DOCUMENT RESUME

ED 052 494 24 CG 006 504

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TITLE Psychological Services: The Pilot Year.
INSTITUTION Arizona Univ., Tucson. Arizona Center for Early Childhood Education.
SPONS AGENCY Office of Education (DHEW), Washington, D.C.
BUREAU NO BR-7 0706
PUB DATE Aug 70
NOTE 102p.

EDRS PRICE EDRS Price MF-$0.65 HC-$6.58
DESCRIPTORS Behavioral Objectives, *Behavior Change, Behavior Problems, Child Development, Consultants, *Consultation Programs, *Early Childhood Education, *Elementary School Students, Program Descriptions, Program Evaluation, Psychological Services, School Psychologists, *Systems Approach

ABSTRACT

This report describes the pilot year operation of the Tucson Early Education Psychological Services (TEEPS) program, which is based on the position that the quality of psychological services in the public schools can be increased by establishing educational systems in which the functions of psychology in education are embodied in system components rather than in individual practitioners. TEEPS is designed not only to deal with deviant behaviors, but also to facilitate the development of intellectual skills, leadership skills, social skills, and creativity in children. The program has three components: (1) research and development; (2) consultation; and (3) evaluation. Current thinking on the consultation process, which utilizes behavior modification techniques, is discussed extensively. Its success demonstrates that: (1) a psychologist and teacher working together can define problems operationally; (2) they can formulate concrete intervention plans; and (3) they can measure what they have accomplished. Data further indicate that such consultation teams are highly effective, reasonably efficient, and that consultation as a service can attain a high level of acceptance in schools. (TL)

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PSYCHOLOGICAL SERVICES:
The Pilot Year

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August 14, 1970

ACKNOWLEDGMENTS

Many people made significant contributions to the pilot year of Tucson Early Education Psychological Services (TEEPS) implementation. Recognition should be given to the staff of the TEEPS program: Mr. Howard Burns, program field representative; Mrs. Kate Cloud, graduate student; Miss Patricia Humphrey, research assistant; Mrs. Elaine Nicholson, research and information disseminator; Mrs. Jean Rush, graduate associate. These people participated in the design and dissemination of the program and in research relevant to the programs. Field representatives in the instructional component and parent involvement component of the Tucson Early Education Model also made significant contributions to TEEPS. These people took it upon themselves to explain the program in those Follow Through communities which did not participate in the pilot implementation of TEEPS. Their explanations helped to foster interest in and understanding of TEEPS in Follow-Through communities. Technical assistance was provided by Mr. Ben Jacobs and Mrs. Joan Golden. They assisted in making the video tapes used in TEEPS training. Special thanks should be paid to Dr. Ronald Henderson who worked diligently to obtain the support to make it possible to initiate TEEPS and to Dr. Joseph Fillerup who along with Dr. Henderson, has provided continuing support for the program during implementation. Dr. Carol Rubow has played a major role in articulating the program to the other programs comprising the Tucson Early Education Model. Dr. Marie Hughes has provided valuable council with respect to strategies for program implementation and played the central role in creating the setting in which TEEPS could be initiated.

The major responsibility for TEEPS implementation resided in the three school systems, Fort Worth Independent School District, Vermillion Parish School, and Walker County Department of Education, who took it upon themselves to implement an untried program.

We owe our thanks to the project directors in these communities, Mrs. Louise Emmett, Mr. Henry Bernard, and Mrs. Gertrude Embree, for their continuing support of the TEECS program, and our admiration to the three psychologists, Miss Marie Davis, Mr. Jeffrey Meaux, and Mrs. Georgia Moore for the outstanding work which they did in carrying out the program.

PROJECT SUPPORT

The Arizona Center for Early Childhood Education is administered through the University of Arizona's College of Education, F. Robert Paulsen, Dean. It is an interdisciplinary organization and is directed by Ronald W. Henderson.

The work reported herein was performed pursuant to a contract with the office of Education, U. S. Department of Health, Education, and Welfare through the Arizona Center for Early Childhood Education. Contractors undertaking such work under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the work. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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PSYCHOLOGICAL SERVICES:

The Pilot Year

This report describes the Tucson Early Education Psychological Services (TEEPS) program during its first year of operation. The first year was a pilot year. Services were implemented as part of the Follow Through program in three school systems: Fort Worth Independent School District, Vermillion Parish School Board, and Walker County Department of Education.

A SYSTEMS APPROACH

TEEPS is based on the position that the quality of psychological services in the public schools can be increased by establishing educational systems in which the functions of psychology in education are embodied in system components rather than in individual practitioners. The reasoning underlying this position has been set forth by Bergan (in press) as follows:

> "The central task associated with the rendering of psychological services in school settings is that of bringing relevant knowledge and techniques from the field of psychology to bear on the process of educating children. The basic approach which has been used to accomplish this task in the past has been for established professionals to specify in broad terms the kinds of knowledge and techniques which should be made available to the schools and then to train and certify various types of personnel to apply such techniques and knowledge in school settings. In this approach the basic vehicle for providing interaction between psychology and education in the schools is the individual practitioner who has been trained and certified. Psychology, as it is communicated in the school, is in a sense embodied in the practitioner. The knowledge and skills which practitioners possess in large measure define what psychology is for the school.
>
> A serious difficulty associated with the approach of embodying psychology within the individual practitioner is that psychology presently encompasses more relevant techniques than the individual practitioner can be expected to absorb. Furthermore, there is every reason to suspect that the fund of knowledge in psychology will increase at an enormous rate in the forseeable future.

"One approach to the problem of knowledge and skill requirements has been to advocate high levels of training for school psychologists. The inadequacy of this approach is attested to by the long-standing discrepancy between the level of training that many professionals have felt would provide the most effective services to schools and the level of training which has been attained by personnel operating in the field.

A second approach to the knowledge and skill problem has been to establish sub-specialties related to the field of psychology. The proponents of sub-specialties advocate the division of services related to psychology into categories and the establishment of separate sub-specialties for each category. This procedure has produced a proliferation of roles which has created countless problems in the psychological services field. Over the years, roles have been added piecemeal to existing services. New roles have often overlapped with old ones. The result has been an inordinate concern with problems associated with role definition and with stepping across role boundaries. In addition, it has failed to maximize the extent to which existing knowledge and techniques in psychology are used appropriately in the educational process, and it has failed to maximize the responsiveness of the practitioner to changes and developments in his field.

The TEEPS system packages knowledge and skills in system components rather than mainly in individual practitioners. This packaging provides to the schools, both higher levels of training and more diversity of training than typically have been available in psychological services in the past. In addition, the system provides communication channels among components designed to make the individual practitioner responsive to new developments in his field and to make significant problems encountered in the field influence the course of future training and research."

THE ARIZONA SYSTEM OF EDUCATIONAL SERVICES

The TEEPS program is one of three divisions of the Tucson Early Education Model. The other two divisions are an instructional program and a parent involvement program. The Tucson Early Education Model is implemented through an educational system involving two components: a research and evaluation component and a training and dissemination component.

Dissemination operations of the Arizona system are outlined in figure 1. Information related to the implementation of the Tucson Model and/or to the evaluation of the Model through research and development activities is transmitted from the Arizona Center through

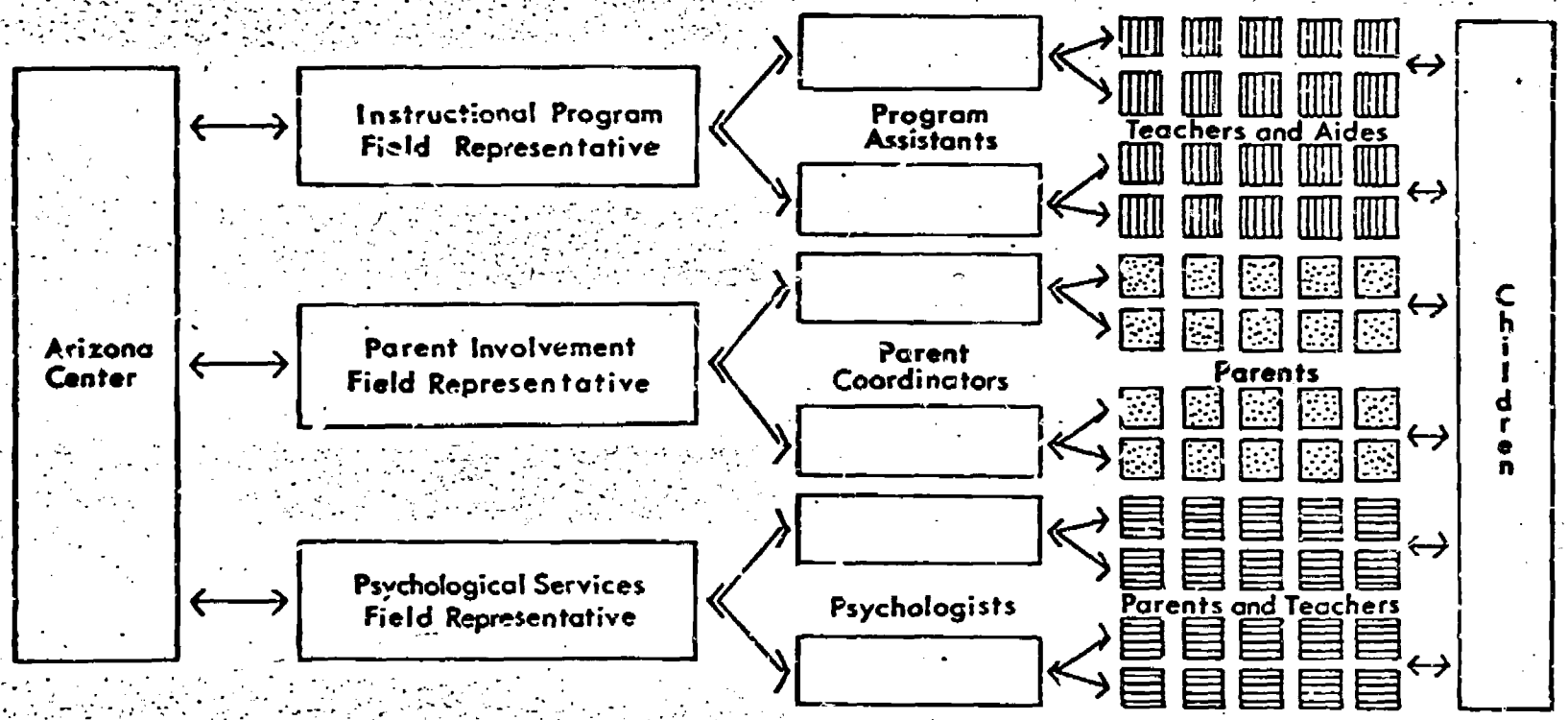

FIGURE 1. THE ARIZONA SYSTEM OF EDUCATIONAL SERVICES

a staff of field representatives. The principal receivers of Center information in field settings are program assistants for the instructional program, parent coordinators, and in the case of psychological services, school psychologists. These three types of recipients transmit information to parents and instructional personnel who deal directly with children. Communication in the system is two way. Information is transmitted from the field to the Center as well as from the Center to the field. Incoming information to the Center is used to provide guidance for future research and development activities.

DISSEMINATION

In TEEPS, field representatives transmit information to field psychologists through a six weeks summer training institute and through periodic visits to field settings during the school year.

The content of training includes: 1) methods for defining child behavior and the procedures used to change it in observable, i.e. measurable terms, 2) research and theory dealing with psychological processes, particularly thinking and learning processes, and 3) training in the consultation process.

The training process used during the summer institute involves the following steps: Program input is initiated through lecture and discussion. Lecture and discussion is followed by observation of video tapes illustrating applications of program principles. Role playing program applications follows observation. Finally, program techniques are applied in work with educational change agents. The application phase of training is initiated during the summer institute and followed up in the field.

PROGRAM OBJECTIVES

The TEEPS program focuses on learning and adjustment problems identified by teachers and other personnel associated with the instructional program of the Tucson Model. The word "problems" is used in a special sense. It does not refer to disabilities or inadequacies inherent in a child. Rather, it indicates the task of formulating and implementing strategies to enable a child to achieve

desired goal behaviors. This usage of the term "problems" greatly broadens the kinds of situations in which psychological services could be applied. Traditionally, psychologists in schools have dealt mainly with so called deviant behaviors. TEEPS is designed to overcome this limitation. For example, TEEPS can be used to facilitate the development of intellectual skills, leadership skills, social skills, and creativity in children.

Program functions within TEEPS are divided into three categories: research and development, consultation, and evaluation.

RESEARCH AND DEVELOPMENT

Pilot research efforts were undertaken last year to establish prodedures for defining, measuring, and teaching intellectual skills to children. Results of these efforts were included in the 1970 summer training for psychologists implementing TEEPS. A position paper on the concept of intellectual skills is included in Appendix A of this report.

Development activities in TEEPS during the past year have focused on the establishment of a set of evaluation procedures for assessing the overall effectiveness of the TEEPS program. The information provided by these procedures is discussed in detail in a later section of this report.

In addition to evaluation work, there has been a continuous effort to refine the consultation process, the vehicle through which psychological theory and practice is communicated to educational change agents. Current thinking on the consultation process is presented in the next major section of this report.

