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ABSTRACT

Presented in the paper are procedures for diagnosing academic and social behaviors of retarded and emotionally disturbed children 5 to 8 years of age. Assessment before instruction is said to involve medical reports, interviews, psychometric tests, direct observation, and behavior inventories. Assessment during instruction is discussed in terms of direct observation, pretest and posttests from the classroom instructional programs, systematic evaluation of the child's work, and analysis of reinforcement and recorded behaviors. Suggested for terminal assessment is analysis of performances on the last posttests, scores from the readministration of psychometric tests, and descriptions of academic and social behavior from objective measures and accounts. (MC)

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Behavioral Diagnosis and Assessment in Teaching Young Handicapped Children[1]

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This paper deals with behavioral diagnosis and assessment as it applies to teaching, particularly to teaching young retarded and emotionally disturbed children. Teaching is here viewed as the arrangement of conditions to expedite learning in a child (Skinner, 1968). The conditions refer to the curriculum materials, the pedagogical practices of the teacher, and the social and physical setting which is the class and classroom. The target behaviors of teaching in this instance are academic tool subjects and personal-social behaviors which facilitate learning (e.g., good attending behavior). By young retarded and emotionally disturbed children, I mean children between the ages of five and eight who have demonstrated serious behavior problems in kindergarten or the first grade in the public schools.

Diagnosis

The diagnostic practices in the special education of retarded and emotionally disturbed children cannot be adequately discussed without a consideration of the concept of etiology. Etiology, a term borrowed from medical practice, generally refers to the cause of a school problem. For example, reading disability is said by some to be caused by a

single factor such as organic impairment or dysfunction (e.g., primary dyslexia). Others view reading disability as being caused by multiple factors, some empirically defined (e.g., visual defects and social maladjustment), and some hypothetically constructed (e.g., poor auditory association and limited short-term memory).

The search for or creation of single or multiple causal factors, empirically or hypothetically defined, is based on the assumption that a school problem is a symptom of some pathology in the individual. This is a tenable assumption if one accepts the illness or disease model for analyzing school problems. However, the adequacy of this model for conceptualizing behavior problems in and out of the school situation has in recent years been seriously questioned on the basis of empirical findings (e.g., Bringmann, Mueller, Balance, & Matijiw, 1970b, and Bringmann, Mueller, Balance, & Matijiw, 1971).

It has also been seriously questioned on theoretical grounds (e.g., Bringmann, Mueller, Balance, & Matijiw, 1970a). From the point of view of an experimental analysis of behavior (Skinner, 1953 and 1969), for example, a school problem is important in its own right and not as an indication of some underlying condition. It is the behavior of concern because it is aversive to someone (in many instances the child himself) and because it is the phenomenon that must be analyzed and altered in arranging a treatment program, educational or otherwise. Problem behavior, like <u>any</u> class of psychological behavior, is caused by, or is a function of, the genetic and personal history of the individual and his current situation. We take his genetic history as given and try to understand his personal history.

To know the personal history of a child with a problem school behavior requires knowledge of the actual interactions that have constituted his development (Bijou & Baer, 1961 and 1965). Information of this sort is not ordinarily available to the teacher or school psychologist and attempts to obtain even faint hints from secondary sources (e.g., retrospective accounts, questionnaires, and psychological tests) have proven wholly inadequate (Yarrow, Campbell, & Burton, 1968). The difficulty of identifying the historical determiners of a class of behavior does not degrade the diagnostic endeavor because knowledge of a child's past interactions with the environment is not necessary. Remedial education cannot undo or redo the history of a child. It can, instead, arrange an environment that encourages a child to learn the behavior repertoires he lacks and to modify those behaviors that have proven disadvantageous from the point of view of cultural demands. Knowledge and application of behavior principles, not knowledge of the child's history, can serve to accomplish those ends.

