OVERVIEW OF NIMH SUPPORT OF RESEARCH IN BEHAVIOR THERAPY¹

STEPHANIE B. STOLZ

NATIONAL INSTITUTE OF MENTAL HEALTH

Many parts of the National Institute of Mental Health have explicit policies of encouraging research on behavior therapy. The policies about behavior therapy research of sub-units of NIMH are reviewed, as these policies existed in fiscal year 1973. Examples are given of the type of behavior therapy research that NIMH was supporting in 1972. Particularly important is the evaluation of the efficacy of behavior therapy in comparison with standard treatment procedures.

Although the National Institute of Mental Health (NIMH) has no institute-wide emphasis on the support of research in behavior therapy, many parts of the Institute, whose programs could include research in this area, do have explicit policies of encouraging research on this topic. This article describes these policies, as they existed in fiscal year 1973, for the various sub-units of NIMH, and gives some examples of the type of research currently being supported. More general information on support for research on psychological topics can be found in Hicks, Liebowitz, Ross, and Paller (1970). As with that article, the purpose of the present one is to help those with research ideas get information about those interested in supporting that sort of research.

Behavior therapy, as used in this article, includes the many types of programs based on learning principles. Projects using individual therapies, such as desensitization, implosive therapy, or one-to-one behavioral shaping are included, as well as projects in which the unit being studied is a social system, such as a hospital ward or half-way house. Applied behavior analysis is included, as is behavioral engineering and biofeedback.

This review covers only extramural research projects, that is, research carried out with the support of NIMH funds at universities, colleges, hospitals, research institutes, and other non-profit organizations. Fellowship and training support by NIMH is beyond the scope of this article.

The research priorities of the NIMH as a whole are in the areas of research dealing with children, minorities, crime and delinquency, addictive drugs, and alcoholism. Research on these topics tends to be given preference in funding.

Although NIMH does not emphasize research on behavior therapy, projects involving behavior therapy procedures and principles are currently being supported by four of the divisions of NIMH and by the National Institute on Alcohol Abuse and Alcoholism (NIAAA), which is located within NIMH.

Let me describe the present organization of the National Institute of Mental Health, to the extent that is relevant for this paper. The Institute is composed of divisions, each of which has components called branches or centers. In addition, as mentioned above, the National Institute on Alcohol Abuse and Alcoholism is located within NIMH. The parts of NIMH that support research in universities, colleges, and other non-profit organizations are the Division of Extramural Research Programs (DERP), the National Institute on Alcohol Abuse and Alcoholism

¹I thank Dr. Jerome Levine for his suggestion that I gather the data on which this report is based. Reprints may be obtained from the author, Small Grants Section, NIMH, 5600 Fishers Lane, Rockville, Maryland 20852.

(NIAAA), the Division of Narcotic Addiction and Drug Abuse (DNAD), the Division of Special Mental Health Programs (DSMH), and the Division of Mental Health Service Programs (DMHS). In fiscal year 1972, the Division of Extramural Research Programs provided more than 40% of NIMH's support for research outside the Institute.

Within the Division of Extramural Research Programs, research is supported through the Behavioral Sciences Research Branch, the Applied Research Branch, the Clinical Research Branch, the Psychopharmacology Research Branch, the Center for Epidemiologic Studies, and the Small Grants Program. The NIAAA supports research through its Extramural Research Branch; the Division of Narcotic Addiction and Drug Abuse, through the Center for Studies of Narcotic and Drug Abuse; the Division of Mental Health Service Programs, through the Mental Health Services Development Branch. The Division of Special Mental Health Programs has a number of research-supporting centers, including the Center for Minority Group Mental Health Programs, the Center for Studies of Metropolitan Problems, and the Center for Studies of Crime and Delinquency.

In this paper, I will discuss only those components of the NIMH whose programs are relevant to behavior therapy. The largest number of behavior therapy projects is supported by the Division of Extramural Research Programs (DERP); other extensive programs in behavior therapy are supported by the Center for Studies of Crime and Delinquency (DSMH), and the NIAAA. Including all the research grants in this area, NIMH support of behavior therapy research was somewhat more than \$3 million in fiscal year 1972.