CONSULTATION

NEED AND DEFINITION

Knowledge and techniques in the field of psychology can have little impact on education if they are not made available to educational change agents. In the past, two procedures have been used to disseminate psychological theory and practice to educators. Psychology has been transmitted directly to educators in teacher training programs. Prospective teachers for many years have been required to take courses in psychology and educational psychology as part of their pre-service training. In addition, graduate students often take an advanced course in general educational psychology. Psychology is transmitted indirectly into the curriculum through the impact which it has on authors of curriculum materials. For example, curriculum materials in recent years have been heavily influenced by learning principles underlying programmed instruction. While both the direct effects of course work and the indirect effects through author influence have a desirable impact on education, they have not provided teachers with means for bringing psychological principles to bear on daily classroom problems. The content of psychology is far too broad to be communicated adequately in one or two survey courses. Furthermore, course work settings are necessarily remote from continuing needs encountered in the classroom. Curriculum materials are not flexible enough to meet the unexpected needs for psychological principles which arise during instruction. The TEEPS program has selected consultation as a vehicle for providing educational change agents with access to psychological theory and practice in their efforts to solve educational problems.

Consultation is defined as the process of making knowledge and techniques in psychology available to educational change agents for the purpose of solving educational problems. It should be made clear from the beginning that consultation is not being defined as teaching in the traditional sense. The psychologist using consultation does not attempt to impart knowledge of his discipline in a formal way. Rather, his goal is to make psychological theory and practice available to change agents who deal directly with children.

The consultant achieves his goal by eliciting statements from the change agent which reflect psychological concepts relevant to the solution of the educational problem under consideration. The change agent uses the elicited statements to solve the problem.. For example, one step involved in solving an educational problem is to state the problem in operational terms. The consultant would not attempt to accomplish this step by explaining the characteristics of operational definitions to the change agent. Rather, he would ask a series of questions likely to elicit an operational definition. For example, he might begin by asking:

"What does Jimmie do when he disrupts the class?"

A question such as this will tend to elicit a concrete description of behavior on the part of the teacher.

Another point which needs clarification is that consultation is not managment. The psychologist does not tell the change agent how to solve an educational problem. Consultation is based on the position that the change agent should be responsible for defining the educational problem, planning a solution for it, and in most instances implementing whatever intervention is undertaken.

There are advantages to an approach stressing change agent responsibility. An educational problem which is managed by the change agent directly responsible for the child will tend to be handled in a manner which is relevant to the on-going educational program of which the child is a part. Relevancy may be lacking when the psychologist services the child directly. Also, a change agent probably is more likely to implement a program which he has designed than one constructed by the psychologist.

THE PURPOSE OF CONSULTATION

The aim of consultation is to change child behavior. However, consultation very likely eventuates in alterations in change agent and psychologist behavior as well as child behavior. Implicit in any intervention program is the fact that the change agent implementing the program will do something different from what he has been doing. Furthermore, if the intervention is successful, the change agent will be

rewarded for altering his own behavior. Consultation may be thought of as a kind of teacher/parent training program in that it eventuates in rewarded alterations of the behaviors of these change agents.

Consultation may produce alterations in psychologist behavior as well as change agent behavior. The consultant receives a great deal of input from change agents which may affect his thinking concerning educational problems. Furthermore, he receives feedback as to the effectiveness of intervention programs designed in consultation which may alter his thinking about such programs.

BEHAVIORS DEFINED IN CONSULTATION

In order to assist change agents to modify child behavior, it is necessary to define the behavior to be modified and the behavior expected as a result of modification. For example, in order to assist a teacher to develop leadership skills in a child, it is necessary to define leadership skills in such a way as to permit assessment of the child's current level of leadership and that expected as a result of leadership training.

Target Behaviors. In the TEDPS program, actions selected for modification are called target behaviors. A target behavior is defined operationally by a target behavior class, target behavior exemplars, conditions under which target behavior occurs and target behavior strength.

The target behavior class specifies the category which defines the behaviors chosen for modification. For example, a teacher may wish to lable kicking, pinching, and biting behaviors as aggressive. The justification for grouping behaviors into a category is the assumption that the behaviors in question are all controlled by the same class of consequences. For example, hitting, pinching and biting behaviors may all be controlled by teacher atcention. If however, one of these behaviors were to be controlled by some other reinforcer such as peer approval, then it would not be appropriate to group all three behaviors into a single class.

Target behavior exemplars are examples of behaviors falling within a target behavior class. Target behavior exemplars are those behaviors which are to be recorded by the change agent.

The specification of conditions includes those events which occur just prior to and just after the target behavior exemplars as well as the situation in which the target behavior occurs. For example, a child might engage in aggressive behavior in a particular committee just after seeking the teacher's attention and not getting it. The consequent events just following this target behavior might include a reprimand from the teacher. Strength specifies quantitative characteristics of behavior (e.g. rate of occurrence). For instance, in the above example, strength might be measured as the number of times each day the target behavior occured in committee.

Goal Behaviors. Goal behaviors are those actions which the change agent wishes the child to perform. A goal behavior is defined by a goal behavior class, goal behavior exemplars, conditions under which goal behavior is to occur, and desired strength of behavior. The goal behavior class indicated the category defining the behaviors which the change agent wishes to produce in the child. Goal behavior exemplars are examples of behaviors falling within a goal behavior class. Goal behavior exemplars must be defined in a manner which will permit them to be measured by the recording procedure adopted in the initial phase of consultation. Conditions and strength of goal behaviors are specified in the same manner as that employed for target behaviors.

THE CONSULTATION PROCESS

The consultation process as shown in figure (2) is conceived in four stages: problem identification, problem analysis, intervention, and evaluation.

Problem Identification. Problem identification has two purposes: to obtain a definition of the problem in behavioral terms, and to establish recording procedures for measuring the incidence of the problem behavior. These purposes are accomplished in an interview between the psychologist and the change agent.

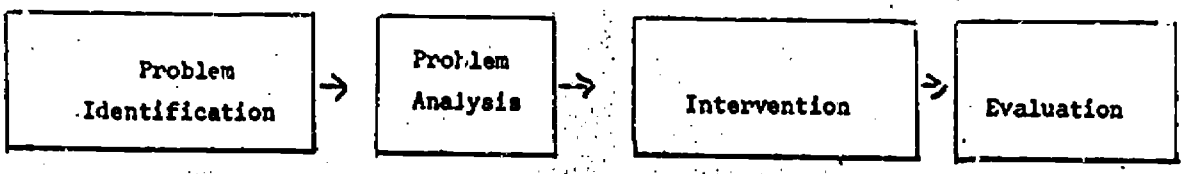

Figure 2. The Consultation Process

Problem Analysis. The purposes of problem analysis are: to identify those variables which might be controlling behavior chosenn for modification, to define goal behaviors and to establish a plan to enable the child to achieve goal behaviors. Problem analysis also requires an interview between the psychologist and the change agent.

Intervention. The purposes of intervention are to implement the modifidation plan and to measure child behavior during modification.

Evaluation. In the evaluation interview, data collected prior to and during intervention are assessed to determine whether or not intervention has been effective. If the goal established in problem analysis has been achieved, services may terminate. Sometimes however, the change agent may identify other behaviors for modification. In such cases, the interview shifts from evaluation to problem identification. If the goal has not been attained, further problem analysis is undertaken and a new intervention plan devised.

INTERVIEWING BEHAVIORS

The psychologist achieves his goals in consultation through the use of several different types of interviewing behaviors. For example, the organization of an interview is established through the use of structuring behaviors.

Structuring Behaviors. Structuring behaviors are statements or questions which specify in broad terms the topics to be discussed in a given phase of an interview. A structuring behavior includes specification of a class of behaviors or events and an implied or explicit request that the change agent talk about the class which has been specified. Structuring behaviors are always used to initiate an interview. For instance, in the problem identification interview, a structuring behavior is used to introduce the educational problem to be discussed and to elicit general information about the child. For example, the psychologist might begin the problem identification interview by saying:

"Tell me about Jimmie."

In the problem analysis interview a structuring behavior introduces discussion of baseline data. For example, the psychologist might begin the problem analysis interview by saying:

"Let's look at the data you collected last week."

Structuring behaviors are also used to change topics in an interview. For example, toward the end of the problem identification interview the psychologist typically would want to discuss behavior recording. He might say:

"We may need to make some plans to get some concrete data on Jimmie's behavior."

A third use of the structuring behavior is to re-establish focus. When irrelevant material is introduced by the change agent, the psychologist may return the conversation to its previous focus by ignoring the irrelevant material and countering with a structuring behavior. For example, if the psychologist wishes to obtain information about classroom behavior, and the teacher says:

"Of course, Jimmie's home life is just awful. His parents are divorced, and his mother is only there half the time. Don't you think this may have something to do with his behavior here at school?"

The psychologist may say:

"Tell me about what Jimmie does at school."

A final use of structuring behaviors is to obtain additional information on a topic. For example, the psychologist may say:

"Tell me more about Jimmie's behavior during reading activities."

<u>Operationalizing Behaviors</u>. In defining target behaviors, goal behaviors, and recording and intervention plans, the psychologist uses operationalizing behaviors. Operationalizing behaviors elicit operational definitions from the change agent. Operationalizing behaviors are statements calling for descriptions of behaviors,

or the conditions under which behaviors occur, or the strength of the behaviors. The list that follows specifies types and examples of operationalizing behaviors:

1. Target Exemplar Elicitors: A target exemplar elicitor requests the change agent to detail instances of a target class. For example, the psychologist might say:

   "What does Jimmie do when he disrupts the class?"

2. Goal Exemplar Elicitors: Goal exemplar elicitors direct the change agent to specify instances of the goal class. For example, the psychologist might say:

   "What kinds of things would Susan need to do to show that she was participating in committee activities?"

3. Strength Elicitors: Strength Elicitors direct the change agent to specify quantitative characteristics (e.g., amplitude, latency, frequency) of behavior. For example, in eliciting the strength of a behavior, the psychologist might ask:

   "Approximately how often does this occur?"

4. Conditions Elicitors: Conditions elicitors require the change agent to specify the conditions under which a behavior either should or does occur. There are three types of conditions elicitors:

   a. Antecedent condition elicitors: Antecedent condition elicitors are requests for information about events prior to a target or goal behavior. For example, the psychologist may ask:

      "What generally happens before Susan destroys the work of another child?"

   b. Consequent condition elicitors: Consequent condition elicitors request the change agent to spedify events following a target or goal behavior. For example, the psychologist may ask:

      "What generally happens after Charles hits another child?"

      In addition, he might say:

      "What then, do you do, and how do the other children react?"

c. Situational conditions elicitors: Situational conditions elicitors are requests for specification of the settings in which specific behaviors occur. For example, the psychologist might ask:

"When does Susan's crying typically occur?"

Summarizing Behaviors. A third type of interviewing behavior used in consultation is the summarizing behavior. Summarizing behaviors are statements which recount the content of a previous interview or phase of an interview. Summarizing behaviors may help the psychologist and the change agent to remember what has been said. For example, the psychologist might say:

"You've said that Mary hits others, kicks the chairs, and throws crayons on the floor."

This enumeration helps the psychologist and the teacher recall the information which the teacher has given.

Summarizing behaviors also assist in validating the extent to which the psychologist and the change agent agree on what has been communicated. When the psychologist enumerates points previously made in an interview, the change agent is afforded the opportunity of validating what the psychologist has said. For example, if the psychologist were to say:

"You say that Rose hits and kicks and grabs things away from other children, and won't share things with others."

The teacher might say:

"That's partly right. However, Rose does share some of the time."

Finally, summarizing behaviors may serve as a catalyst in initiating interpretations of behavior. The psychologist, by mentioning two events which he hypothesizes are related, may plant the seeds for consideration of the relationship by the change agent. For example, he might say:

"You say that when Susan makes mistakes reading her talking murals, you give her individual help, that Susan seems to enjoy this help, and that this is her main opportunity to interact with you on an individual basis."

The psychologist might follow this statement with an interpretation suggesting the possibility that teacher attention could be reinforcing innaccurate oral reading. However, the summary might make it possible for the teacher to make the reinforcement interpretation without assistance.

Informative Behaviors. There are circumstances in consultation which call for the rendering of factual information to the change agent. Informative behaviors are statements which convey such information. Informative behaviors can be used to make the change agent aware of recording procedures. For example, in the problem identification interview, the psychologist might say:

"You could count the number of times which Charles leaves various groups during the day as an indication of group participation, or you might wish to record the amount of time in minutes he remains in various groups."

Informative behaviors are used to report the results of an informal task analysis. For example, the psychologist might say:

"I found that he could identify top and bottom, but he had difficulty with left and right."

Finally, informative behaviors are used to indicate the results of a classroom observation. The psychologist might say:

"I noticed that when Susan tried to talk to other children, Charles interrupted her."

Interpretive Behaviors. During the problem analysis phase of consultation the psychologist may wish to infer functional relationships with respect to a behavior and the events surrounding it or he may wish to make inferences about skills underlying effective task accomplishment. To accomplish such purposes the psychologist would use interpretive behaviors. Interpretive behaviors are statements

of inference. They typically are used following a summarizing behavior enumerating the variables which are crucial to whatever inference is to be made. For example, after an appropriate summarizing behavior, the psychologist might say:

> "It may be that Jimmie is hitting the other children to get your attention."

Validating Behaviors. It is essential to insure agreement with the change agent at a number of points during consultation. Validating behaviors are statements designed to determine whether or not the change agent and psychologist agree on some specific point.