To contend that it is unnecessary to know the actual interactional events in the history of a child does not mean that background material about him should be ignored. Information that is ordinarily considered a "history" throws light on a child's current home and neighborhood conditions and such data must be taken into account in planning ways to augment and generalize school learning.

Let us consider the usual diagnostic practices in special education. Diagnosis generally refers to the use of psychometric, medical, educational, and clinical techniques to obtain data upon which to place a child in one or more classification categories, e.g., psychiatric

(autistic), intelligence (borderline), or educational potential (trainable). It may also involve a prediction of the child's performance. This concept of diagnosis is based on three highly questionable assumptions: (1) that there is currently available a specific treatment program for children included in each of the diagnostic categories, (2) that these treatment techniques are well known to the teacher, and (3) that the teacher has the facilities, equipment, and personnel to put them into operation as needed. Although there is considerable discussion about the need for differential treatment of the autistic, the brain-injured, and the deprived, the remedial program proposed for one category is not contraindicated for children in other categories. For example, a program developed on a population of clinically inferred, brain-damaged children could be used without detrimental effects on a group of hyperactive children not diagnosed as brain-damaged. In regard to the second and third points, the programs described in the literature or on the market for presumably specific categories of children are not necessarily known to special teachers and those that may be known cannot be readily actualized under most existing school conditions.

A variation of the classification and treatment format is the diagnostic hypothesis-testing model articulated by Bateman (1967). For her, diagnosis consists of:

1. Determination that a problem exists.
2. Behavior analysis of the problem area.
3. Diagnostic testing of possible correlates or underlying disability areas in receptive language (tactile-kinesthetic, visual, and auditory), internal processes (assimilation,

storage, and retrieval), and expressive language (motor and social).

4. Formation of a diagnostic hypothesis which leads directly to the remediation of the primary disability area and then to broadening the scope of remediation to include (a) related disability areas and (b) general application to problem area as indicated in 1 above.

Although these procedures focus on an analysis of an individual child, they are unnecessarily circuitous. This roundabout course is necessitated by the assumption of underlying hypothetical variables or conditions. It includes (1) determination and analysis of the problem, (2) a search for the presumed underlying primary disability areas, (3) the preparation of a program designed to remedy the primary disability areas, (4) the preparation of a program designed to remedy related disability areas, and (5) the preparation of a program designed to remedy the problem behavior. An alternate direct procedure would involve only the first and last steps: determination and analysis of the problem, and preparation of a program to remedy the problem behavior.

Diagnosis, from the point of view of behavioral analysis, consists neither of placing a child in a diagnostic category, nor of making a prediction, nor of speculations about previous historical interactions, nor of a search for hypothetical underlying areas, neurological or otherwise. Diagnosis is, instead, oriented toward determining the conditions that would probably develop new behavior and modify the problem behavior. It consists of ascertaining the relevant repertories in objective behavioral terms and of specifying in concrete ways the kinds of educational programs

that would probably remediate the problem. Since impressions or hypotheses of the required conditions change with the availability of new information, the diagnostic procedure starts with the initial evaluation and continues throughout the treatment process. We shall now describe how the behavioral concept of diagnosis may be carried out.

Assessment for Diagnosis

The behavioral approach involves three sets of interrelated assessment procedures chronologically arranged with respect to the entire treatment procedure. The first set provides information about the child's repertories in the areas that are the targets of instruction (baseline). These findings are the basis for decisions concerning the appropriate starting places in a child's educational program. Starting a child at the level of his strengths gives him an opportunity to make progress in school work at the outset and to be reinforced for his efforts. This is a well-known remedial practice, as Bateman (1967) points out: "A basic premise of remediation in cases of learning disability is that one must determine exactly where the child is functioning and begin instruction at or slightly below that point. Diagnostic testing is a valuable aid in this determination" (p.22). In a behavioral approach, however, the teacher does not seek to determine "where the child is functioning" but rather what the child can actually do in the task that is presenting the problem. Furthermore, diagnostic testing, if it means assessing behavior inventories, is not only "a valuable aid" but an indispensible tool, as we shall see.

