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Sound Recording and the Problem of Evidence in Psychiatry[1]

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Recording the verbal behavior of patients. Research workers in the field of psychodynamics have long been in the paradoxical situation of having their most productive source of data, the psychiatric interview, closed to the scrutiny of independent observers. Much of the research and instruction in the field of psychotherapy has thus depended on hearsay. In order to subject the patient-therapist relationship and the verbal and other behavior involved therein to study, psychotherapists have resorted to note-taking. Freud (*1*), who noted that the presence of a third party may distort to a significant degree the productions and behavior of patient and physician, made his records retrospectively at the end of a working day. Some workers have followed this lead. Others take occasional notes during the course of an interview, recording a key word or phrase and using it later as a stimulus for further elaboration. Such elaboration generally takes place a long time after the original notes were jotted down. Still others take profuse "verbatim" notes throughout each session.

These methods are subject to a number of criticisms. They depend on the author's memory, and the records may contain significant omissions and distortions. Kubie (*2*) draws attention to the impossibility of retaining by unaided memory an adequate record of the course of treatment. Even the most proficient note-taker misses critical material, and attention to the note-taking process inevitably detracts from attention to the interview situation itself and from the aim of the interview, diagnostic or therapeutic. This not only contributes to omissions, but is one source of actual distortion of data, inasmuch as the behavior and attention of the psychiatrist influence the productions of the patient.

Not so obvious, but perhaps more important in the recording of psychiatric interview data, is the influence of conscious and unconscious screening in the therapist himself. The incoming sensory material often is neither adequately nor completely recorded. The authors found by comparing memories, notes, and actual transcriptions that important material often was omitted. At times recorded interviews elicited responses of startle and surprise, as though the therapist had not previously been in the actual situation and had not previously heard the patient's and his own verbal productions. Omissions, distortions, elaborations, condensations, and other modifications of the data occur, and these all contribute to the difficulty of evaluating what really happened. These processes are important from the viewpoint of methodology and are being studied further.

Recording the verbal behavior of therapists. Observations of the patient and his productions constitute but one part of the significant data of an interview. Another part should consist of observations of the therapist, how he responds to the patient, and how his behavior provokes activity on the part of the patient. Theoretically, the fully trained and experienced psychotherapist should constantly be able to evaluate his own as well as the patient's psychological status during the course of the interview. This cannot, however, be scientifically confirmed unless another observer can somehow be introduced into the situation. This observer cannot, of course, be directly aware of the unverbalized or unconscious thoughts and feelings of the therapist, but on the basis of observed behavior, augmented by accounts of the therapist's own ideations and rationale of treatment, inferences should be possible (*3*). It should be kept in mind that changes of the interviewer's status from participant to observer alter the context of the interview (*4*).

Sound recording as an observational method. As verbal behavior is of paramount importance in psychotherapy, sound recordings permit adequate reproduction of the main features of the process. The method was initially used by Zinn (*6*), F. Deutsch (*7*), Bierer (*8*), and more extensively by Rogers (*9*) and his students. Recently the technique has been perfected to such high standards of fidelity that it has become possible to realize its full potentialities. Minor inflections and nuances, and details of verbal interplay that were formerly missed are now picked up. Unobtrusive though not concealed sound recordings may be obtained in a fashion that need not disturb therapist or patient. Listener strain is reduced to a minimum, and reproduction is of auditorium or broadcast quality (*10*). The data, preserved on tape, may be listened to and analyzed carefully, with opportunity for relistening, by more than one observer. Through the use of recordings the "iron curtain" of the psychotherapist's office, which has so far blocked independent critical inspection, can be lifted.

Direct observation of interviews. As indicated above, inferences about the participants in an interview are based on visual as well as auditory cues. This is one reason why it is important that observers who listen to recordings of interviews be themselves experienced in interviewing. The experienced therapist will not overevaluate auditory cues and underestimate the im-

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portance of nonauditory cues. A blank pause on a tape record may represent a smile or sympathetic gesture by the therapist, the silent weeping of the patient, or innumerable other behavioral possibilities. Unless, as Kubie (*5*) recommends, a movie of the interview is taken, the visual impressions cannot be recorded for exact reproduction. So far, however, the technical difficulties in unobtrusively making sound movies of the psychotherapeutic process have not been overcome. For more fleeting impressions, one-way mirror observation is being widely used. This allows simultaneous direct observation by a number of observers, whose independently arrived at formulations may then be compared.

Inferences and primary data. There have been only a few studies (*13–16*) dealing with the problem of evidence in psychoanalytic propositions. From these it is apparent that detailed specific and concrete reports of the original data and the psychological and logical processes leading to inferences regarding such material are extremely rare. Actually, perusal of the psychiatric and psychoanalytic literature indicates that in a number of instances inferences by the therapist are treated as if they were primary data. Recognition of the unique features of the psychotherapeutic interview as a data-gathering situation does not, however, imply the theoretical inapplicability of the usual scientific criteria for evidence, or obviate the ultimate necessity for critical evaluation of data by independent observers. There are, of course, tremendous practical difficulties involved, and sound recording offers only the most elementary approach to many of these, especially to problems related to the identification of unconscious or partially conscious, unverbalized factors in the therapist and their influence upon, and interaction with, similar phenomena in the patient.

The recognition of limitations is not, however, a valid argument against the employment of new methods. Recordings permit study of the therapist's interpretations to patients and of his inferences made for the benefit of scientific colleagues. This medium will help to introduce a more rigorous operational approach, differentiating primary data, deductions, and inductions. As data become accessible to multiple observers, problems of agreement, reliability, validity, probability, and prediction may be studied. The differentiation between basic principles—if such exist—and individual practices based on common or uncommon sense and intuition is one of the important problems that may be studied with this method. Studies of the dynamics of the therapeutic process, variables in patients and therapists, and the evaluation of the total therapy should be within the realm of an objective approach.

Recordings may also be used in the evaluation of experimental organic therapies. The Yale Lobotomy Project is currently employing this technique in evaluating the dynamics of the interview situation with patients before and after prefrontal lobotomy.

One last word of caution should be added: The systematic analysis of sound recordings is an extremely time-consuming procedure. The procedure itself is at times uncertain and unsystematic unless a rather specific project is pursued and specific questions are asked. Such lack of system is one of the consequences of the absence of a universally accepted and satisfactory theory of behavior—notwithstanding some important beginnings in the creation of a science of behavior, such as the attempt to fuse concepts of psychoanalysis and learning theory (*11*) and H. A. Murray's approach (*12*). Improvement of procedure will lead to better theory, which in turn will permit a more systematic method in the complex science of normal and abnormal human behavior.

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Some Effects of High Velocity Electrons on Wood

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It has been shown by others that ionizing radiation of suitable intensity will produce chemical changes in materials subjected to such radiations (*1–3*). The modification of a 1-mev pressure insulated resonance transformer-type x-ray unit (*4*) provided a source of high velocity electrons with which a dose was accumulated at the rate of approximately 0.14×10^6 equiv r/sec. Much higher doses are readily realized with this source than with the usual x-ray and radioactive sources.

Irradiation of basswood with high velocity electrons alters its structure in such a way that some of the

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