
Joseph Zubin

Biometrics Research, New York State Department of Mental Hygiene and Columbia University

Biometrics Research, a unit of the New York State Department of Mental Hygiene, was created in 1956 for the specific purpose of developing objective measures for assessing the behavior of mental patients at time of admission, during treatment, and on follow-up, with the view to improving methods for detection of mental illness, diagnosis, prognosis, and evaluation of outcome of therapy. This unit is an outgrowth of the Department of Psychology of the New York State Psychiatric Institute where I had served as volunteer research psychologist and later as Associate Research Psychologist (1938-1956) while initiating the biometric approach to psychopathology.

The earliest attempt was to develop the Personal Inventory Form (1932), which was a self-administered inventory given to 1000 patients in the Department of Mental Hygiene and which gave rise to the development of pattern scoring (1) and the method of like-mindedness (2). This was followed by the development of objective scoring methods for sorting and abstraction tests and projective techniques (3, 4, 5).

As a result of these endeavors, it became clear that the criterion for the evaluation of the results of psychological tests -- the psychiatric interview, the ultimate basis for diagnosis -- was the weakest link in the chain of our program, and we set about to develop instruments for objectifying the observational techniques and interview methods now in use by clinicians.

It then became apparent that each member of the clinical team, the clinical psychiatrist, clinical psychologist, ward nurse, attendant, social worker, occupational and physical therapist, etc., makes some unique contribution to the understanding of the patient's pathology. Because of the different observational situations afforded each member, a different technique was required for eliciting and recording the observations in each clinical context. The development of such techniques was begun, and the following techniques are now available in various stages of completion: (1) The Ward Behavior Inventory, (2) Mental Status Schedule, (3) Structured Clinical Interview, (4) Children's Behavior Inventory, (5) Social Adaptation Inventory and Anamnesis, and (6) the Work Behavior Inventory.* (6, 7)

1. The Ward Behavior Inventory (8,9,10,11)

The first result was the provision of an instrument for recording the behavior of the patient as observed by nurses, attendants, or special observers on the ward. Material relevant to ward behavior was culled from the literature

*In addition to these techniques, which tap overt and covert behavior reflecting deviations from social-cultural expectations, we also developed a battery of physiological, sensory, perceptual, and psychomotor techniques to tap the culture-free indicators of mental illness (MH 07776, MH 07478).
and in 1953 a Hospital Adjustment Rating Scale was introduced for use in our
prognostic studies at the Brooklyn State Hospital. This became the starting
point for the development of the Ward Behavior Inventory under the direction of
Dr. Burdock, et al.

Present Status

This instrument capitalizes on the observational opportunities afforded
nurses and ward attendants in everyday contact with the patients. The WBI con-
sists of 138 items rated true or not true. All the items describe observable
behaviors as seen during a specified interval of a single day. Neither retro-
spective material nor dynamic inferences are included. Total scores reflect
global pathology and provide evidence of change in response to treatment. The
Ward Behavior Inventory has proved itself reliable when raters are properly
trained and motivated. (Burdock, Hakem, Hardesty, and Zubin, 1960).
Reliability coefficients ranged from .40 for untrained raters to .84 for well-
trained and well-motivated observers. Follow-up studies indicate that the global
pathology score correlates at a low but significant level with outcome in terms
of length of time out of hospital. WBI scores of 107 patients followed for 1
year had a correlation of .23 with an Outcome Index (1961). Several drug studies
have proved the instrument sensitive to change. Among these are the NIMH
9-hospital collaborative study of phenothiazine therapy conducted by the Psychopharmacology Service Center (Cole, J., 1962) and an unpublished study of the
efficacy of a psychic energizer for seniles.

Future Plans (MH-11117)

Future work with the WBI will focus on analysis of patterns of items and
identification of clusters of patients possessing similar symptomatology. In
order to obtain more objective data than those made available by the overburdened
ward nurse specially trained research nurses are to be included in our research
team. The new data to be used in the construction of subcales will be based
on a suitably sampled population of patients drawn from the Washington Heights
area.

2. The Mental Status Schedule (12, 13, 14, 15, 16, 17,

While still serving as Associate Research Psychologist in 1943 I
assisted Dr. Nolan D. C. Lewis in the revision of the third edition of the
Outlines of Psychiatric Examination, the classic handbook for guiding the new
resident in his mental examination of patients. A mimeographed sheet was
provided for checking the pertinent items regarding the psychopathology of the
patient. This was used for a short time and was included in the case history,
but the rapid changes brought on by the end of World War II soon overwhelmed the
training of residents and the use of the mental status schedule fell into discard.

Dr. Burdock, beginning in 1960, assisted by Mrs. Anne Hardesty, and later
by Dr. Robert Spitzer, initiated a new attempt at standardizing the interviewing
of psychiatric patients. This culminated in the development of two instruments,
the Mental Status Schedule and the Structured Clinical Interview (to be dis-
cussed below).
Present Status

The instrument consists of an interview schedule for the mental status examination and a matching inventory of 245 dichotomous items descriptive of small units of pathological behavior. The schedule contains questions arranged in a definite sequence designed to provide for follow-up of incomplete responses. Most of the questions are open-ended so as to encourage the patient to reveal his own mentation. Properly administered, the interview has the "feel" of the clinical evaluation. However, unlike the usual clinical interview, the provision of a specific schedule of questions, a fixed order of presentation, and a uniform coverage of the same areas of psychopathology with each patient makes it more likely that the differences observed will be due to actual differences among patients rather than to different interviewing procedures. This technique has yielded reliabilities of the order of .90 or more when groups of patients were evaluated independently by three psychiatrists. Moreover, it has distinguished significantly between the amount of psychopathology shown by inpatients, clinic outpatients, and former inpatients on follow-up.

