilitating generalization such as individualized program planning, task analysis, in vivo and simulated training environments, environmental adaption, and homework tasks, but few actually cite generalization as the underlying purpose for using such techniques.

If occupational therapists in mental health continue to embrace behavioral skills training and psychoeducation, they too need to ask themselves these questions: In what contexts does this client need to use the skills he or she is being trained in? After training, does he or she use the skills in these contexts? If not, why not? What strategies will facilitate the use of these skills in the necessary contexts? If treatment does not generalize, therapists are wasting their own resources and those of their clients. The consideration of whether clients apply the skills they learn should be a standard part of therapy. Occupational therapy clinicians and researchers need to systematically evaluate and apply generalization strategies relevant to the skills they train.

Acknowledgments

We thank Jill Faddy for manuscript preparation and Elspeth MacDonald and Mike Lyons for helpful comments on an earlier draft of this paper. Preparation of this article was supported by an Australian National Health and Medical Research Council grant to the authors.

References