Validating behaviors are used to obtain agreement as to problem definition. It is crucial for the psychologist to insure that he and the change agent agree on the definition of the problem under consideration. At the end of the operationalizing phase of the problem identification interview, the psychologist should make a summarizing statement defining the problem in terms of target exemplars, conditions, and strength. He should then make a validating statement such as:

> "This, then, is the problem. Is that right?"

Validating behaviors are used to obtain agreement with respect to recording procedures. In the problem identification, problem analysis, and evaluation phases of the consultation process, it is necessary to obtain agreement as to the nature of the recording procedure. The recording procedure should remain constant through all phases of consultation. In each phase of consultation the conditions, strength, and exemplars to be recorded should be validated.

In the problem analysis interview, after a summarizing behavior specifying conditions, strength, and procedures, the psychologist should make a validating statement to insure mutual agreement as to the definition of the modification plan. He might say:

> "This, then, is the plan, correct?"

In the problem evaluation interview, the psychologist should summarize the data and the previously established goal of intervention. He should then make a validating statement:

"Can we say from these data that your goal has been achieved?"

Reinforcers. Verbal reinforcers are occasionally used in consultation. The central use of reinforcement in the consultation process is to maintain verbal behavior on the part of the change agent. For example, the psychologist might say: "Hm-mm" periodically to maintain talking on the part of the teacher.

APPLICATION

The interviewing behaviors described above are used in all phases of consultation. Outlines of problem identification and problem analysis interviews illustrating applications of interviewing behaviors are given in appendix B of this report. In addition, a listing of TEEPS video tapes illustrating interviewing technics is presented.

ANALYSIS PROCEDURES

Informal applications of functional analysis (Skinner, 1953) and task analysis (Gagne, 1970) are used extensively in establishing the causes of behavior during consultation. Functional analysis is the determination of antecedant and consequent events which control specific behaviors. Task analysis is the specification of behaviors which are prerequisite to a goal behavior.

Applications of analysis procedures are informal in the sense that their use in consultation typically should not involve the scientific rigor which would be demanded in a research setting. For example, suppose that a psychologist and a teacher hypothesize that a particular consequent event is controlling aggressive behavior in a child. They remove the event and the aggressive behavior diminishes. At this point, the teacher's goal has been reached. The scientist in a research setting, however, would probably not be satisfied that the consequent event under study really was controlling aggression. As a further check on the hypothesis, he might re-instate the consequent to increase aggressive behavior and then remove it a second time to determine whether or not it consistently diminished aggression.

EVALUATION

In attempting to evaluate the results of Psychological Services implementation for the first year of operation, the following areas will be discussed: scope of services, program effectiveness, program acceptance, program implementation, and program efficiency.

The collection of data necessary to analyze these aspects was accomplished by the use of rather extensive recording forms filled out by the psychologist during the progress of the case. A sample set of forms is included in appendix C. The forms were designed to provide extensive information about the case and also, to give self-instruction in program implementation. The overriding concern in data collection was to obtain as complete information as possible with as little intrusion as possible into the work of the psychologist and the educational change agents whom he served. No demands outside of the actual case were imposed upon the teachers in the communities.

SCOPE OF SERVICES

Although the heart of TEEPS implementation in the field is the consultation process, the psychologist must perform many other kinds of services in the schools to effectively implement the TEEPS program. For example, pre-service and in-service sessions with school staff and parents are essential to program implementation. Informal services are often rendered to teachers and others with respect to problems which do not warrant a formal referral. Also the psychologist may have duties not directly connected with TEEPS. For instance in one community, the psychologist, in addition to implementing TEEPS served as the coordinator for the entire Follow Through program in his system and also acted as the director of special education.

The data presented in Table 1 are approximate representations of percentage of time devoted to the implementation of the psychological services program and to other duties peculiar to the local situation.

Table 1

SCOPE OF SERVICES

Community	Consul-tation	SRI Testing Coordination	Informal Services to Teachers, Parents & Colleagues	Pre- & In-Service Workshops	Grant Writing Federal Projects	Director of special Education	Coordinator of Follow Through	Non-[illegible] Follow Through Consultation	Princ. of Sp. Educa. Build.
No. 1	30%		20%	5%		15%	15%		15%
No. 2	30%	5%	10%	5%					
No. 3	65%	5%	10%	5%	10%			5%	

These data are based on informal communications from the field and are highly subjective and incomplete. They do, however, convey the fact that the three participating psychologists engaged in a wide variety of activities in performing their services.

COMMUNITY ACCEPTANCE OF PSYCHOLOGICAL SERVICES

In an attempt to determine if the psychological services system was accepted within the local communities, the following types of data were collected: number of Follow Through participant schools in each community, number of schools in each community from which referrals were recieved, number of Follow Through teachers in each community, number of Follow Through teachers who referred cases, number of schools who referred more than one case, and number of teachers referring more than one case. The position taken here is that one way of determining if a program has been accepted is to note the number and kinds of services requested. Since the referral procedure initiates solely within the school, requests for service would seem to indicate that the teacher had some assurity of receiving worthwhile assistance. Also, if a teacher refers more than one case, there is some indication that she was satisfied with the service received on the first referral.

Table 2 presents the data relevant to this analysis. There were a total of 17 Follow Through schools in the community implementing the psychological services system. At least one referral was processed from each of these 17 schools. Thus it would appear that all schools were at least receptive to the possibility that psychological services might be able to offer valuable services.

There was a total of 66 Follow Through teachers in the three communities served. Of this total 37 (56%) of the teachers referred at least one case. This would seem to represent a rather good sample of the Follow Through teachers.

Table 2

ACCEPTANCE OF PSYCHOLOGICAL SERVICES

Community	Number of Follow Through Schools	Number of Schools Referring Cases	Number of Teachers in Follow Through Classes	Number of Teachers Referring Cases	Number of Schools Referring More than One Case	Number of Teachers Referring More than One Case	Total Number of Cases
No. 1	7	7	17	8	3	2	10
No. 2	6	6	35	16	4	8	34
No. 3 [a]	4	4	14	13	4	4	17
TOTALS	17	17	66	37	11	14	61

a In addition to Follow Through Classes the psychological services in Community No. 3 were extended, on a time available basis, to Project Head Start classes. A total of seven Head Start cases were served and are not reflected by these data.

Of the 17 participating Follow Through schools, 11 referred more than one case (range from 1 to 18). The absence of more repeat referrals from schools is, in part, explained by the situation in one of the communities in which the psychological services worker was asked for assistance only in cases of extreme need. Thus only 10 referrals were processed from 7 schools in that community.

Of the 37 teachers who referred cases, 14 referred more than one case. The range in number of referrals per referring teacher was from 1 to 8. A substantial number of teachers felt that it was worthwhile to seek assistance a second time.

A total of 68 cases were referred to psychological services in the three communities, 10 in community No. 1, 34 in community No. 2 (5 cases involved multiple problems, the 58 total cases refers to number of children worked with while a total of 73 problems were handled), and 24 in community No. 3. The lower number of cases referred in communities 1 and 3 may reflect in part the extent of other services provided by these people. The teachers in the communities were probably aware of the limited time the psychologist had for servicing cases and may, as a result, have not referred cases unless they were of a very severe nature. This hypothesis is supported by the nature of the cases referred in those two communities. As indicated in Table 5 on page 31, in community No. 1 of the 10 cases referred, 5 were for highly aggressive children, 4 for disruptive children and one for a non-talking child. Eleven of the cases referred in community No. 3 fit these same descriptions.

In community No. 2 where the psychologist was able to devote more of his time to psychological services, both the number and the nature of the cases referred were different. One noticeable difference was the seven cases referred for the determination of eligibility for placement in special education. This service was a part of the psychologist's function in community No. 2 but not in the other communities. Also note the relatively large number

of community No. 2 cases dealing with academic problems (eight such cases are reported in the chart and the 13 cases for which referral problem was not specified were all within the area of academic problems). Although academic problems may in some cases certainly be considered severe, they are not usually seen as problems requiring emergency service.

PROGRAM EFFECTIVENESS

Table 3 presents the summary data pertaining to the outcomes of the cases serviced.

Table 3

EFFECTS OF PSYCHOLOGICAL SERVICES

Status of Cases as of June 1, 1970

Community	Goal or Sub-Goal Attained	In Progress or Terminated with Improvement	No longer a Problem with Data	No longer a Problem without Data	Terminated without Success	Not Opened	Referred to Other Services	Number of Cases
No. 1	5	1	2	1	1			10
No. 2	22	7	1	1	2	2	4	39
No. 3	5	6	2	6	2	1	2	24
TOTALS	32	14	5	8	5	3	6	73

Cases recorded under the column "Goal or sub-goal attained" reflect those cases in which the child's behavior was modified to the extent that it satisfied a goal previously determined by the teacher. Those cases recorded under the column "in progress or

terminated with "improvement" are cases in which either the teacher was satisfied with the results of the modification procedure even though it did not correspond precisely with a stated behavioral goal or in which the teacher had not actually specified a desired terminal behavior but was satisfied with the level of behavior following modification.

Cases in the column "no longer a problem with data" are those in which a target behavior was specified, baseline data collected and a decision made based upon the data that the behavior had changed, without direct modification, to the point that it was no longer of concern to the teacher. There are several possible explanations for cases terminating in this manner. The teacher may have overestimated the extent of the problem and after collecting objective data reached the conclusion that the behavior was not really the problem she thought it was. Or the very process of specifying a particular behavior and collecting data on it may have changed the teacher's reactions to the child and his behavior and thus have acted to modify the behavior. Another possibliity is that the act of recording could function as a reinforcer for changing child behavior. A final possibility is that at the time the behavior was recorded existing controlling stimuli were operating upon the behavior and the record accurately reflects the problem being resolved.

With the data available it is not possible to objectively determine which if any of these possible explanations was in fact, the right one. We only know that after collecting baseline data the teacher was satisfied that the behavior was no longer of concern.

The same possible explanations would be applied to those cases recorded under the column "No longer a problem without data". However, in these cases the psychologist has only the verbal report by the teacher that the problem no longer exists. Since the teacher did not even attempt to record baseline data it might be inferred that the behavior still exists but that the teacher is using this

explanation as a means of telling the psychologist that she is no longer interested in modifying the behavior or that she feels it would not be worth the effort. These cases may in some instances, indicate a rejection of psychological services by the teacher.

The cases recorded under the column "terminated without success" are those cases in which either a modification plan was employed and did not have the desired effect or in which at some point during the case the teacher chose to not continue, the problem presumably remaining. Of the five cases reported in this column, two cases were ones in which the teacher wanted the children placed in special education and when this was not done chose not to take baseline data or to attempt to work with the problems in the classroom. In one case the psychologist felt that due to the age and circumstances of the child it was not advisable to attempt modification. In another case the psychologist felt that the goal and procedure as specified by the teacher were inappropriate within the theoretical framework of the Tucson Early Education Model. In this case the psychologist chose to not continue. Finally, on one case, a modification plan was employed and did not have the desired effect. The case was terminated at the request of the school principal who felt that the child would benefit from placement with another teacher the next year.

The cases included under the column "Referred to other services" represent four cases in which the children were placed in special education classes and two cases in which, in the opinion of the psychologist, the child was in need of medical treatment and so referred.

In summary, the data presented here may be grouped in the following manner for interpretation. Of the 73 cases 70 were opened. Of the 70 cases serviced 65 terminated with teacher satisfaction while 5 for reasons explained above, were terminated without teacher satisfaction.

EFFICIENCY OF THE PSYCHOLOGICAL SERVICES SYSTEM

A first consideration in assessing the efficiency of a psychological services system would be an indication of the total number of cases served during the year. As reported and discussed earlier a total of sixty-eight cases were serviced in the three participating communities. There were significant drawbacks associated with the use of total number of cases as a measure of effiency. As pointed out in the section on scope of services, the field psychologists engaged in a wide range of professional activities outside of consultation ranging from informal contacts with teachers to directing all special education programs within the school system.

A second measure of program efficiency which is less related to the factor of professional activities beyond consultation is the ratio of number of cases served to number of cases referred.

The three psychologists serviced over 95% of all cases referred. If the three cases referred and not serviced had been received before the last two weeks of school, presumably they also would have received attention. Thus, for all practical purposes, the psychologists were able to provide service for all teachers who requested it.

The total number of children referred for psychological service, 68, represents approximately 6% of the children in Follow Through classrooms within the three communities. The figure of 6% referred corresponds roughly to that expected in a regular public school system. This would seem to indicate that for the most part only problems requiring remediation of a rather extensive nature were referred. Psychologists traditionally have been called in only to provide service to children exhibiting grossly deviant behavior. A major objective of the TEEM psychological services system during the coming year will be to broaden considerably the scope of services offered. The principles and procedures of the psychological services system are applicable to educational objectives for children whose behavior is in no way deviant. The data from the past year as to the number and kinds of problems referred indicate that more effort is needed in expanding the perceived role of the psychologist. One technique for accomplishing this objective that

was stressed in summer training is extensive pre and inservice work with teachers explaining and demonstrating the procedures with a wide variety of problems.

Another issue relating to efficiency would be the number of conferences required by the psychologist to service a case. It can generally be assumed that a conference required no less than twenty minutes and rarely more than one hour.