The second set of assessments yields running accounts of the adequacy of the programs, including teaching materials, response contingencies,

response requirements, and contextual factors. These measures provide essential information upon which to base decisions about changing the programs. The third set of assessments indicates the child's competencies at the end of training. The differences between the baseline and terminal measures indicate, in objective terms, the child's progress over the treatment period.

All assessments can be and should be made by the teacher. In most school systems the school psychologist assesses the abilities and achievements of the child. Using psychometric tests and a modified form of psychoanalytic theory, he attempts to categorize the child, predict his performance in class, and analyze his personality in "dynamic" terms. Little of the information in the psychologist's report is helpful to the teacher in planning an instructional program because generally it does not refer to the specific things the child can do. Even if the school psychologist were trained to provide the kind of information that is relevant to individual program planning, it would still be preferable for the teacher to evaluate her own pupils. The assessment process gives the teacher first-hand acquaintance with what the child can do, his style of performing, and his responsiveness to social contingencies. This kind of direct knowledge is far more helpful to her than a verbal account by someone whose responsibility to the child is already finished.

Assessment Prior to Instruction (Baseline)

As we indicated above, assessment prior to remedial instruction provides information for preparing tailor-made instructional programs for the child. Data for this purpose are derived from (1) direct observation, (2) reports and interviews, (3) psychometric tests, and (4)

inventories and surveys of behavior.

Direct observation. Direct observation of a child's social and academic behaviors, both in the classroom from which he was referred and in the special class during the first few weeks after enrollment, can be recorded by verbal descriptions, rating scales, and check-lists. However, the most serviceable technique found to date is counting the frequency of occurrence of selected classes of behavior. Since this technique of recording has been discussed in detail elsewhere (Bijou, Peterson, & Ault, 1968; and Bijou, Peterson, Harris, Allen, & Johnston, 1969), and since the literature on its use in the school has been comprehensively reviewed recently (Bersoff, in press), only examples will be given here.

One such example pertains to observations of a six-year-old boy in the first-grade classroom from which he was referred. The data, collected during the reading period, are presented in Table 1 under "A". Each box

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represents a continuous 10-second period. There are 30 boxes representing 5 minutes. On-task behavior (working appropriately with the reading materials) and off-task behavior (anything other than on-task behavior) are coded as N and F respectively. Each 10-second box was scored for the occurrence of either or both of these behaviors. Fifty-six percent of the entries were N's and 44% were F's, with an overall observer reliability of 97%. Hence the child was on-task for only a bit more than half of the total six-minute observation periods and had a high rate of switching from reading to non-reading behavior (five times).

A second example is the behavior of another six-year-old boy during a reading period in a public school first-grade classroom. The method of collecting data, shown under "B" of Table 1, gives more information about the child's off-task behavior as well as some indication of its social consequences. The child was on-task 33% and off-task 67% of the observational period. Off-task behaviors, which included physical aggression, teasing, destroying materials, disrupting other children's study, and sitting quietly doing nothing were recorded in the third row of the data sheet. The only off-task behaviors observed in the sample data shown in Table 1 were "disrupting other children's study" shown as 3, and "sitting quietly doing nothing" designated as 6. When the child was off-task, he disrupted other children 27% of the time and sat quietly 73% of the time. The consequences of his behavior (e.g., peer attention, teacher attention, approval, and teacher admonishment), shown as "I" entries in the second row of the "B" section of Table 1, indicate the intervals in which the teacher paid attention (talked) to the child. (See box 13, 20, and 21 in the first row.) Although the child was on-task 33% of the time, the teacher paid attention to him primarily when he was off-task. It is quite possible that her differential attention at least partially controlled this child's high rate of off-task behaviors.