Future Plans (MH-08534)

Future work with the instrument will be directed towards developing subscales and towards standardizing the scores on subscales and total on contrasted groups of normals and mentally ill. This work is under the direction of Dr. Spitzer.

3. Structured Clinical Interview (18, 19)

In connection with the development of the Ward Behavior Inventory, which consisted essentially of observations by ward nurses and attendants, Dr. Burdick initiated an interview schedule to be administered to the patients by psychologists.

The purpose of this instrument is to focus on the general social and psychological adjustment of the interviewee. It consists of open-ended questions that are quite neutral in tone and content but which nevertheless permit the interviewee to express psychopathological ideation and behavior. For this reason it is most suitable as an initial instrument for community surveys as well as for admission services in hospitals and clinics.

If this instrument yields a score which makes the interviewer suspect that he is dealing with a possible psychiatric case, more probing instruments can be applied to determine further the nature and extent of the psychopathology. If the interviewee fails to show any psychopathology on this instrument he can be tentatively regarded as "normal." Interviewees who give evidence of psychopathology in this neutral instrument tend to have severer illness than those who require probing to elicit their psychopathology.

Present Status

The instrument consists of an interview schedule of open-ended questions and 178 inventory items which are to be marked true or not true on the basis of the interviewee's answers. The reliability of the total score, which represents the severity of psychopathology exhibited by the interviewee, has been studied by
comparing the results of two or more simultaneous but independent observers. Intra-class correlations among observers have ranged from .83 to .92 for groups of patients ranging in size from 26 to 83. With score on the Ward Behavior Inventory as a criterion for validity, the coefficients for the SCI of .30 to .68 were found, while the coefficient for an unstructured interview with the same criterion was only .22. The following subscales have been developed: anger-hostility, conceptual dysfunction, fear and worry, incongruous behavior, incongruous ideation, lethargy-dejection, perceptual dysfunction, physical complaints, self-depreciation, and sexual deviance.

Future Plans (NH-11117)

Future work with the SCI will be in the direction of developing norms based on suitable samples drawn from the general population and from patients.

4. Social Adaptation Schedule (NH-08534)

This technique follows the form of the Mental Status Schedule in that the patient is examined by means of a structured interview and observations are recorded on an inventory of dichotomous items descriptive of small units of pathological behavior. However, it differs from the examination of the mental status in that the focus is not on symptomatology but on disturbance of function in the context of social adaptation. The patient is examined for evidence of disturbed functioning in the following areas of adaptation: 1) use of leisure time, 2) friendship patterns and involvement in social activities, 3) work adjustment, 4) sexual and marital adjustment, 5) school or vocational training, and 6) level of aspiration. The technique has been designed so that it can be used to supplement the examination of the mental status or can be used on a separate occasion as an independent instrument.

With regard to the anamnesis, we have not yet developed an instrument for this area. It is important, however, to realize that obtaining information on the entire spectrum of a person's developmental history is a research task of the first magnitude. In the experimental approach to this problem it is necessary to develop techniques which will focus on particular critical periods in the history of the individual. It is proposed to begin with a focussed interview dealing with the question of the status of the patient a year before he came for help and, by focussing on this particular period, to arrive at more objective information. A second focus might be the adolescent friendship patterns of the patient, since in some current research we have found this phase of development important in prognosis, especially with regard to type of onset. A third focus might bear on early childhood, especially based on history obtained from the family. In all of these aspects of the anamnesis, at least two members of the family ought to be interviewed for checking purposes. While this may sound impractical for everyday use, it should not be beyond the range of a research project. In fact, the Katz Adjustment Scales (Katz, M. and Lyerly, S. B., in press) are based upon interviews with relatives of patients. Hopefully, the more intensive methods used in this research can form the basis for more practical approaches in the future.

5. The Work Behavior Inventory (NH-11117)

This has been prepared and is being printed for field trials.
6. The Children's Behavior Inventory (NH-03546) (20)

This inventory is being used in the collection of observations of children hospitalized for physical illness as well as for collection of observations in children's services of psychiatric facilities. Three successive two-hour observations are made on an observation day by specially trained psychologist observers. This technique allows for determination of frequency of pathological behaviors over the observation day. Comparisons of the hospitalized normals with the psychiatric patients will lead to development of normative criteria.

7. Statistical Methods for evaluation (21, 22, 23, 24, 25)

The need for improved methods for evaluating the reliability and validity of observational techniques has been a challenge to our group. With the help of our biostatistician, Mr. Joseph Fleiss, we have developed some new approaches to reliability and validity and to the problem of the fractionation of populations into their subgroups along their natural lines of cleavage.

8. Outcome Index (26, 27, 28)

In addition, there has been a continuing effort to develop special statistical measures of outcome in which the period of follow-up and the number of admissions and readmissions have been developed into an encompassing index of outcome. The older method of utilizing the percent of patients out of the hospital on the day of follow-up as a measure of outcome, is no longer useful as a basis for evaluation. Until we can develop more sensitive measures of the degree of readjustment of the patient to the community, these outcome indices which measure motility in and out of the hospital will have to serve.
A. Introduction


B. Ward Behavior


C. Mental Status


D. Structured Clinical Interview


E. Children's Behavior Inventory


F. Statistical Methods for Evaluation


* The Mental Status Schedule was used in these studies.