Table 4

PROGRAM EFFICIENCY

Number of Contacts by Psychologist and People Contacted [a]

Community	Number of Cases Reported	Teacher	Child	Principal	Parent	Counselor	Program Assistant	Field Representative	Other	Total	Number of Per Case
No. 1	10	39	6	5	4		2	2	1	49	2.1
No. 2	21*	77	100			21	1	2	1	189	
No. 3	24	67	9	1	2		6	1	4	80	
TOTALS	55	183	115	6	6	21	9	5	6	308	

Median number of contacts (conferences) per case = 3.5
Model number of contacts (conferences) per case = 3
Mean number of contacts (conferences) per case = 5.6

a * Data were not available for 13 cases from community No. 2.

In Table 4 it can be noted that it required a total of 308 psychologist conferences to service fifty-five cases (as indicated in the Table, this information was not reported for thirteen cases). The range in number of conferences per case was from 1 to 22. It should be pointed out that the case reporting 22 conferences was a case involving three separate goal behaviors, thus in effect three consecutive problems involving the same child. The most meaningful indication of central tendancy for number of conferences per case would probably be the median figure of 3.5 conferences per case. Assuming the upper limit of one hour per conference, this would result in a median of 3½ hours of psychologist time spent servicing one case. Additional time not reflected in these data was obviously devoted to travel to and from conferences, time spent scheduling conferences, time spent recording and reporting data, time spent preparing case reports for sending to the Arizona Center and time spent in planning.

A considerable discrepancy can be noted between the number of contacts required in community No. 2 and the other two communities. This discrepancy is a result of the number (26) of cases in community No. 2 which involved skill training. Although not necessitated by the procedures, the psychologist in community No. 2 conducted much of the skill training instruction, thus greatly adding to the amount of time required to service the case. In four of the skill training cases from community No. 2 sequential goal behaviors were specified. The data for these cases thus represent, in effect, more than one training procedure.

An issue related to efficiency is that of what people were directly involved in the analysis and modification of the cases served. Table 4 presents the relevant data. As can be noted from the table the person most often involved was, naturally enough, the teacher of the child referred. Although the philosophy and referral procedures of the psychological services system allow for a referral to be made by any concerned person, all the referrals received by the three communities were initiated by the teacher.

The next most involved person was the child himself. For a case to report direct involvement of the child one of three situations existed: One, that the child was directly observed in the classroom or other relevant situation by the psychologist. Two, the child participated in one or more of the conferences conducted by the psychologist. In most cases in which this occured the child was included in the Problem Analysis Interview at which time he was encouraged to participate in the formulation of the modification plan, or the plan was explained to him and his cooperation enlisted. In nearly all cases the child was informed of the plan; it was counted as a contact only if the psychologist was the one who provided the explanation. Third, the psychologist worked directly with the child either in a testing situation or in the case of thirteen cases reported from community No. 2 the psychologist engaged in skill training instruction with the child.

The 21 contacts reported with the counselor in community No. 2 represent a unique set of role relationships in that community. The counselor in many cases assisted in skill training with the child. Thus, the conferences with counselor were sessions devoted primarily to devising training procedures and evaluating data. No comparable person was available in the other two communities.

The six contacts reported under the "other" column include three contacts with a psychological aide in community No. 3, one with a nurse, one with a program director and one with a parent coordinator.

PROGRAM IMPLEMENTATION: DESCRIPTIVE DATA

Under the general heading "program implementation" two types of data are discussed. One approach presents descriptive data as to the types of problems referred, the types and purposes of modification plans implemented, the types of reinforcers used, the amount of baseline and modification data collected and the measure of response strength used. A separate data analysis was conducted in an attempt to determine if the psychological services workers were able to implement the psychological services system as intended.

Cases referred. Table 5 presents a classification of the types of problems referred to psychological services by the teachers. In cases in which more than one type of problem was included in the referral only that problem that was eventually selected for modification is reported.

Table 5

TYPE OF PROBLEMS REFERRED[a]

Community	Aggressive	Disruptive	Attending	Participation	Verbal, Lack of	Verbal Inappropriate	Academic Completion	Eligibility for Special Education	Reading	Letter Recognition	Total
No. 1	5	4			1						10
No. 2[b]		4		1	2	1		7	6	2	23
No. 3	5	2	2	4	4		7				24
TOTALS	10	10	2	5	7	1	7	7	6	2	57

a For cases with multiple referral problems the problem here is the problem that was defined as the operationalized problem.

b Data not available for 13 cases from community No. 2.

The following general descriptions were used in assigning a classification to a referral problem.

Aggressive: in which the presenting problem involved some form of physical assault upon another person. Examples were hitting, kicking, biting, and pushing.

Disruptive: in which the problem involved a behavior by the child which served to disrupt the ongoing classroom activity. Examples were: yelling, moaning, interrupting, throwing things, removing or inappropriately rearranging classroom materials, and running in the classroom.

Attending: in which the child referred did not pay attention or appeared to not attend to activities being conducted.

Participation: in which the problem involved a lack of verbal or motoric response indicating participation in the ongoing activities.

Verbal,lack of: in which the child emitted little or no verbal behavior within the classroom.

Verbal, inappropriate: in which the quality of a child's speech was not adequate for understanding.

Academic completion: in which the problem was stated as one in which the child did not complete an acceptable amount of assigned academic tasks. If the problem was primarily one of accuracy it was classified under another heading.

Eligibility for Special Education: in which the request for services directly called for determining eligibility for special education placement. In community No. 2 this was a prescribed function of the psychologist.

Reading: in which the referral problem stated that the child was not making satisfactory progress in learning to read.

Letter recognition: in which the problem was stated as an inability by the child to identify letters of the alphabet.

The assignment of a referral problem to a class was not part of the normal procedure conducted by the field psychologist. Such classification was made at the Arizona Center simply for the purpose of determining the general types of cases referred.

The classes with the most number of cases reported were aggressive and disruptive with ten cases each. Although somewhat lower than might be encountered in a traditional classroom the greater number of cases in these classes was anticipated.

The comparatively large number of cases classified as verbal, lack of was also anticipated. The young age and large proportion of bilingual children served by Follow Through would suggest low verbal skills as a prime area of potential concern.

The type of problems referred in the various communities would seem to reflect different role perceptions of the three psychologists and certain local requirements. As mentioned earlier, the psychologist in community No. 1 was apparently perceived as a source of emergency service for children exhibiting rather severe behavioral problems while the psychologist in community No. 2 was seen more as a person with skills helpful in solving various types of learning problems. The psychologist in community No. 3 fell somewhere between the other two in that the cases referred to the psychologist represented a great diversity of problem types.

Modification Plans. There were a total of fifty cases in which a plan was devised and implemented in an attempt to effect a change in behavior. Table 6 presents a breakdown of the fifty cases by specific procedure, purpose of the procedure and whether the environmental manipulation involved primarily antecedent or consequent events.

In a total of 28 cases, the primary manipulation was with antecedent sitmuli. Of these 28, eight attempted to increase an existing behavior while 20 attempted to introduce a behavior not then being exhibited by the child. The column "set the occasion for the response" describes cases in which the procedure involved the introduction of a change in the conditions calling for a particular response. For example, in one case,role playing in a small group setting was used in an attempt to increase the amount of verbalization from a particular child. In another case a child was given specific information to be related to the group in order to provide some experience with speaking in a group. Under the same sub-heading

"re-structure the task" cases are reported in which the manipulation involved changing the task to facilitate accomplishment. For example, in one case involving lack of accomplishment in spelling the child's assignment was reduced from 20 words per day to three words per day in a successful attempt to allow the child to succeed in spelling.

The column "shaping", under the sub-heading "to introduce a new response" reports one case in which a child was given one aspect of the task at a time until the entire task could be accomplished.

The nineteen cases reported in the "skill training" column under the sub-heading "to introduce a new response" represent those cases in which as a result of a task analysis, the child was given training in a skill which was presumed to underly the accomplishment of a particular goal behavior. For example, several children were trained in component parts letter analysis in an attempt to facilitate their letter recognition abilities.

In a total of 22 cases the primary manipulation was upon the consequent stimuli. In an attempt to increase an existing response thirteen cases reported the "addition of a positive reinforcer" contingent upon the particular response. The specific types of positive reinforcers employed are discussed later under "Class of Reinforcers Used". In those cases where the attempt was to decrease an existing response, six cases reported using withdrawal of a positive reinforcer. No cases reported the use of punishment by the application of aversive stimuli. Three cases reported the application of extinction procedures.

Reinforcers. A total of 26 cases reported the use of consequent reinforcer manipulation as a means of effecting behavioral modification. The reinforcers used have been grouped in Table 7 according to class for purposes of discussion,

Table 6

TYPE OF MODIFICATION PLAN IMPLEMENTED

	Manipulation of Antecedent Events				Manipulation of Consequent Events					
	To increase an existing response		To introduce a new response		To increase an existing response		To decrease an existing response			
Community	Set the Occasion for the Response	Re-order the Task	Shaping	Skill Training	Add a Positive Reinforcer	Remove a Negative Reinforcer	Remove a Positive Reinforcer	Add an Aversive Stimulus	Ex-tinc-tion	Total
No. 1					3		4			7
No. 2				19	2		2		1	26
No. 3	3	3	1		8				2	17
TOTALS	5	3	1	19	13		6		3	50

Table 7

CLASS OF REINFORCER USED[a]

Community	Social	Activity	Physical (Tangible, extrinsic)	Location, Position
No. 1	1	5	1	3
No. 2	1	2	1	
No. 3	7	3	2	
TOTALS	9	10	4	3

a In some cases more than one reinforcer was used per case.

The nine cases reporting "social" reinforcers contain those examples in which verbal praise or other expressions of personal approval by the teacher were used to reinforce appropriate behaviors.

The five examples under "activity" include such things as classroom privileges--making a door chart, passing the waste basket, and participation in various optional activities, e.g. art work, recess, etc.

Reinforcers classified as "physical" included such things as: being given a book to take home and being allowed to keep an art poster.

"Location" reinforcers were those in which the child was allowed to be in a desired position, e.g. first in line, or next to the fish bowl.

There are two particularly striking aspects to the data on class of reinforcers. The first is the absence of reinforcers typically advocated by psychologists in modifying behavior. There were no instances in which points or tokens were used. Nor were there any instances involving the use of candy, for example M&M's. Second, behaviors which constituted severe problems for teachers, such as highly aggressive behaviors, were effectively controlled with the mildest of procedures.

PROGRAM IMPLEMENTATION: EVALUATION

Referral Problems. Table 8 presents descriptive information as to the form in which teachers reported referral problems. The conclusion, not unexpected, was that teachers normally do not operationally define the problems they refer. Only 16 of the 57 cases reported here specified the problem in behavioral terms capable of direct measurement and/or observation. Nine cases specified the conditions under which the problem behavior occurred or was supposed to occur. A total of three cases provided an estimate of response strength. Although not possible at this time, future analyses will be conducted in an attempt to determine if teachers after having worked through one case with the psychologist tend to refer cases in operational terms. Preliminary data from the repeat cases would seem to support this position.

Although operational definitions were not expected from the teachers for referral problems, it was considered essential that operational specifications be agreed upon during the problem identification interview. Only with an adequate operational definition of the problem can baseline data be collected and a modification plan devised utilizing results from a functional analysis or a task analysis.

Table 8

REFERRAL PROBLEMS AS PRESENTED BY TEACHERS

Community	Number of Referral Problems	Number of Problems stated in Behavioral Terms	Number of Problems Stated With Conditions	Number of Problems With an Estimate of Strength
No. 1	10	4	1	0
No. 2	23[a]	9	6	2
No. 3	24	3	2	1
TOTALS	57	16	9	3

a Referral problem not reported for 16 cases.

Table 9 reports an analysis of the specification of the operationalized problem as reported at the conclusion of the problem identification interview. Of the 51 cases reaching this stage of the consultation process 38 cases reported problem descriptions that included specification in behavioral terms. Examples of problems not specified in behavioral terms were: inflicts harm on others, does not pay attention, and does not participate in committee work. Thus, although these descriptions did not satisfy the criteria for operational specification they do represent an improvement from typical referral problems of "emotionally disturbed", "has not adequately adjusted to the requirements of social interaction", or "immature".

Table 9

OPERATIONALIZED PROBLEM RESULTING FROM PROBLEM IDENTIFICATION INTERVIEW

Community	Number of Operationalized Problems	Number of Problems Stated in Behavioral Terms	Number of Problems Specifying Conditions for Data Collection	Number of Problems Specifying Strength For Data Collection
No. 1	10	8	9	10
No. 2	23	20	16	19
No. 3	18	10	12	12
TOTALS	51	38	37	41

As part of the operationalizing procedure an agreement is made between the psychologist and teacher as to the conditions under which the behavior of concern is occurring and as to the measure of response strength which would most accurately reflect the problem. Columns 4 and 6 of Table 9 report the number of cases in which the information was adequately recorded. The omission of specified conditions in some cases occurred when the recording procedure was

stated in terms like "record the number of times when Johnny hits other children." Presumably this behavior would have been of concern under any and all conditions. However, for the sake of clarity it should have been so stated.

Goal Behaviors. In order to assess the effectiveness of a modification procedure it is necessary to define operationally the goal behavior, i.e. precisely what behavior is desired, under what conditions and with what strength it should occur. Without a clear specification of these points it is impossible to determine objectively if a problem has been successfully remediated. This problem is reflected in the report of the results in Table 3 "Effect of Psychological Services." Cases listed under the column "in progress or terminated with improvement" were largely cases in which precise goal behavior was not specified. Therefore in those cases an evaluative judgement was required by the teacher as to whether or not the procedure had been effective. If a goal behavior had been specified data could have been objectively analyzed as to whether or not the goal had been achieved.