Data from direct observation of a child in the classroom from which he had been referred should be interpreted with caution. First, the presence of an observer in the room may suppress or facilitate the behavior output of the child. The observer can minimize these effects by entering the classroom unobtrusively, by immediately breaking

eye-contact with the child, should it occur, and by making observations at different times of the day (Bijou, Peterson, & Ault, 1968). Second, the presence of an observer in the room may cause the teacher to alter her usual classroom behavior with resulting changes in the child's behavior. Third, some problem behaviors (e.g., physical aggression toward other children) have wide daily variability. Fourth, the data collected usually constitute only a small sample of the child's usual behavior in the classroom.

Another example of using direct observation for baseline information pertains to a child's on-task behavior when he is with a tutor or a teacher and when he is assigned to work alone (e.g., coloring with crayons or copying letters from a model). Figure 1 shows the behavior of a six-year-

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old girl, R.B., in 21 tutored and 15 untutored academic sessions in the remedial classroom. Each successive 10-second period during an observation session was scored if she was on-task for more than half of the interval. It can readily be seen that R.B. was consistently on-task when being tutored, and generally off-task when the teacher gave her attention only intermittently. The arrows indicate the sessions in which reliability measures were taken. Reliabilities for tutored sessions ranged from .94 to 1.00 and for untutored sessions from .97 to 1.00. The information obtained suggested that R.B.'s daily program should include tutoring and that the tutoring sessions should be designed not only to help her make rapid progress in the academic subjects but to teach her how to work alone productively. The latter would be accomplished by the

proper use of percentage and intermittent schedules of reinforcement (Bijou, in press).

Reports and interviews. The second source of baseline information is medical reports and interviews with parents, teachers, and school psychologists. It goes without saying that any mention in the medical reports of poor health, physical disability, or ongoing treatment regimes is taken into account in preparing a program for a child, and any indication of sensory or motor disability or problem is referred for specialized medical evaluation and treatment.

As we indicated earlier, information from interviews with parents, teachers, and school psychologists is not viewed as providing clues for the reconstruction of a child's history but rather as indicators of the conditions prevailing in his current situation. Leads on the kind of support and cooperation the teacher may expect from the parents are of special interest.

Standardized tests. The third source of information is the child's performance on standardized tests. Standardized tests of intelligence and school achievement both yield information about the child's performance as compared with other children of the same chronological age. Standardized school achievement tests yield measures of the child's academic behavior based on selected samples, and are expressed in terms of average grade level or age norms. Because of their low "floors," the Wide Range Achievement Test (Jastak, Bijou & Jastak, 1965) and the Caldwell Preschool Test (Caldwell, 1967) are often used. The Wide Range Achievement measures oral word-reading and writing, spelling, and arithmetic; the Caldwell measures personal information (e.g., name, address, and body

parts); ability to follow verbal directions (e.g., "Put the red car in the black box."); skills in numerical relations (e.g., "Point to the second object."); knowledge of physical attributes (e.g., colors and shapes); and listening comprehension (e.g., "What does a dentist do?"). For the most part, standardized achievement tests provide limited leads for individual program planning.

Intelligence tests such as the Stanford-Binet (Terman & Merrill, 1960) and the Wechsler Intelligence Scale for Children (Wechsler, 1967) indicate a child's aptitude for work in the regular public school classes as they are now constituted, organized, and conducted (Anastasi, 1968 and Humphreys, 1971). Because each can be administered in 10 to 20 minutes, the Peabody Picture Vocabulary Test (Dunn, 1959) or the Slosson Intelligence Test (Slosson, 1963) are often used for this purpose. Intelligence tests provide practically no information for individual program planning. They are often given in a behaviorally oriented special class only because they provide data for school personnel who are interested in comparing a child's school aptitude with children of similar age in a typical school grade placement.