Policies of NIMH Programs

Some of the NIMH programs that support behavior therapy have explicit policies of encouraging that kind of research; programs that may not have a particular emphasis on behavior

therapy are willing to consider applications in that area. These latter programs will support scientifically sound research in behavior therapy, if the projects receive a strongly favorable recommendation from the review committees. This section discusses the various programs and their policies.

Clinical Research Branch (DERP). This branch has a general interest in supporting well-designed research projects on psychotherapy. Within the branch, the section responsible for behavior therapy is the Section on Psychotherapy and Behavioral Intervention (Morris B. Parloff, Chief). In the recent experience of this branch, the review committee has been more favorable to behavior therapy research than to psychotherapy research. This seems to be because the outcomes in behavior therapy are measurable and specifiable, and because the investigators have, on the whole, research, rather than clinical backgrounds.

In view of the staff of the Clinical Research Branch, an inevitable shift is occurring from support predominantly for research on psychotherapy to research on behavior therapy. They feel that this shift is occurring because the behavioral researchers tend to define their terms, define their interventions, and plan good research designs. Where behavioral projects were 32% of the 61 projects supported by the Section on Psychotherapy and Behavioral Intervention in 1967, they were 54% of the 29 active grants supported by that section in 1971.

The Clinical Research Branch is also developing a program of support for therapeutic applications of biofeedback procedures. Branch staff feel that research in this area has potential clinical impact.

Other DERP programs. At least two of the other components of the Division of Extramural Research Programs are currently supporting research in behavior modification. The Applied Research Branch and the Small Grants Section do not have a differential priority for behavior therapy research, although they recognize it as an important field. Few of the behavior

therapy applications currently being submitted fit within the guidelines of these two programs, so they are assigned only these few to review.

In general, the Applied Research Branch (Edward Flynn, Acting Chief) supports applied projects in the area of juvenile problems and social problems. There is a tendency to prefer that the work proposed have some impact on theory within psychology and the social sciences, rather than emphasize technological development.

Research supported by this Branch in the social problems area focuses on the nature of social problems and experimentation with methods leading toward the solutions of such problems. Problems of special interest include the changing role of the nuclear family; problems of the socially and economically deprived; the process of social change, including the capacity to tolerate change and impediments or resistances to change; alienation in contemporary society as related to phenomena such as efforts to change institution and social structure, or those groups with different life styles who organize to bring about social change or greater social acceptance. Juvenile problems research supported by this Branch focuses on the problems of children and youth from infancy through college age, with particular emphasis on the impact of social institutions, social conditions, family structure, and community resources that affect learning and coping capacities relating to the mental health of children and youth. Of special interest are problems such as early child care both in and out of the home, intellectual stimulation and cultural enrichment programs for children, experimentation with new techniques in children's programs, mental health programs in schools, early identification and intervention techniques with emotionally disturbed or culturally deprived children, and services to adolescents in school and other community programs. Problems of the retarded child are appropriate if related to the psychiatric aspects of retardation, learning difficulties, or the impact of cultural deprivation.

The Small Grants Section (Stephanie B. Stolz, Chief) supports 1-yr projects in any area related to mental health, with special emphasis on research proposed by younger investigators and on exploratory and pilot studies.

In all branches of the Division, the staff encourages prospective applicants to consult with them before submitting the formal application.

National Institute on Alcohol Abuse and Alcoholism. The NIAAA has recently become more interested in psychosocial research and applied research in general. In the past, it has supported chiefly biological research related to alcoholism, although it has supported research on the use of aversive stimuli to develop abstinence in alcoholic persons. In addition to continuing support in this area, the NIAAA now is supporting a number of innovative projects that treat alcoholism as a problem in living, that is, as a problem that can be ameliorated by a modification of the environmental consequences. In these projects, the researchers are attempting to retrain alcoholic patients by teaching them new skills for dealing with interpersonal situations. Many of these studies aim to teach the alcoholic individual to control his drinking, enabling him to drink moderately without relapse, something that has not been attempted in the past. This sort of research is very controversial. The position of the NIAAA is that it is an empirical question whether moderate drinking can be achieved by alcoholic persons, and the Institute is willing to support research to see if it can. Albert Pawlowski is Chief of the Extramural Research Branch, NIAAA.