Table 10 presents data describing the specification of goal behavior.

Table 10

OPERATIONALIZED GOAL BEHAVIOR

Community	Number of cases with Goal Behavior	Number of Cases Stating Behavioral Terms	Number of Cases Specifying Conditions	Number of Cases Specifying Strength
No. 1	7	4	6	5
No. 2	27	24	6	3
No. 3	13	5	3	3
TOTALS	47	33	15	11

Of the 47 cases reporting goal behavior 23 cases included a precise behavioral description. Only 15 cases reported a complete description of the conditions under which the behavior was to occur or not occur. Eleven cases specified an acceptable level of response strength. The data presented here for the specification of conditions and response strength are somewhat misleading. In the summer training given the psychologists, the precise specification of conditions and response strength was not stressed. As a result, many of the cases report those data only for cases in which conditions and strength could not be logically assumed. For example, in a case dealing with the reduction of physical assaults the implied goal behavior of no assaults under any conditions was not precisely indicated. In other cases in which the ultimate goal behavior was not readily quantifiable it often was not listed. For example a case dealing with instituting verbal behavior in a nonverbal child, the ultimate goal of "an acceptable level of verbalizations" was not readily identifiable. The immediate goal of obtaining some verbal behavior was probably implied but not stated. Training given to psychological services personnel during the summer of 1970 has stressed the complete specification of goal and/or subgoal behavior. Forthcoming data should be more readily interpretable as to whether or not an agreed upon level for case success has been established.

Modification Procedures. The data presented in Table 11 reflect the specificity with which a modification plan was reported. Column three reports the number of cases in which an operational definition of the reinforcer or of the antecedent events manipulated was given. In those three cases in which the data indicate a lack of this specification the problem was one of not listing specific exemplars of the reinforcer to be used. For example, the reinforcer was listed as "the child will be rewarded" or "the child will be given affection" without specifying exactly what the child was to receive.

Column four reports those cases in which the conditions necessary for the delivery of the reinforcer were clearly specified. Examples of lack of specification in this area were: if he improves he will be reinforced. Improvement was not clearly defined; if he does not hit or kick he will be allowed to be first in line. The length of time the child had to refrain from hitting or kicking was not reported; if he does not wrestle on the rug he will be allowed to do art work. The time of reinforcement was not indicated. It would appear from the results of the cases not clearly specifying contingent conditions that such issues were handled adequately with the teacher, but they simply were not adequately recorded on the report forms.

Table 11

OPERATIONAL SPECIFICATION OF MODIFICATION PROCEDURE

Community	Number of cases Reporting Modification plan	Number Operationally Specifying Reinforcer or Antecedent Stimuli Manipulated	Number Operationally specifying Contingency
No. 1	7	7	5
No. 2	27	27*	20
No. 3	11	8	3
TOTALS	45	42	28

*For cases involving skill training this indicates specification of antecedent events, reporting of consequent events was less complete.

Data Collection. One of the areas of greatest stress in the psychological services system is the collection of behavior records. Baseline data are essential to understanding the nature of the presenting problem to allow an operational definition to be formulated

and to enable the completion of a functional analysis or task analysis to determine factors controlling the behavior. Data are also required as a benchmark against which to evaluate any attempted modification plan.

Table 12 presents the amount and characteristics of the baseline data collected during the past year.

Table 12

BASELINE DATA COLLECTED

Community	Number of cases Reporting Baseline Data	Number of Cases Not Reporting Baseline Whe Necessary	Total Number of Days of Baseline	Median Number of Days Baseline Per Case Reporting Baseline	Range: Days of Baseline Per Case
No. 1	9	1	54	6	3-7*
No. 2	7	1	35	5	5-5
No. 3	10	5	57	6	4-6*
TOTALS	26	7	146	5	3-7

*Three cases reported multiple baseline, the data here represent only one of the baselines.

Column two reports the number of cases, by community and total, which reported baseline data. Column 3 indicates cases in which the reported outcome of the case would necessitate baseline data for substantiation but data were not reported. The most common examples here were the cases which reported, at the time of the problem analysis interview, that the behavior was no longer of concern but for which the teacher had not collected data to document this conclusion.

Columns 4,5, and 6, report the characteristics of the baseline data that were reported. Column 4 reports the number of days represented in the baseline data by community. Column 5 reports the median number of days of baseline data per case and column 6 reports the range, in days, of the baseline collected. As can be noted from the table, the psychologists were quite similar in the amount of baseline data per case they asked the teachers to collect. The range by community and overall is quite small (largest range was from 3 to 7 days).

In the case of community No. 2 only eight cases are listed as reporting or requiring baseline data. An additional 19 cases were conducted which involved skill training. In the procedure of a skill training case baseline data are collected, but in this case the baseline data reflect a recording of the basic teaching procedure then in effect. Such data are not reported here since they represent a different type of record and would tend to be misleading if they were averaged in with baseline reported here.

Table 13 presents information describing the collection of modification data.

Table 13

MODIFICATION DATA COLLECTED

Community	Number of Cases Reporting Modification Data	Number of Cases Not Reporting Modification Data	Total Number of Days of Modification Data Reported	Median Number of Days of Modification Data Per Case	Range: Days of Modification Data Per Case	Number of Cases Reporting Post-Modification Data
No. 1	7	0	49	5.5	5-10	6
No. 2	26	0	199	7.5	5-14	1
No. 3	6	7	64	6	5-16	0
TOTALS	19	7	143	5	5-16	7

a The number of cases reported in this column represent only those cases where modification data were necessary to document the reported result of the case and were not reported. For example, cases marked goal attained, terminated improvement, or terminated without goal behavior should have supporting modification data.

Column two reports the number of cases, by community and total, which reported modifidation data. Column three notes the number of cases in which modification data were necessary to document the reported results of the case but were not reported. Cases that were reported closed with the terminal status being; no longer a problem without requiring modification, not opened, or referred to other services would not have recorded nor needed modification data.

Column four reports, by community and total, the number of days included in modification data. Column five indicates the median number of days of modification data per case. The only apparent major discrepancy among the communities is in the case of community No. 2 in which the median number of days in modification data is somewhat higher. This discrepancy reflects the fact that considerably more time, in terms of days, was required to effect a satisfactory change in a learning problem than in a behavior problem. If the community No. 2 data are separated into cases dealing with learning problems and cases dealing with behavioral problems, the varying amount of time required becomes apparent. Table 14 presents the data thus categorized.

Table 14

COMMUNITY No. 2 DATA CLASSIFIED BY LEARNING OR BEHAVIOR PROBLEM

	Number of Cases Reporting Data	Total Number of Days of Modification Data Reported	Median Number of Days of Modification Data Per Case	Range: Days of Modification Data Per Case
Learning	20	169	8.5	5-14
Behavior	6	30	5	5-5
TOTALS	26	199	7.5	5-14

Thus it appears that on the average a case involving a learning problem required 3.5 days longer to complete than a behavior problem case.

AN ILLUSTRATIVE CASE

One way to gain some appreciation of the impact of TEEPS is to consider an individual case serviced through the program. The following example illustrates the effects of services on a child whose behavior constituted a physical threat to her classmates:

Betty[1], a six year old girl, was referred to psychological services by the teacher. The referral problem as stated by the teacher indicated that Betty exhibited a number of adjustment problems. Betty was described as a child who bit, pulled hair, choked, disturbed the class, and was dishonest and jealous. During the operationalization of the problem, additional difficulties were explored. Betty was unable to remain at a center for any length of time, she continually moved from activity to activity.

The teacher selected hitting and kicking as the problem she would most like to modify. The teacher then collected six days of baseline data. She recorded the number of times (frequency) Betty hit or kicked another child. The data were recorded seperately for mornings and afternoons in order to aid in analysis.

Inspection of the baseline data indicated that Betty emitted the target behavior(hitting or kicking) approximately four times per morning or afternoon session. Examination and discussion of the teacher recording of antecedent and consequent events surrounding Betty's inappropriate behavior resulted in a tentative hypothesis that Betty was being positively reinforced for such behavior by attention from peers, the teacher and the aide. The teacher also reported that Betty's inappropriate behavior seemed to occur more often at the beginning of a session and that the presence of the teacher at the activity Betty first engaged in appeared to depress her aggressive behaviors.

In a discussion of Betty's preferred activities within the classroom, the teacher reported that Betty greatly liked to read stories to the group and that she responded very favorably to personal signs of affection.

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1. The name of the child has been changed for this description.

Goal behavior for Betty was specified as not hitting or kicking the other children.

In attempting to devise a modification plan for changing Betty's inappropriate behavior, extinction procedures were ruled out since it would have been extremely difficult for the other children and the teacher to not attend to acts of physical aggression. Therefore, a procedure employing contingency management plus a change in the antecedent environment was selected.

The teacher was to be located at the first activity center with Betty in the morning and afternoon. While there, the teacher was to verbally praise and show affection periodically so long as Betty did not engage in hitting and kicking. In addition, the teacher told Betty that at certain specified times during the day she would be allowed to read a story to the group so long as she had not hit or kicked since the last story time.

Technically, this procedure is called a variable DRO schedule in which a positive reinforcer is delivered (being allowed to read to the group) for any response occuring at the end of a variable time period (in this case whenever a story session occurred) provided the target behavior (hitting or kicking) has not occured since the last reinforcement period.

The modification procedure was carefully explained to Betty. Betty was shown the Baseline data and encouraged to keep her own record of the number of hits and kicks during the modification phase of the program.

This plan was implemented for a week (5 days). At that time the psychologist returned for an evaluation interview. The modification data showed that from a median of four assults per session during baseline, Betty's hitting and kicking had decreased steadily during modification and that no assaults had occurred the last day. It was decided at that time to remove the modification plan as it then existed but still provide Betty with attention and affection for nonaggressive behavior and to occassionally allow her to read before the group.

An additional five days of data were collected under this post modification phase. On only one occassion during those five days did an instance of hitting occur.

The teacher expressed satisfaction with the results of the modification and reported additionally that "Betty is seldom disruptive in the classroom and that she is not only accepting affection more but has returned the affection!" The record of Betty's behavior is presented in Figure 3.

The case was at this point officially terminated.

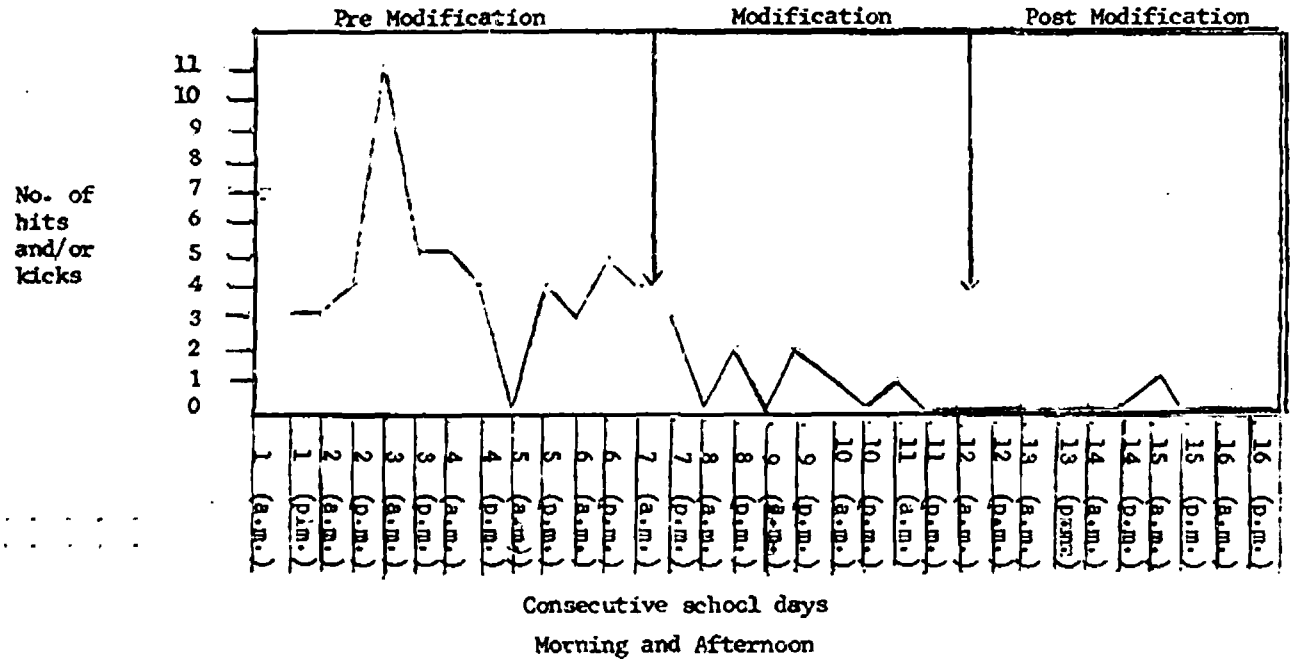

Figure 3. Graphical Representation of Change in Aggressive Behavior

PLANS FOR THE COMING YEAR

EXPANSION

During the coming year, TEEPS will be expanded to service ten school systems: Chickasha Public Schools, Choctaw Community Action Agency, Fort Worth Independent School District, Hoonah Public Schools, Vermillion Parish School Board, Vincennes Community School Corporation, Walker County Department of Education, Wichita Public Schools. Full field representative service will be rendered in six of these systems. Limited service will be given in the other four systems. In addition to implementation in the above schools, TEEPS will be implemented in the Ochoa demonstration school in Tucson District number one.