Recently the use of psychometric tests to evaluate school children has come in for considerable criticism by parents and professionals. The position usually taken is that almost all such tests are particularly unfair to children who are disadvantaged in one way or another, and are, because of their emphasis on school-type experiences, less than adequate as measures of intelligence even for so-called normal children. Demands have been heard that such tests should be abandoned by the schools or, if used, then only with the consent of the parents. In further criticism

of psychometric tests, Cronbach (1970) writes:

> I am more convinced than ever that the solution to the ills of testing is to develop sound knowledge of aptitude-treatment interactions. Then we can shift from a selection model or a prediction model to an allocation model, and use test procedures to pick the educational, therapeutic, or other approach that promises best results for the individual. This is both socially and logically right... When we have cross-validated evidence as to what person variables and treatment variables interact, we will be in a position to generate a new kind of practical testing (p.xxix).

Two things need to be said about current testing practices. First, one may support the continued use of intelligence and school achievement tests as long as school personnel continue the practice of selecting and grouping children on the basis of school achievement. However, the purpose of such tests should be merely to ascertain academic achievement as revealed by a particular test and to measure aptitude in the public schools as they are now constituted. Second, it is not at all certain that the ills of testing will be eliminated when test constructors can relate person variables and treatment variables. Such a prediction assumes that the needed transition to a treatment model can be made within the framework of current psychometric theory and practice. This is a questionable assumption. One may argue that the change requires a shift from group analysis to individual analysis. It is quite probable that

the tests of the future will not be based on normative concepts, comparative measures, and group research methodology but rather on functional concepts, behavioral repertory measures, and individual research designs. These tests or assessment procedures will reveal in detail what a child can do in relation to an explicit program of instruction or training (Ribes-Inesta, in press; and Risley, Hart & Reynolds, 1970). Our next topic, assessment by means of behavior inventories, deals with this approach in detail.

Behavior inventories and surveys. Three basic behavior inventories are necessary: (1) a child's abilities in pre-academic and academic tool subjects, (2) his social behaviors, and (3) his likes (functional reinforcers). Academic skills may be assessed by pretests from the reading, writing, spelling, arithmetic, and language programs used in the class. Below is an example of assessing a child for program placement in a Laboratory class. N.B., a five-and-a-half-year-old boy, was referred to the Laboratory School because "he does not relate with adults, has emotional problems, and does not follow or join in group activities." On the reading pretest, N.B. was successful on picture, letter, and word discrimination tasks, so it was not necessary to place him on the pre-reading program which is designed to improve attending behavior. However, he could not identify or sound out phonetically any of the words on the general reading pretest, and could not identify any of the 10 words in the first subset pretest of the reading program although he was able to imitate verbally all 10 words when they were presented orally. Since the latter performance was the prerequisite for the first subset of the reading program, N.B.'s first assignment in reading involved unit one

in set one.

In writing, N.B. held the pencil correctly and copied all the printed letters of the alphabet on unlined paper without major errors. However, his writing showed marked hand tremors. Lined paper (No. 1) was used in the training program designed to reduce gradually the unevenness of his strokes.

In arithmetic, he named the numbers from 1 to 10 and counted sequentially from 1 to the 30's. He was given the pretests for the arithmetic program which showed that he could imitate the numbers 1 through 20 presented orally in random sequence; could count from any number (1-19) to any other number (2-20); could identify (name and point to) any written number from 1 to 20; could make equal sets; and could match sets and numerals. N.B. was started on the finger counting unit, a set arranged to help him learn elementary addition and subtraction.

N.B. was able to recite the alphabet and name the primary colors. He could name all of the upper-case letters (printed models) and all of the lower-case letters except d, b, l, i, g, and p. He was assigned to work on these six lower-case letters during the language and writing periods. Since N.B. had been unable to identify any words in the reading program, he was not given a spelling test because spelling is not introduced until a child has a sight vocabulary of at least 10 words.

Social behavior inventories center on a child's ability to participate as a member of a group. Observations in group situations produce data upon which to make decisions about preparing informal programs which aim to shape peer interactions and participation in academic groups (e.g., Does the child "volunteer" or does he have to be "called

upon?").

