

DIRECT MEASUREMENT OF COMMUNICATION DURING PSYCHIATRIC ADMISSION INTERVIEWS*

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Summary—A new technique has been developed which allows the continuous, automatic and direct recording of the auditory and visual communication between two persons. This study presents findings derived from the application of this technique to the analysis of interviews of newly-admitted patients by the admissions director of a large state hospital. Although most of the patients included in the study were acutely disturbed at the time of the interview, all but two began responding almost immediately and continued to respond throughout the interview at rates high enough for the interview to proceed satisfactorily. Both the patients and the interviewer adjusted to the artificial nature of closed-circuit television within 10–15 min. The patients' rates of looking, listening and talking correlated negatively with the severity of their illness. Cumulative records of several interviews demonstrate that speech-content of significance to a patient frequently correlates with altered rates of looking and listening. Suggestions for further research with this method are also given.

INTRODUCTION

FREE-OPERANT techniques have been successfully used over the past ten years to analyse individual human behaviour. The utility of these methods for the study of behavioural pharmacology and behavioural pathology has been clearly demonstrated (Lindsley, 1960, 1962b, 1962c).

These methods have also been used to investigate interactions between two persons. Co-operation, competition and leadership behaviour in normal children and adults have been experimentally controlled and directly recorded (Azrin and Lindsley, 1956; Cohen, 1962; Lindsley, 1961). With the addition of closed-circuit television and conjugate reinforcement, the techniques have been further refined to permit direct and separate automatic laboratory measurement of the talking, looking and listening behaviour of chronic psychotic patients during psychotherapy sessions (Lindsley, 1962a). The exploratory results reported by Lindsley show that the method is sensitive to marked changes in (1) type of therapist (psychologist or fellow patient), (2) therapist's speech (responsive or silent), and (3) psychotic state of the patient (occurrence of hallucinatory and paranoid episodes). Furthermore, the closed-circuit television and continuous response recording did not appear to distort the psychotherapy session.

The present study was undertaken to determine further the sensitivity of the method for analysis of communication during psychotherapeutic and interview sessions. Initial psychiatric admission interviews were selected as extreme tests of the practicality and sensitivity of the method because (1) since the psychiatrist was not a developer of the method he would not be positively biased concerning its value, (2) in their first interview, patients would be maximally anxious and minimally motivated to co-operate, and (3) the content variables of admission interviews should be as subtle as any of importance in long

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term, intensive psychotherapy. Testing the method on a minimally involved psychiatrist, interviewing minimally motivated patients, in a search for the most subtle content variables, would reveal the degree of sensitivity of the method and suggest the amount of distortion it would introduce into standard psychotherapeutic sessions. The results from 16 admission interviews demonstrate that the method is relatively distortion-free and is sensitive to subtle content variables.

METHOD

Patients and interviewer

Eight men and eight women, newly admitted to a large state hospital, were initially interviewed by the admissions director of the hospital. The patients were from 16 to 50 years old. Patients' later diagnoses included neurotic depression and character disorder, as well as acute and chronic schizophrenia.

Experimental rooms

A patient and the interviewer sat in separate sound-attenuated rooms, yoked by television cameras and microphones (Fig. 1). A television screen in each room displayed images of the person in the other room.