Next year's expansion will provide an increased data base from which to draw conclusions about TEEPS and will make it possible to measure the effectiveness of TEEPS in a variety of settings. Also, it is hoped that TEEPS implementation will ehhance the quality of psychological services in the eleven participating systems.

A DATA PROCESSING SYSTEM

A coding system has been devised whereby incoming case report forms can be coded and punched onto IBM cards. In addition to facilitating the compilation of data similar to that presented in this report, the data processing format will allow other types of analyses, such as multiple correlations among problem type, modification procedure, outcome, time spent, number of people involved etc. Also, questions relative to trends in the data can be investigated. For example, do teachers tend to refer problems of a more operational nature after they have received service on a prior case? Is there a difference in the type of problems referred early in the year and near the end of the year?

IMPLEMENTATION OF THE CONSULTATION PROCESS

One concern which has not been directly measureable with regard to system implementation has been to ascertain the effects of consultation on teacher verbal behavior. No specific research has been thus far directed at studying the effects of the consultation process in operation. In an attempt to investigate consultation effects, the

field psychologists agreed to send a series of tape recorded teacher interviews to the Center. These tape records will be coded by a system currently being developed at the Center for classifying by type of statement each phrase uttered by the psychologist and the teacher. Analysis of these data will allow the determination of such questions as: What kind of a reply do you get to a structuring lead in question? What is the effect of a structuring redirect statement? Does a structuring elaboration question really result in a listing of exemplars?

In addition, questions concerning the results of the consultation process will be studied. For example, is the problem operationally defined? Is a modification adequately specified? Is a functional analysis conducted? etc.

TEACHER ATTITUDE AND BEHAVIOR

A third objective for future plans involves an attempt to determine what effects the psychological services system has upon the behavior and attitudes of the teachers who receive service. It is assumed that after a teacher has gone through the process of operationalizing a problem, collecting data, doing a functional or task analysis, designing and implementing a modification plan and evaluating the effects of such a plan in consultation with the psychologist her attitudes and techniques of observing and interacting with children may well change. If she has found the system to be helpful in solving one educationally relevant problem, will she not employ some of the same techniques when dealing with other problems as they arise? The answer to these and other questions relating to the impact of the psychological services system can not be directly answered from available data. Data will become available during the coming year which can be used to determine if teachers on repeat referrals tend to state referral problems more operationally. Inspection of repeat cases from a teacher may also allow some conclusions as to whether they are able to collect more complete and relevant data. However, the main questions regarding the impact of the psychological services system on teacher attitude and behavior can not be answered from such data.

Several approaches are avaliable formore adequately investigating these concerns, however, they would require much more intrusion into the activities of the psychologist and teacher than is felt to be desired at this time.

Some possible approaches that have been considered include:

1) Administering pre and post tests to the teacher before and after receiving services on a case. The tests would measure knowledge of the principles and procedures involved. A disadvantage of this approach would be that it would only measure the teacher understanding of the system and not whether or not it had changed her attitude or approach. Also requiring the teacher to submit to a pre-post test would be an imposition, probably not appreciated by the teacher. It might even discourage teachers from referring cases.

2) Collecting solicited testimonials as to "How the psychological services system has benefited me." Although no doubt useful for public relations, such data would be of relatively little value in actually determining impact unless a highly structured format were used. If so, the same objections would apply as listed for pre and post testing.

3) Collecting video tape recording of teachers handling various types of classroom situations. This procedure would, if carefully planned, seem to offer the most direct measure of change in teacher behavior resulting from psychological services. The main problem here would be in establishing reliability. The teacher might well behave differently in front of the camera than she would normally. Thus the record would primairly indicate if the teacher could apply the techniques not necessarily if she normally did apply them. The other problem would be one of logistics. Considerable time, effort and inconvenience would attend such a procedure.

FURTHER REFINEMENT OF ROLE RELATIONSHIPS

An area of continuing concern is that of clearly defining the roles of the various personnel involved in the TEEM so as to facilitate a more integrated comprehensive system. The interrelationship of the psychological services worker, the instructional program assistant and the parent coordinator is one area that is currently being refined. Further development in definition and integration will be continued throughout the year.

INTELLECTUAL SKILL RESEARCH

In an effort to augment and expand the training received by the psychological services personnel in the areas of intellectual skill training, the Arizona Center will conduct several investigations within this area, especially the area of skills facilitating identification of letters. Three related studies have been designed for investigating the task, procedure, and stimulus variables involved in the identification of complex visual stimuli (letters). These studies will be conducted during the coming year. Data resulting from these and other related investigations will be disseminated to the field psychologists as soon as they become available.

CONCLUSIONS: EDUCATIONAL IMPLICATIONS

PROGRAM ACCOMPLISHMENTS

The pilot year of TEEPS implementation demonstrates that a systems approach can be used with success to make psychological theory and techniques available for use in solving educational problems. TEEPS, operating within a systems context, has provided professional skills in research, consultation and evaluation to participating schools. This diversity of skills would be difficult to duplicate through the traditional approach of embodying competencies in the individual practitioner.

TEEPS has also demonstrated the effectiveness and efficiency of a consultation approach to the solution of educational problems. Psychological services in schools have traditionally used the so called medical model, diagnosis followed by treatment. Treatment, when implemented, has been carried out by a highly trained specialist in counseling or psychotherapy.

The medical Model has proved to be inadequate for use in schools on several counts:

1) The model is limited in its application to "problem" children because it begins with the assumption that there is something wrong with the child. The scope of services which psychologists could provide in schools has been severely curtailed in part because of this limitation of the medical model.

2) Because of cost, diagnosis often takes place without treatment. The schools are provided with a depressing record of problems in children with no record of solutions.

3) Because treatment occurs outside the classroom or home, with no guidance from the teacher or parent, it may lack relevance with respect to solving the problems with which educational change agents are concerned.

4) Finally, applications of the medical model have not required any objective measure of the extent of problem solution. Problems are not defined operationally nor are goals stated in operational terms. Consequently, when the medical model is used it is impossible to determine whether or not services have been of any value.

It has been known for some time that principles of learning can be used to solve educational problems (for example, see Bandura, 1969) and that the elaborate procedures associated with the medical model are in all likelihood ineffective. However, little work has been done on procedures for making psychological principles available to educational change agents who have minimal training in psychology.

TEEPS demonstrates that a psychologist and a teacher working together can solve educational problems. They can define problems operationally. They can formulate concrete intervention plans, and they can measure what they have accomplished. The data indicate that consultation teams are highly effective and reasonably efficient, and that consultation as a service can attain a high degree of acceptance in schools.

PSYCHOLOGY IN THE SCHOOLS

We live in an era representing a significant advance toward the long held goal of developing a science of educational practice. Educators and the public at large are no longer satisfied with testimonials about program effects. There is a growing desire to know in concrete terms what an educational program is and what can be expected of the children who are in it.

Psychologists, as behavioral scientists, are in an excellent position to guide the application of science in educational settings, and, indeed, they have already made extensive contributions in this regard. Unfortunately, the psychologist in the schools has not been perceived in the broad role of educational scientist. Rather, he has been identified with specialized, narrowly focused theoretical positions. School psychologists, for example, have been thought of as diagnosticians or mental testers and have dealt mainly with deviant behaviors.

TEEPS is based on the position that the communication process between psychologists and educational change agents is the crucial factor in transmitting psychology into the schools. It is for this

reason that great stress is placed on the consultation process within the TEEPS program. Consultation has the capability to bring the vast scope of information which constitutes psychology as a science to bear on educational problems.

THE NEED FOR TRAINING

The character of psychological services in the schools cannot be altered by words. At the Thayer Conference (Cutts, 1955), for example, the importance of consultant services was stressed. Yet, consultation has never become a major thrust in psychological services. The Thayer conference was not designed to make provision for defining consultation concretely, for demonstrating its effectiveness, or for training psychologists to use it. These are the tasks which are necessary to accomplish to make consultation a part of educational practice.

If the consultant role is to be implemented in the schools, psychologists will have to be trained to perform it. Funding agencies have allocated very little support for the training of psychological services personnel. Perhaps this lack of support stems from disenchantment with the results of services rendered in accordance with the medical model.

We believe that the psychological services worker trained in consultation at the sub-doctoral level is the crucial link in the transmission of psychology as a science into educational practice. The pilot year of TEEPS operation provides a step toward demonstrating the vital importance of the sub-doctoral psychologist in his role as consultant in the schools.

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APPENDIX A

INTELLECTUAL SKILLS: A NEW CONCEPT FOR A CHANGING SOCIETY

By John R. Bergan

June 23, 1970

INTELLECTUAL SKILLS: A NEW CONCEPT FOR A CHANGING SOCIETY[1]

By John R. Bergan

Conceptions of intellectual competence in Western culture have long been dominated by the concept of intellectual abilities. The central educational use of the ability concept has been to provide a basis for classifying students in order to group them for instruction. Ability classifications have served an important purpose in society. The achievement of the technological culture in which we live has come about because natural resources and human resources have been readily available. Ability classifications have facilitated society's access to human resources by providing an economical means for identifying those individuals whose intellectual competencies, with a minimum of expense, could be harnessed to the complex tasks of a technological age.

Despite the benefits which have accrued from resource availability it is now becoming increasingly clear that the path of resource utilization which we have chosen is fraught with danger. We have been a consuming society, a society whose wanton plundering of both natural and human resources suggests an almost mythological belief in a world of inexhaustible plenty. We are beginning, however, to recognize that we cannot go on consuming our natural resources as we have been doing without radically altering living patterns, and we are slowly beginning to see that past consumption of human resources has contributed to the creation of the rural and urban ghetto wastelands which sprawl across the country.

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1. The author wishes to express his appreciation to Dr. Barry Zimmerman, whose ideas greatly influenced this paper.

The concept of intellectual abilities has been shaped to serve the needs of the consuming society. As the nation has begun to move toward a conservation stance with respect to its natural and human resources, a new set of needs has emerged. Needs for classification to facilitate access to human resources have given way to needs involving development of human resources. This shift in emphasis from classification to development calls for a thorough re-examination of the ability concept. In addition, it raises the question of whether or not the ability concept ought to be augmented by a concept, such as that of the intellectual skills, with greater potential for metting the needs of programs designed to produce change in intellectual competencies.

Intellectual Abilities

Abilities and Prediction

The term ability may be described quite simply as behavior which an individual can emit. The simplicity of this denotation belies the fact that abilities are defined empirically by an elaborate set of conventions designed to serve the purpose of predicting behavior.

The study of human abilities for nearly 100 years has been strongly identifies with the objective of predicting performance. Ironically the stage was set for the long dominance of the prediction approach by laboratory research which did not have prediction as its goal. For nearly a decade in the late 1800's, James McKeen Cattell (1896) attempted to define and measure the basic processes underlying intellegence. Then came Wissler's (1901) study which indicated that Cattell's measures were of no value in predicting academic success. Wissler's study dealt a serious blow to the theoretical approach exemplified in Cattell's work and pointed to the potential importance of prediction.

At the end of the nineteenth century, the challenge of using mental tests to predict criterion task performance was taken up by

Binet (1905) using correlational techniques. Since Binet's early work, the prediction paradigm has been the dominant force in shaping the concept of mental abilities.

The conventions of the prediction paradigm are thoroughly familiar to every psychologist:

1. Test items chosen to measure abilities are selected so as to maximize individual differences in performance. Items which too many people pass or too many people fail are excluded becaude they do not help to maximize individual differences.
2. Since the purpose of ability measurement is to predict performance, validity is established by correlating ability measures with criterion measures.
3. Since accurate prediction requires stability in individual differences, reliability is established by assessing the extent to which individual differences are consistent within a test, or between two forms of the same test, or over time.
4. An individual's test performance is described by stating his position in a reference group.
5. Finally, abilities are defined, typically through factor analytic procedures, on the basis of clusterings of correlations.

Whenever there is a need to select individuals for inclusion in or exclusion from a given group on the basis of predicted criterion performance, the prediction approach is of value. Society is replete with situations calling for selection. The most familiar example of such situations is, of course, ability grouping.

Although it is valuable for selection purposes, the prediction approach is not well suited to the problem of teaching intellectual competencies. The central problem associated with the prediction paradigm is that it does not require operational specification of the parameters which define abilities. Because operational specification is lacking, behavioral change resulting from instruction can be obscured. The procedure used to select samples of items for ability subtests provides one example of lack of operational specificity making it extremely difficult to determine appropriate content for training. Tests of intelligence, for example, invariably include all items in a population in a single administration of a subtest.

The dilemma created by the sampling problem is that when the population of items underlying a subtest sample is not specified, it is not possible to assess the extent to which the ability measured by the subtest is changed through instruction. Consider the case of a vocabulary subtest. If one were to teach the words on the subtest, one would be accused of teaching the test and not the ability measured by the test. If one were to systematically avoid subtest words, presumably there would be little change in future performance on the subtest. If the population of words from which the subtest sample was selected were known it would be possible to base instruction on random selections of words from the population. Under these circumstances, words on the subtest would occasionally be selected for instruction. The probability of a subtest word being selected would be a function of rate of learning.