Finally, behavior inventories are taken of the child's likes (reinforcers). Because most handicapped children have had an unpleasant experience with school work, close attention must be paid to the assessment of response consequences that support the acquisition and maintenance of academic and social learning. These include teacher attention, school-related activities, and marks (tokens) exchangeable for objects and activities.

An assessment of the reinforcing value of the teacher's attention can be accomplished rather quickly. If the teacher's attention is not reinforcing to a child, he will probably go off-task in tutored situations, including the administration of tests. If the teacher is uncertain about the value of her attention for a child, she can quickly evaluate it by making her attention contingent upon some simple low-frequency behavior. Hand-raising is an example. If her attention is a reinforcer for a child, his hand-raising behavior will increase when she gives him her attention as soon as she sees the raised hand; hand-raising will decrease when the teacher ignores the raised hand and reserves her attention for other behaviors.

Activities such as recess, play-time, or art may also function as reinforcers. They should be evaluated, especially if teacher attention is a weak reinforcer.

Non-exchangeable marks, such as gummed stars, rubber stamps, seals, and numerical and letter grades may function as weak reinforcers for academic learning for some children. The reinforcing value of this class of marks is probably related directly to the strength of contingent teacher attention and comments of approval. If the teacher's attention

and statements of support are not reinforcing to the child, it is likely that non-exchangeable marks will not be reinforcing for him. If, on the other hand, the teacher's contingent responses are reinforcing, these symbols will very likely increase the range of reinforcers and minimize decreases in performances correlated with satiation.

When teacher attention and comments of approval are not reinforcing for a child, then other stimuli that are likely to be reinforcing to the child should be used. These include small toys, candies, school objects, such as pencils, erasers, crayons, chalk, colored paper, etc., participation in preferred activities, and so on. Instead of giving them contingent upon correct responses, it is best to use them as "backups" for marks or tokens. Such a mark or token system has several advantages over dispensing "backup" reinforcers directly: (1) A large number of marks can be dispensed over short intervals; (2) each mark can be given immediately after a response; and (3) the satiation-performance-decrement effect that comes with giving a large number of "backups" can be avoided.

There are several instruments available that may be used as an aid in evaluating the reinforcing function of stimuli for a child. One is the Children's Reinforcement Survey (Clement & Richard, 1971). This two-page set of rating scales requests the informant to rank in order the people, places, and things that a child spends most of his time with or on during each week. Others are discussed by Ackerman (1972), Ayllon and Azrin (1968, and Birnbrauer, Burchard, and Burchard (1970).

Assessment During Instruction

It is generally agreed that diagnosis is, or should be, continuous throughout treatment but progress evaluation is often carried out in ways

that are not functional for this purpose, e.g., oral or written subjective impressions, periodic notes, test grades, or scores on standardized tests at the beginning and end of treatment. To convert this dictum into a workable reality, a systematic approach is needed which yields objective measures that are consistent and compatible with those obtained during the initial assessment period described above.

Three types of monitoring techniques fit this requirement. The first utilizes the actual products of the child's behavior, his work output. Completed writing assignments, sheets of arithmetic problems, written spelling pages, and tape recordings are scrutinized, scored, and entered on progress charts each day. The second technique involves the use of pre- and posttests from the instructional materials. If the academic pre- and posttests are constructed so that they accurately measure the behaviors the programs are designed to teach, they are the best criteria for evaluating the effectiveness of the programs.

The third technique is direct observation of behavior which was referred to in assessing baseline behaviors. This technique as a monitoring measure can take many forms, ranging from simple frequency counts (e.g., number of prompts, or number of correct responses) accumulated in daily or weekly units to automated recording along a continuous-time line (e.g., electronic teaching machines). The equipment required under ordinary circumstances is a mechanical handcounter or a tally sheet. The reliability of observations, however, is sometimes a problem. A more dependable procedure is one in which data are collected by an observer (teacher, aide, parent, or student) who records instances of antecedent and consequent stimulus events and the child's responses on

a sheet with successive time-units (Bijou, Peterson, & Ault, 1968 and Bijou, Peterson, Harris, Allen, & Johnston, 1969). If the stimulus and response events are defined in clearly discernable, observable terms so that two or more observers can agree on their occurrences, this method can be used to record the behavior of a child in relation to the academic tasks, the instructional procedures of the teacher, the behavior of peers, and response contingencies from all of these sources.