Center for Studies of Narcotic and Drug Abuse (DNAD). Like the NIAAA, this center has recently begun to shift from support mainly for biological research to support for more psychological research. While the Center is currently supporting little research in behavior therapy, an additional staff person (N. A. Krasnegor) was recently hired explicitly to develop applications in that area. In line with this specific interest in behavioral research, the Center sponsored a

small in-house meeting with about a half-dozen consultants, all of whom are researchers prominent in applied behavior analysis, to discuss specific applications of behavioral technology to drug abuse problems.

Center for Studies of Crime and Delinquency (DSMH). This Center (Saleem Shah, Chief) has had a continuing interest in the support of behavioral research on applied problems since its establishment a few years ago. The objectives of the Center are to support the development of models that are utilizable, practical, and economical. The emphasis is on research in which the target of intervention is a larger social system, such as a housing project or a school system, rather than on one-to-one clinical treatment. The Center's orientation to problems of crime and delinquency is inter-disciplinary. Moreover, since social deviance typically is multi-determined, the conceptualization of such phenomena as well as efforts to alter deviant behavior will usually require a variety of approaches and methods of intervention.

The Center's support of behavior modification is quite extensive at the present time. Staff feel that the importance and necessity of supporting other program areas limit the number of additional projects in behavior modification that can be funded. Thus, any new proposals in this area would at least need to build on and extend existing research programs, as well as incorporating scientifically sound design and being utilizable and concerned with cost and manpower implications.

Mental Health Services Development Branch (DMHS). This branch, within the Division of Mental Health Service Programs (DMHS), is actively interested in supporting more behavior therapy projects. Projects appropriate for this branch would involve research related to the application of behavior therapy methods to a service delivery system, such as a community mental health center or hospital ward. Of paramount concern is research on the practicality of behavior therapy methods, on integrating them into a total treatment system, and on the accept-

ance of these methods by clients, staff, and community. Howard Davis is Branch Chief.

NIMH-Supported Research Activities

Historically, nearly all the early work in behavior therapy was supported by NIMH grants. It is not possible to list here all of the papers resulting from those grants, nor even to list all the NIMH grantees who have done research on behavior therapy. However, to give a small sample, NIMH supported Ogden R. Lindsley's work with psychotics, C. B. Ferster and Marilyn K. DeMyer's work with autistic children, and the work from the University of Washington group on the use of operant conditioning principles for the amelioration of the behavior problems of preschool children, retarded children, and children with severe behavior problems. NIMH supported O. Ivar Lovaas' work with autistic children, and provided partial support for Teodoro Ayllon and Nathan H. Azrin's development of the token economy system. Peter J. Lang's experimental studies of desensitization were NIMH-supported, as was Albert Bandura's research on modelling, including his work on the use of filmed models to reduce children's phobias. Neal E. Miller's basic research that underlies biofeedback therapy was also done with the support of an NIMH grant.

Currently, NIMH is supporting research in a wide variety of areas of behavior therapy. A number of the projects are quite innovative, involving the development of new procedures or the application of established procedures to new problems, new populations, or new settings; some projects involve the evaluation of well-established or new procedures; and, of course, some projects are continuations and extensions of work that has been on-going for some time. The research described below is a sample of the projects funded in fiscal year 1972.

Biofeedback. The newest form of behavior therapy involves the application of the newly discovered procedures of biofeedback to clinical problems. NIMH is currently supporting four such projects: (a) Neal E. Miller (Cornell

University Medical Center), the discoverer of the original phenomenon of the reinforcement control of autonomic processes, is attempting to extend his laboratory research to cardiac patients and to patients with spastic sigmoid colons; (b) Aman U. Khan (Children's Memorial Hospital, Chicago) is giving asthmatic children praise and other feedback for bronchodilation; (c) Joe Kamiya (University of California Medical Center) is attempting to condition esophageal motility; and (d) Pierre F. Renault (University of Chicago) is working with patients with gastric hyperacidity in an attempt to condition changes in gastric acid secretion. The first two projects are supported by the Clinical Research Branch, DERP; the latter two by the Small Grants Section, DERP.