The procedure of group reference provides a second example of lack of operational specificity. When group reference is used, an individual's performance is described, not in behavioral terms, but in terms of group position. Although it would be possible to relate group reference scores to behavioral descriptions of performance, it is not necessary to do so. The result all too often is that group reference scores obscure information about what a student can or cannot do by substituting for such information nothing more than a description of group position.

Group reference obscures behavioral change as well as operational specificity of behaviors. The most direct way to measure ability acquisition would be to assess the extent to which an individual's performance of an ability behavior changed over time. Acquisition typically is not assessed in this fashion. It is measured not by change in performance, but rather by change in group position. Consider a group of ten first-grade children who differ in the ability to remember sequences of digits. By the time the children are third graders their memories will probably all have improved, but their relative positions in the group of ten may tend to remain constant. In order for a child to demonstrate a change in ability, he must be able to show not merely that his performance has improved, but that the improvement has been at a faster rate than is the case for others in an appropriate reference group. When change is measured against a standard (the reference group) which is itself changing, the apparent extent of change necessarily will be attenuated.

Not only does the prediction approach obscure change, it also obscures the cultural relevance of intellectual training. Prediction type tests do not measure the manner in which ability behaviors influence criterion task performance. Prediction test scores indicate only group position.

The role of the prediction approach in obscuring the cultural relevance of ability training is clearly illustraded in recent efforts to base ability training programs on scores obtained on diagnostic ability tests. The general format for the construction of

diagnostic ability tests includes a series of subtests under a heading such as language abilities or perceptual abilities. Typically each of the subtests is assumed to measure a separate ability. A child receives a score on all subtests as well as a total score. These scores are in essence standard scores which specify the child's position with respect to a norm group. The child is given a profile which indicates for each subtest the extent to which his performance deviates from the average. Instruction is often prescribed on the basis of the profile. For example, if a child is above average on six subtests and below average on three, it may be suggested that he receive instruction in the three areas in which his performance is low.

The basic task which diagnostic ability tests used in education are designed to accomplish requires specification of the manner in which the abilities of the individual child influence his performance of academic tasks. Unfortuaately diagnostic ability tests specify only group position. It is impossible to determine directly from such tests whether or not for the individual child ability training is of any use in facilitating criterion task performance.

In some instances research has been done to ascertain whether or not ability training influences criterion performance of a group of children. The general strategy underlying such research efforts has been to compare the performance of children receiving ability training with controls who have not received training. Studies by Frostig (1963) provide examples.

Results of group comparision research have been in the main quite disappointing, and they provide no information about the advisability of profile analysis. To demonstrate that an experimental group which receives training performs significantly better than a control group in no way indicates that training should be based on the analysis of individual profiles. Highly complex and very expensive studies involving differential predictions of learning rate based on profile variations would be needed to establish the validity of profile analysis.

The strategies underlying the prediction approach were designed to facilitate prediction. They were never intended to relate ability training to cirterion task performance.

Intellectual Skills

Need for the Concept

The concept of ability has been linked for so long to prediction conventions that it is doubtful that new meanings could be attached to it without creating a great deal of confusion. Yet, there is a need in education for a concept in many respects analogous to that of ability.

Radical behaviorists, operating as though there were no justification for an ability concept, have attempted to alter learning by applying a single set of procedures to all individuals regardless of individual differences in the kinds of competencies brought to the learning task. Certain behaviors have proven to be extremely resistant to change under procedures advocated by behaviorists (Flavell, 1963). (Gagne 1968) has argued quite effectively that the lack of success of the behaviorists canbbe traced to a failure to determine and to teach those behaviors which are prerequisite to the mastery of learning tasks.

There is a need to establish a concept like the concept of ability to serve as a basis for classifying behaviors which underlie task mastery. The term intellectual skill provides a suitable lable for such a concept. Although the idea of skill has been linked primarily to the study of motor coordination, it does have properties which make it a likely choice for use in describing intellectual behaviors. The term has been used informally to describe intellectual competencies. Yet, it is not firmly entrenched in an existing theoretical position as is the case with the concept of ability. Furthermore, common usage of the word skill indicates behaviors which can be acquired through instruction. Thus, the spectre of the nature-nurture issue would probably not become involved in debates over the training of intellectual skills to the extent that it has been associated with arguments over the training of intellectual abilities.

Defining Attributes

A skill, like an ability, is behavior which an individual can em[illegible] Intellectual skills can be distinguished as a class from oth[illegible] b[illegible]iors by three defining attributes: Cultural relevance, behavioral definition, and transfer properties.

In order for a behavior to be classified as an intellectual skill it ought to be possible to demonstrate the relevance of that behavior to the accomplishment of cultural goals. The construct of intelligent behavior has long involved emphasis on cultural relevance. As early as 1534 the English legal definition of intellectual incompetence, stressed cultural relevance as reflected in economic responsibility, "He who shall be said to be a sot and and idiot from his birth is such a person who cannot account or number twenty pence, nor can tell who was his father or mother, nor how old he is, etc., so as it may appear that he hath no understanding be reason of what shall be for his profit nor what for his loss." (Fitz-Herbert, 1534).

Concern for cultural relevance has continued to the present to exert influence on concepts of intellectual competence. Such concern is most clearly evidenced in the convention of establishing the validity of ability tests by correlating them with criterion measures. Despite this convention, however, the cultural relevance of instruction presumed to promote intellectual competence is often not established. This is particularly apparent in early education programs. For example, perceptual discrimination tasks and object classification tasks are presumably taught because it is assumed that they will assist the child in future learning of tasks with known cultural relevance. Empirical support for this assumption is lacking.

In recent years there has been a laudable increase in interest in establishing behavioral objectives for educational programs (Mager, 1962). It would be of great benefit to education to establish that a necessary condition for defining an intellectual skill be a definition of the skill in behavioral terms. The importance of behavioral definition is, of course, that it enables educators to define precisely what they are trying to teach.

The most important reason for distinguishing intellectual skills from other behaviorsiis that it is useful to have a name for those behaviors with transfer properties that facilitate the learning, performance, and/or retention of various criterion tasks.

A number of investigators (e.g. Bruner, 1960; Gagne, 1970) have indicated the importance of distinguishing between transfer based on identical sitmulus and response elements and the transfer of concepts, principles and strategies for directing learning. Gagne (1970) has argued that all of the varieties of transfer play a role in shaping intellectual capabilities. He suggests that higher order forms of transfer exemplified in the transfer of concepts, principles, and strategies are based on less complex forms of generalization involving identical stimulus and response elements.

The central importance of the higher order forms of transfer is that they are freed from specific stimulus properties. This freedom offers the potential for greatly expanding the kinds of situations within which transfer behaviors can be used. The potential to apply a capability in a wide variety of situations has long been thought to be the hallmark of intelligence. Accordingly, the empirical demonstration of the higher order forms of transfer ought to be a criterion for defining intellectual skills.

Transfer influences can affect acquisition, performance, and retention. The research efforts of Harlow(1949) on learning to learn and of Gagne (1970) and Resnick (1967) on learning hierarchies illustrate the beneficial effects of transfer on acquisition. Transfer also may influence performance. For example, in the area of problem solving, the learning of principles underlying the solution to a given problem may enable the learner to solve other problems in the same class (Gagne, 1970). Finally, the transfer properties of certain intellectual skills can influence retention of material previously learned (McGeoch and Irion, 1952).

Conventions for Defining Skills

Just as it was necessary to establish conventions for defining and measuring abilities to serve the needs of the consuming society, it will be necessary to establish conventions for defining and

and measuring intellectual skills to be developed to serve the needs of the conserving society. There are well known procedures which could be applied as conventions for defining intellectual skills. To meet the criterion of behavioral definition, available procedures for specifying behavioral objectives (Mager, 1962) could be adapted. If these procedures were used, the class or population of behaviors representing a skill would be specified. Exemplars of the class would be given. The conditions under which the skill is performed would be detailed and the level of acceptable performance defined.

Established experimental procedures used in research on learning could serve as conventions to meet the criterion that transfer properties be empirically demonstrated. Group statistics designs involving experimental and control conditions could be applied in laboratory research on the definition of intellectual skills and in those field settings in which appropriate controls were available. Single subject designs developed by operant researchers, because they require neither randomization nor controls, would be especially useful in field settings.

Assessment of the cultural relevance of a skill requires determination of the relevance of the criterion tasks in which the skill is used. Because the character and needs of a culture change overtime, cultural relevance of criterion tasks must be determined by human judgment rather than by objective standards. There are established means in American culture for making judgments as to those behaviors which are relevant to cultural goals. The various annual meetings and special conferences of professional groups and the publications of experts in fields related to education provide examples of existing sources for determining relevance at the local level.

Given that the cultural relevance of a task has been established, the cultural relevance of skills purported to underlie accomplishment of the task can be objectively assessed by establishing the convention that tasks used to demonstrate transfer have known cultural relevance.

Conclusion

The central importance of both the concept of intellectual abilities and the concept of intellectual skills is that they identify factors which underlie the accomplishment of significant tasks within a culture. To say that a person learns academic material quickly because he has a good memory, or that he writes well because he is creative, is to say that there is something present in his behavior which has a determining influence on his effectiveness in task performance. In the consuming society, it was sufficient to lable that something as an internal set of traits called abilities.

The need for identifying behaviors underlying effective task accomplishment is even greater in the conserving society than it has been in the consuming society. The purpose for identification, however, is different. Whereas in the past it was sufficient to identify individuals who possessed behaviors underlying task accomplishment, it is now necessary to identify the behaviors themselves so that they can be taught. This shift in purpose demands a shift in the concepts and conventions used to define intellectual competence. Needs for selection continue to exist in society. In consequence, the notion of intellectual abilities remains viable. The concept of intellectual skills advanced in this paper would augment the ability concept to make the definition of intellectual competence responsive to the goal of developing human intellect.

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APPENDIX B

Interview Outlines and Vido Tapes
From the Arizona Center Library

THE PROBLEM IDENTIFICATION INTERVIEW
For a
BEHAVIOR PROBLEM

I. Operationalizing the Problem.

A. Structuring Behaviors.
1. "Tell me about Jimmie."

B. Target Behavior Elicitors.
1. "What does Charles do when he disrupts the class?"

C. Conditions Elicitors.
1. Antecedent Conditions Elicitors.
(a) "What gernerally happens before Charles hits another child?"

2. Consequent Conditions Elicitors.
(a) "What happens afterward?"
(1) "What do you do?"

(2) "How do the other children react?"

3. Situational Conditions Elicitors.
(a) "In what kinds of settings does Charles hit other children?"

D. Target Strength Elicitors
1. "How often does this occur?"

The Problem Identification Interview
For a
Behavior Problem (continued)

2. "How long does he usually participate before he leaves the group?"

E. Summary
1. "You have said that: This, then, is the problem."
(Give exemplars, conditions, and strength)

In the course of operationalizing the problem, it may be necessary to use structuring behaviors and summarizing behaviors in order to maintain focus in the interview and to remember what has been said.

II. Recording Baseline Data

A. Structuring Statements.
1. "We need to have a record of Paul's paritcipation in the group and the conditions under which it occurs."

B. Informative statements.
1. "The record will help us to know precisely how much Paul does participate and it may give us some clues as to what factors are controlling his participation. Also it will give us a standard against which to evaluate changes in the extent of his participation."

C. Structuring Statements.
1. "How would it be most convenient for you to record participation?"

The Problem Identification Interview
For a
Behavior Problem (continued)

D. Recording Conditions Elicitors.
   1. "When would you take data?"

E. Recording Strength Elicitors.
   1. "How often during the week (day, etc.) would you record?"

F. Target Exemplar Elicitors.
   1. "What would you record?"

G. Summary
   1. "You have said that you are going to record: (Specify target exemplars, antecedent and consequent events to be recorded and response strength and conditions)."

H. Terminating the Interview.
   1. Record on the data collection: baseline form the target exemplars, conditions and response strength and conditions as you make the summary in G above.

   2. Give the teacher a copy of the data collection baseline form.

   3. Schedule the problem analysis interview.

THE PROBLEM ANALYSIS INTERVIEW FOR A BEHAVIOR PROBLEM

I. Discussing Baseline Data

A. Structuring Statements.
   1. "Let's begin by looking at the baseline data you collected."
      (a) Advantage: assumes teacher has collected data.

      (b) Don't say: "Did you collect the data?"
         (1) Implies that the teacher might not have collected data.
         (2) Has the connotation of checking up on the teacher.

B. Graph the data for the teacher.

C. Strength Elicitors.
   1. "Let's see how often this behavior occurs."

D. Conditions Elicitors.
   1. "What most often follows this hitting behavior?"

   2. "What precedes it?"

   3. "In what situations does it occur?"

E. Summary
   1. "We can see from this record that:"

The Problem Analysis Interview
For a Behavior Problem (continued)

F. Interpretation Statements.
   1. "It almost seems as though Charles enjoys being reprimanded for hitting others. As you said, he seems to be doing it for attention."

G. Interpretation Elicitors.
   1. "What in the events that you noted following this behavior could be rewarding to Susan?"

II. Planning the Intervention.

A. Structuring Statements.
   1. "We need to make a plan."

B. Summarizing Statements.
   1. "You said that Charles seems to hit others to get your attention and that these cues (list them) seem to trigger hitting behavior."

C. Modification Conditions Elicitors.
   1. "Is there some way that we could remove your attention as a consequence for hitting behavior?"