Monitoring the frequency of occurrence of behaviors has two other advantages. First, it provides an effective technique for training teachers, teacher's aides and assistants, and parents. Systematic observation of behavior is the keystone to effective teaching skills. Second, it yields objective information on small changes in behavior. Trends indicating increases in a child's desirable behavior can be a powerful reinforcer for both teacher and pupil. Trends indicating decreases in desirable behavior can serve as indicators that one or more of the following interacting aspects of the learning environment requires attention: (a) conditions supporting interfering precurrent behavior (e.g., academic material is too easy), (b) ineffective response contingencies (e.g., intrinsic reinforcement from the task), (c) conditions preventing the occurrence of appropriate responses (e.g., academic material is too hard), and (d) setting or contextual factor (e.g., illness or chaotic conditions in classroom). All four of these factors interact with one another all the time. Hence information from the monitoring procedures must be such that the teacher can discern which one or ones are probably responsible for a specific instance of deceleration. Some examples are given below.

Example 1: Monitoring interfering precurrent behaviors. Most decreases in the strength of interfering behaviors occur as the result of strengthening appropriate behaviors. One source of interfering emotional behavior generates from a child's enrollment in a new class. Although such behavior generally decreases over the course of one or two weeks, occasionally more interactions over a longer period are necessary. The resulting decrease in emotional behavior oftentimes allows the child to display knowledge and academic skills not observed in the initial assessment. For example, R.B., a child in the Laboratory School, initially behaved in many ways best described as fearful. He tended to remain in unoccupied rooms or close to walls, crossed open spaces very quickly, and often hid his face in his hands when approached by an adult or another child. These behaviors made it difficult for the teacher to administer the academic pretests and her impression, from the lack of responses, was that R.B. possessed only minimal academic skills. Two months later, after observational data showed that the interfering behaviors had decreased, she again presented him with the general pretest for the reading program. Excerpts from the teacher's report follow:

> "Of the 40 words on the first page, R.B. read 22 quite clearly. Others were read so that the initial sounds were correct, but he didn't pronounce the last syllables or sound. On the second page of the test, R.B. read 4 out of 13 phrases perfectly. I was not able to tell whether R.B. could understand what he read or not; he did not answer questions about the words he read orally."

Clearly this child did have some academic skills, skills which would not have been discovered so promptly had the teacher not monitored the child's precurrent behavior. Several weeks later, R.B. also demonstrated reading comprehension defined as following simple written instructions.

Example 2: Monitoring adequacy of academic materials. If a child's normally satisfactory performance in academic work suddenly deteriorates, or if he does not acquire some new academic task as readily as he had in the past, the difficulty may lie in the way the academic materials were programmed for him. An example is provided by the performance of a six-and-a-half-year old girl, K.D. on the Laboratory's beginning reading program. After some initial difficulties with discriminated responses to letters, K.D. was placed in the reading program and was doing well. Her performance on Units 38 to 41 is shown in the graph at the top of Figure 2. The "A" portion of the overall-percent-correct curve shows

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Insert Figure 2 about here
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K.D.'s performance on oral reading and comprehension (solid line) was generally accurate and stable. She was reinforced with tokens about 25% of the time, as shown by the broken line. Unit 42 introduced and concentrated on the word "day." Units 40 through 47 each introduced a new word but also included systematic reviews of the word "day." The "B" portion of the overall-percent-correct curve shows that no major difficulties occurred in Units 42, 43, and 44. However, the curve representing accuracy for the word "day", shown in the "B" panel of the middle graph, indicates that K.D.'s performance on the reviews of the word "day" declined to 50% in Unit 44. Previously, during the administration of