Alcoholism. In the alcoholism area, Roger E. Vogler, N. H. Azrin, and George E. Bigelow are the researchers supported by the NIAAA who are attempting to develop procedures whereby alcoholic persons will be able to maintain drinking at a moderate level.

Vogler is continuing work at Patton State Hospital (California) that was begun by Hal-muth H. Schaefer, who has recently left the country. Schaefer's preliminary work, also supported by NIMH, showed that most of the alcoholic patients he trained in the institution to drink moderately were able to maintain this pattern of behavior outside the institution for extended periods of time. Like Schaefer's research, Vogler's is based mainly on the use of aversive control, by means of which the alcoholic individual is taught to discriminate when his blood alcohol concentration exceeds a specific level. The same sort of response consequences are also used to train alcoholic individuals to drink slowly. Vogler is working both with chronic alcoholic in-patients and, through Pacific State Hospital, with out-patients. The patients are also given assertive training and relaxation training, to reduce the tensions presumed to be related to alcoholism.

Azrin's program at Anna State Hospital (Illinois) is a massive life-intervention scheme based

on operant reinforcement principles. Alcoholic in-patients are given marital counseling and job counseling, and alcohol-free social situations are established for them. Bigelow's project (Baltimore City Hospitals) involves maintaining alcoholic in-patients on a token economy, and attempting to achieve abstinence in some, moderation in drinking in others.

Other current research. Some of the most significant projects currently supported are those that take essentially established procedures and apply them in new ways. Some of these programs are Peter M. Lewinsohn's work (University of Oregon) with depressives, Lovaas' (UCLA) with autistic children, Richard B. Stuart's (University of Michigan) extension of contracting procedures involving teaching them to agency personnel, Gerald R. Patterson's (University of Oregon) extension of therapy for delinquents to include parents and teachers as therapists, and Montrose M. Wolf's (University of Kansas) halfway house for predelinquent adolescents.

Two exciting applications of known procedures to new settings are being supported by the Mental Health Services Development Branch, DMHS. In these two projects, the investigators are attempting to extend the use of behavior modification procedures to community mental health centers. One (A. J. Turner, Huntsville-Madison County Mental Health Center) will attempt to use behavior modification procedures in all possible service areas of the center; the other (Robert P. Liberman, Camarillo State Hospital) will apply behavior modification procedures to a randomly chosen sub-set of the patients in the clinical programs of the center.

Todd R. Risley (University of Kansas), supported by the Center for Studies of Crime and Delinquency, DSMH, is conducting an innovative pilot study in which he is attempting to develop procedures whereby residents of a housing project can establish a residents' code of conduct that would also contain sanctions rather than relying on the police department for enforcement. Henry M. Boudin (University of

Florida) has begun a project in which he plans to use contingency contracting with drug abusers in an out-patient setting. Like the other projects just mentioned, this one applies an established technology, in this case contingency contracting, to a new sort of problem, drug abuse. The research task for Boudin's group will be to modify the technology of contracting so that it can be effective with the special behavior problems characteristic of drug abusers. Boudin's research is supported by the Center for Studies of Narcotic and Drug Abuse.

Two other projects fall within the general category of extensions of known technology to new contexts: (a) Virgil W. Harris (Indian Development District of Arizona, Phoenix), supported by the Center for Studies of Crime and Delinquency, DSMH, is comparing a rehabilitation program for delinquent American Indian youths in a halfway house with one done in an institution. He hopes to develop procedures that will facilitate transition from the therapeutic setting to the natural conditions in a community. (b) Harry Lawrence, a social worker at the University of Michigan, is applying behavior modification procedures to group therapy for persons who seek help in social work agencies. In this sort of group therapy, the emphasis is on the group members' acquisition of skills that they lack, and on their learning to administer social reinforcers to others. This project is supported by the Applied Research Branch, DERP.