   2. "Could we remove Charles from this situation which seems to trigger his hitting behavior?"

   3. "What are some things Charles likes to do?"

D. Summarizing Statements.
   1. "This, then, will be our plan: (Specify target exemplars, conditions and strength)."

The Problem Analysis Interview
For a Behavior Problem (continued)

III. Recording the Modification Plan.

A. Summary validating recording procedure.
   1. "You will continue to record hitting behavior as you did last week."

B. Written agreement.
   1. Write down the modification plan.

   2. Give the teacher a written copy of the plan.

IV. Terminating the Interview.

A. Make arrangements for the scheduling of the evaluation interview.

PSYCHOLOGICAL SERVICES

Video Tapes

NAME	COMMUNITY	SUBJECT	TIME	QUALITY
Betty Crutchfield	Chickasha	Prob. Ident. w/P. Bolton	19 Min.	Video-Good Audio-Good
Betty Crutchfield	Chickasha	Prob. Anal. w/P. Bolton	4 Min.	Video-Good Audio-Good
Betty Crutchfield	Chickasha	Prob. Eval. w/P. Bolton	29 Min.	Video-Good Audio-Good
Richard Brown	Tucson	Prob. Ident. w/A. Smith	14 Min.	Video-Good Audio-Good
Dohn Dololou	Tucson	Prob. Anal. w/B. Richards	25 Min.	Video-Good Audio-Good
John Dololou	Tucson	Prob. Eval. w/B. Richards	21 Min.	Video-Fair (light) Audio-Good
John Dololou	Tucson	Prob. Ident. w/ B. Richards	18 Min.	Video-Good Audio-Good
Joan Warner	Santa Fe	Prob. Ident. w/ Spradling	7 Min.	Video-Good Audio-Good
Joan Warner	Santa Fe	Prob. Anal. w/ Spradling	3 Min.	Video-Good Audio-Good
Joan Warner	Santa Fe	Prob. Eval. w/ Spradling	10 Min.	Video-Fair Audio-Good
Genevieve Bartlett	Walker Co.	Prob. Ident. w/B. Houser "Good Peer Model"	26 Min.	Video-Good Audio-Good
Genevieve Bartlett	Walker Co.	Prob. Anal. w/K. Cloud	22 Min.	Video-Good Audio-Good

Lynn Kelley	Hoonah	Prob. Anal. w/B.J. Mayles	11 Min.	Video-Good Audio-Good
Lynn Kelley	Hoonah	Prob. Ident. w/B.J. Mayles	13 Min.	Video-Good Audio-Low at beginning
Lynn Kelley	Hoonah	Prob. Eval. w/B.J. Mayles	10 Min.	Video-Good Audio-Good
Jearold Mason	Vincennes	Prob. Anal. w/B. Houser	9 Min.	Video-Good Audio-Good
Jearold Mason	Vincennes	Prob. Eval. w/B. Houser	21 Min.	Video-Good Audio-Good
Jearold Mason	Vincennes	Prob. Eval. w/B. Houser	22 Min.	Video-Good Audio-Good
Jean Vaughn	Wichita	Prob. Ident. w/M. Melton	28 Min.	Video-Good Audio-Good
Jean Vaughn	Wichita	Prob. Anal. w/K. Cloud	19 Min.	Video-Good Audio-Good
Robert Buckner	Lincoln	Prob. Ident. w/V. Busbook	21 Min.	Video-Good Audio-Good
Doris Hart	Miss.	Prob. Anal. w/A. Smith	5 Min.	Video-Good Audio-Good
Doris Hart	Miss.	Prob. Ident. w/A. Smith	16 Min.	Video-Fair (Slightly dark) Audio-Good
Doris Hart	Miss.	Prob. Anal. w/A. Smith	18 Min.	Video-Good Audio-Good
Robert Buckner	Lincoln	Prob. Anal. w/V. Busbook	18 Min.	Video-Good Audio-Good
Joan Warner	Santa Fe	Prob. Anal. w/E. Spradling	18 Min.	Video-Good Audio-Good
Genevieve Bartlett	Walker Co.	Prob. Anal. w/B. Houser	18 Min.	Video-Good Audio-Good

APPENDIX C

Forms Used in Consultation

FORMS AND PROCEDURES

Code	Identity	Sequence Number
Consultation Packet--		
RF/2-70	Referral Form	1.
PII/5-70	Problem Identification Form (3 pages)	2.
FA/7-70	Functional Analysis	3.
PAI/7-70	Problem Analysis Interview (2 pages)	4.
BOSS/7-70	Behavioral Objectives Summary Sheet	5.
PEI/7-70	Problem Evaluation Interview	6.
Additional Forms--		
CD/5-70	Data Collection Form	
BR/5-70	Behavioral Record (graph)	
DC:A/7-70	Data Collection: Baseline	
DC:M/7-70	Data Collection: Modification	

PROCEDURES

A. A quarterly report form will be sent on or before December 1st, March 1st, and June 1st.

B. Send all forms on all cases in your quarterly report. (For example, assume that during the first quarter you have conducted a problem identification intexview on a case, send the referral form and the PII form. Assume that during the 2nd quarter you complete the case. Send all forms when you submit the quarterly report, including copies of the referral form and the PI interview. During the 3rd quarter, the case would not be reported since it was closed in the previous quarter. Send nothing on the case in the third quarter.)

C. In the case of learning problem referrals
   1. Keep a summary record for each stage undertaken indicating sequence and success level.

D. Mail all forms, quarterly reports and correspondence concerning cases to:
   Mrs. Elaine Nichoson
   c/o Arizona Center for Early Childhood Education
   College of Education, University of Arizona
   1515 E. 1st Street, Tucson, Arizona 85721

PROCEDURES FOR FORM USE IN SPECIFIC CASES

A. Behavior Modification: problem recurrence
   1. Problem Analysis Interview
   2. Problem Evaluation Interview

B. Change from behavioral to learning problem or vice versa
   1. Begin at Problem Identification and go on.
   2. Problem Evaluation Interview

C. New problem in same child - start from beginning.

D. Teacher picks a new behavior mentioned in Problem Identification Interview at time of initial referral--start from the beginning with Problem Identification Interview.

REFERRAL FORM

Name of Child: Teacher:

Age: Grade: Date of Birth: School:

Date of Referral: Psychologist:

Nature of Problem:

Background:

Referred by:

Psychologist's Remarks:

RF/2-70

Date:

PROBLEM IDENTIFICATION INTERVIEW

Non-operational Description:

Test Information			Physical Description	Incidental Comments
Test				
Level				
Date				
G.E. Scores				
Total Ach.				
I.Q. Total				
Other				

Operationalizing the Problem:

Target Class -

Target behavior exemplars -

Strength (frequency, amplitude, latency, duration, percentage) of target behavior

Examples of conditions under which target behavior occurs:

	Antecedent Events	Target Behavior Exemplars	Consequent Events: Child's own Reactions	Reactions of Other Children	Teacher Response	Other
Incident #1						
Incident #2						
Incident #3						

PII 12/5-70

PROBLEM IDENTIFICATION INTERVIEW (continued)

Examples of condition under which target behavior occurs: (continued if needed)

Antecedent Events	Target Behavior Exemplars	Consequent Events			
		Child's Own Reactions	Reactions of Other Children	Teacher Response	Other
Incident #4					
Incident #5					
Incident #6					

PII #2/5-70 optional

PROBLEM IDENTIFICATION INTERVIEW (continued)

Behavior Recording Procedure:

Strength Measure(s) (frequency, amplitude, latency, duration, %)

Procedure (Continuous, interval, time sampling)

Condition (any, or under specific conditions)

Time for recording (specify interval or time as recorded by teacher)

PII #3/5-70

Date:

FUNCTIONAL ANALYSIS

Summary Data For Functional Analysis

Antecedent Stimuli		Possible maintaining consequences	
f		f	

Conclusions:

1. Antecedent stimuli serving as cues -

2. Maintaining reinforcers -

FA/7-70

Date:

PROBLEM ANALYSIS INTERVIEW

Operationalizing Goal Behaviors:

Class

Exemplars

Strength (rate, amplitude, latency, duration, percentage)

Contiguous and/or contingent conditions

Rationale for Modification Plan:

Operational Definition of Modification Plan:

Is the child told about the plan? Yes No

Functional Analysis:

Antecedent events -

Class

Exemplars

Procedure (withdraw, introduce)

Consequent events -

Class

Exemplars

Characteristics (schedule, immediacy, amplitude, duration)

Contingent conditions

Procedure (withdraw, introduce)

Plan executor(s):

P/I/7-70

PROBLEM ANALYSIS INTERVIEW (continued)

Skill Training Procedures:

Antecedent Events -

Stimuli presented

Class

Exemplars

Strength

Procedures (introducing cues, modeling)

Conditions of stimulus presentation

Context

Directions

Consequent events:

Teacher's events -

Class

Exemplars

Strength

Conditions

Plan executor(s):

P/I 2/7-70

Date:

BEHAVIORAL OBJECTIVES SUMMARY SHEET

Goal Behavior for child:

Sub-goal #1
Class

Exemplars

Strength

Conditions

Sub-goal #2
Class

Exemplars

Strength

Conditions

Sub-goal #3
Class

Exemplars

Strength

Conditions

Sub-goal #4
Class

Exemplars

Strength

Conditions

Additional Comments:

BOSS/7-70

PROBLEM EVALUATION INTERVIEW

Case status: (check as many as needed)

Terminated	Yes	No
In progress	Yes	No
Behavior modification goal attained	Yes	No
Behavior modification goal partially attained	Yes	No
Behavior modification plan unsuccessful	Yes	No
Behavior modification plan withdrawn	Yes	No
Behavior modification plan continued	Yes	No
Post behavior modification recording	Yes	No
Intellectual skill training goal attained	Yes	No
Intellectual skill training goal partially attained	Yes	No
Intellectual skill training sub-goal ___ attained	Yes	No
Intellectual skill training sub-goal ___ partially attained	Yes	No
Intellectual skill training sub-goal ___ unsuccessful	Yes	No
Intellectual skill training withdrawn	Yes	No
Intellectual skill training continued	Yes	No
Intellectual skill training transfer successful	Yes	No
Intellectual skill training transfer unsuccessful	Yes	No
Intellectual skill training transfer not attempted	Yes	No
Child moved away	Yes	No
Referred to other services	Yes	No
Unable to select relevant behavior	Yes	No
Lack of change agent cooperation	Yes	No
Behavior no longer a problem (with data)	Yes	No
Behavior no longer a problem (without data)	Yes	No
Change of intellectual skill training goal	Yes	No
Change of behavioral goal	Yes	No
Case not opened	Yes	No
Other _____	Yes	No

Evaluation of unsuccessful reinforcement procedure:

1. Length of time program has been in effect -

2. Immediacy of reinforcement -

3. Frequency of reinforcement -

4. Amplitude of reinforcement -

PEIM1/7-70

PROBLEM EVALUATION INTERVIEW (Continued)

Evaluation of unsuccessful reinforcement procedure: (continued)

5. Duration of reinforcement -

6. Schedule of reinforcement -

7. Does procedure generate conflicting reinforcers -

8. Was plan implemented correctly -

New or revised modification plan: No Yes (see Problem analysis Interview)

Testing for transfer:

Stimuli presented -
Class

Exemplars

Strength

Procedures

Conditions -
Context

Directions

Results -
Transfer demonstrated

Inconclusive

PROBLEM EVALUATION INTERVIEW (continued)

Testing for transfer: (continued)

No effect noted

Evaluation of unsuccessful skill training procedures:

1. Length of time procedure has been in effect -

2. Motivational aspects (see reinforcement procedures) -

3. Success rate -

4. Status of enabling behaviors (attending, auditory, verbal skills) -

5. Defined criterion of skill training (was skill adequately learned)

6. Evaluation of prerequisite skills -

7. Training method -
   Context

   Directions

   Procedures

8. Relevancy of skill trained -

PROBLEM EVALUATION INTERVIEW (continued)

Psychologist's contacts: (list dates, designate joint conference by *)

Teacher
Principal -
Parent -
Program Asst.
Counselor -
Parent Inv. -

Child -
Teacher aide -
Field rep -
Social worker -
Other -

EI"4/7-70

Date:

QUARTERLY REPORT

From (date): To:

# of cases opened:

# of cases closed:

NAME	CASE IN PROGRESS	CASE TERMINATED

QR/2-70

DATA COLLECTION: BASELINE

Dates: From_____to_____ Child's Name:_____

Behavior:

Conditions:

Measure:

Recording Procedures:

Time	Score	Before	After

DC:B/7-70

DATA COLLECTION: MODIFICATION

Dates: From _____ to _____ Child's Name: _____

Data Collection:

Behavior

Conditions

Measure

Recording Procedures

Modification Plan

Reinforcer to be used

Contingent upon

Time	Score	Observations (any changes or additions to before and after events)

PC:N/7-70

BEHAVIORAL RECORD

PROCEDURES FOR GRAPH CONSTRUCTION

1. Label side of the graph with the Response Strength Measure (rate, %, amplitude, duration, latency)

2. Label bottom in terms of time sampling (intervals, days, hours, etc.)

3. Include premodification, modification and post modification data on a continuous graph. Label sections for each phase of modification at the top of the graph. (Delimit each modification phase by a vertical line from the top to the bottom of the graph)

4. If data samples are missing leave a blank (absenteism but not weekends)

Measure of Response Strength

Observations