Units 37 through 44, an attempt had been made to decrease the frequency of contingent marks. This decrease is shown by the dashed curve in the "B" panel of the upper graph in Figure 2. (The frequency of teacher approval for correct responses, rather than marks, varied between 90% and 100% for all the reading units shown, and thus has not been plotted.) On the assumption that this decrease in the frequency of marks might be the condition responsible for the decrease in K.D.'s accuracy, the rate was increased at the beginning of Unit 45 (the first data point in the dashed curve shown in the "C" portion of the upper graph of Figure 2). However, accuracy for the review of "day" declined even further, as shown in the "C" portion of the middle graph, and K.D. failed to acquire the new word "a", as shown in the "C" portion of the lower graph. She was given Unit 45 again on the following two days and, as shown in the middle and lower graphs, again failed to meet the criterion. It was noted that K.D. usually responded with the word "day" to the written word "a" and vice versa. Accordingly, a short remedial unit was constructed that (1) emphasized discrimination between the written "a" and "day" and (2) utilized a much condensed version of the normal transition from the reading-discrimination task. This remedial unit proved to be effective and K.D. moved on to the next units of the program - 46 and 47. The "D" portion of the upper graph of Figure 2 shows K.D.'s overall accuracy; the "D" portion of the middle graph shows her accuracy for the review of the word "day"; and the "D" portion of the lower graph shows her accuracy for the review of the word "a". All were at 100%.

Assessment at the End of Instruction (Terminal)

Assessment at the end of the school year or at the end of the

treatment period consists of (1) administering the standardized intelligence and achievement tests given at the beginning of treatment, (2) describing the child's performance on his last set of posttests, and (3) describing his school-work behavior and social behaviors. The findings are compared with the data obtained from the initial assessment and with the description of the reason for referral.

The teacher's final report, oriented toward the child's next teacher, is generally a comparison of the child's beginning and end-of-year behavioral status. The summary includes a description of the social and academic skills and knowledge he has acquired. To aid the new teacher in planning for the child, the response contingencies used successfully during the last month are described in detail. Recommendations are based on extensions of the academic materials and teaching procedures that have been effective and on the specific techniques that were successful in strengthening desirable behaviors and weakening undesirable behaviors. Summary comments on the work with parents are also included.

Summary

Diagnosis is an integral part of the remedial teaching of the retarded and emotionally disturbed young child. However, diagnosis from the point of view of behavior analysis is not concerned with placing a child in one or several diagnostic categories, or predicting his performance in a regular or special class, or making statements about the presumed etiology of his problem. Instead, it involves arriving at a set of decisions, in concrete and specific behavioral terms, for designing an academic program that will meet a child's specific academic and social needs. The initial set of decisions is considered tentative,

changing throughout the period of instruction as new findings are revealed.

Information for diagnostic decision-making is derived from assessing the child's performance before, during, and at the end of remedial instruction. Assessment before instruction (baseline) involves medical reports, interviews, psychometric tests, direct observation, and behavior inventories, with the latter two techniques supplying most of the essential data. Interviews supply some information on a child's current home and family situation, while psychometric tests provide information on selection and grouping primarily for public school personnel. Assessment during instruction (monitoring data) consists of direct observation, pre- and posttests from the classroom instructional programs, systematic evaluation of the child's productions, and "counts" of indicators of progress. Assessment at the end of instruction (terminal measures) consists of performances on the last posttests, scores from the readministration of psychometric tests, and descriptions of the child's precurrent and social behavior from objective measures and accounts.

Designating a child, or a group of children, as retarded, or emotionally disturbed may serve a useful purpose in mustering support for special educational programs, in fabricating legislation, and in establishing administrative policies. But such labeling does not help a teacher to work out an effective remedial plan for the child so designated. Only knowledge and systematic application of psychological principles can serve that purpose.

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Footnote

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