Behavior therapy procedures of relaxation training, desensitization, and related methods are being tried with some new clinical problems, such as insomnia (Richard R. Bootzin, Northwestern, supported by the Clinical Research Branch, DERP), asthma (Thomas Creer, Children's Asthma Research Institute and Hospital, Denver, same source of support), and heroin addiction (Benjamin J. Auerbach, Department of Corrections, Sacramento, supported by Center for Studies of Narcotic and Drug Abuse). Here again, an established clinical procedure is being tested with new sorts of problems.

Finally, a number of projects are concerned with preventive mental health. In these projects, various ways are being tried to teach parents and classroom teachers to use behavior modification, both before the children develop problems and also while the problems are still relatively mild.

Those projects mentioned here are examples of the most exciting ones from the point of view of development of new therapeutic technologies or of the extension of fairly established procedures to new clinical or social problems. In the development of a therapeutic technology like behavior therapy, this is where the innovations primarily come from.

Of course, there is also some research being supported by NIMH that is a continuation, or less innovative extension, of research with established procedures in populations and problems already frequently studied. These projects would include some that involve, for example, the use of contingency contracting in an attempt to get persons to stop smoking, or the use of aversive control, desensitization, implosive therapy, or relaxation with alcoholic persons and homosexuals.

Evaluation designs. Many of the behavior therapy projects currently supported by NIMH use individual subject controls to evaluate the efficacy of the experimental procedure; others use a comparison of subjects who receive the treatment with others who do not. These two kinds of evaluation design are important in the early stages of the use of a new therapeutic procedure, when the question being asked is whether the new treatment is even any better than no treatment at all, that is, whether it has some minimal efficacy. For behavior therapy, at the present time it is generally conceded that the procedures based on reinforcement principles do produce more improvement than no treatment at all, and this is probably also true for clinical procedures such as desensitization and relaxation training.

Many persons are coming to feel that behavior therapy must now move on to the next

step in evaluation: comparative evaluation in which one group of individuals receives a standard, well-accepted treatment, conscientiously applied, while another receives some sort of behavior therapy, again conscientiously applied. This sort of research design is addressed to the important questions of relative therapeutic efficacy and cost-effectiveness. By a comparison of the magnitude of results obtained with existing, standard procedures and with behavior therapy, researchers will begin to provide the evidence necessary for deciding whether the costs of introducing new procedures—including staff training, changes in supervision and record-keeping, and so on—will be adequately repaid in a significant improvement in the functioning of the persons treated.

NIMH is currently supporting some projects that do compare the application of some sort of behavior therapy to the standard therapeutic procedure for the same problem. For example, in a particularly well-designed and carefully conducted project, Gordon L. Paul (University of Illinois) is comparing token economy procedures and milieu therapy with a traditionally treated control group. Patients in all three groups are being followed up extensively once discharged from the hospital. This project, originally supported by the Applied Research Branch, is now being supported by the Mental Health Services Development Branch, DMHS.

This latter Branch is also supporting Turner's and Liberman's work, described above, in which behavior modification procedures are being used in community mental health centers. In Turner's project, the results obtained on a wide variety of measures administered to the patients in the experimental community mental health center will be compared with results on the same

measures obtained from patients in a comparable community mental health center using standard procedures. In Liberman's project, progress reports and psychometric data on the patients in the experimental day-treatment center with the behavioral milieu will be compared to similar data on patients in a comparison day-treatment program using standard procedures and located in the same community mental health center.

In all, eight of the more than 30 studies in behavior therapy supported by NIMH include a comparison with a standard treatment procedure. Given that this sort of evaluation is only beginning to be used by researchers in this area, that is an unexpectedly high proportion of the active projects. Most of these comparisons with standard treatments are newly initiated, but, given the youth of the field, perhaps it is to be expected that it would take 10 years or so of development before the therapeutic techniques of behavior modification would come to the point at which people would be interested in and able to do this sort of comparison. Results of these eight studies, as well as of any others like them, will provide important evidence as to whether behavior therapy procedures are a meaningful improvement over the various psychotherapeutic procedures now commonly used.

REFERENCE

- Hicks, L. H., Leibowitz, H. W., Ross, S., and Paller, M. A 1970 overview of sources of support for psychological research. *American Psychologist*, 1970, **25**, 1013-1025.

Received 12 February 1973.
(Final acceptance 21 May 1973.)