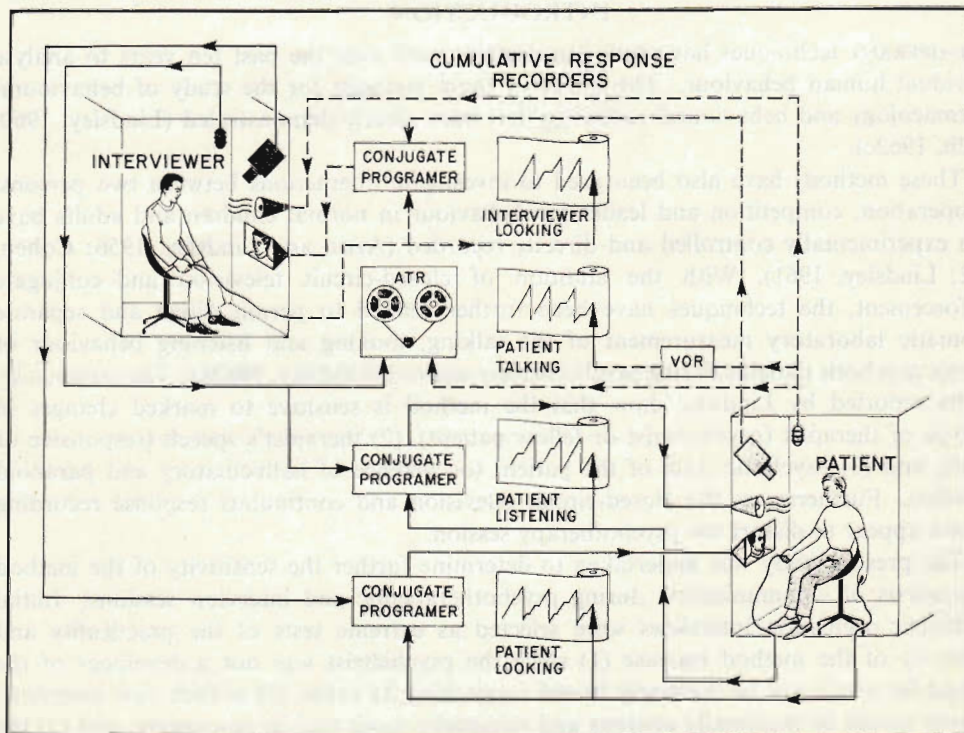


FIG. 1. Apparatus schema for direct measurement of receptive communication responses between patient and psychiatrist interviewer using closed-circuit television. The looking, listening and talking of the patient and the looking of the psychiatrist are recorded on four separate cumulative response recorders. VOR indicates a voice-operated relay and ATR a two-channel audio tape recorder for recording interview content.

The patient had a switch* (operandum) in each hand, one to increase the brightness of the image on his television screen and the other to increase the intensity of the sound from a loud-speaker mounted above the television screen. By pressing the switches at high rates (above 60 responses/min), the patient could look at and listen to the interviewer continuously at maximum intensity. At intermediate rates of responding, the television image dimmed and the sound diminished. If the patient paused for even a few seconds, he could not see or hear the interviewer. In other words, the patient had to press his switches in order to receive communications from his interviewer.

The interviewer did not have to respond to hear the patient, but he had to press a handswitch to maintain the video image of the patient.

Recording

Looking and listening responses of the patient and looking responses of the interviewer were automatically and continuously recorded on separate counters and cumulative recorders. In addition, the patient's speech was fed through a voice operated relay† (VOR in Fig. 1) and recorded continuously on another cumulative graphic recorder.

In cumulative recording, the paper moves continuously at a constant speed, while a pen moves up the paper one small unit with each response. Thus, a high rate of responding is indicated as a steep line and periods of no responding as horizontal lines on the record. In the records presented here, the recording pen was automatically reset after every 200 responses. Pips in the cumulative records indicate separate content variables in the interview. Only those content variables which produced changes in response rate are discussed in this paper.

Whenever responding in order to look or listen ceased for more than 3 sec, a hatchmark (downward movement of the recording pen) was automatically made on a horizontal line below the appropriate cumulative record. This pen maintained the "down" position until a response was made to terminate the pause.

A two-channel audio tape recorder (ATR in Fig. 1) recorded the patient's speech content on one channel and the interviewer's speech content on the other. This objective recording of interview content (topography) was compared with the continuous, automatic graphic recordings of switch pressing and vocal responding to determine the relationships between the verbal content and listening, looking and talking rates of each interview. Although the comparison itself cannot be done automatically, reliability can be maximized by using several independent data analysers. Also, the records can be stored indefinitely for later verification.

Response cost

The rates of looking and listening responses required to keep the picture and sound of the closed-circuit television at maximum intensities were separately and functionally determined for each response and each individual in the following manner: Initially, a low required rate of 30 responses/min was set for each patient. When the patient was responding evenly at this rate, the requirement was raised gradually to a point at which he could no

* The handswitches, purchased from Grason-Stadler, West Concord, Mass. (Cat. No. E7742) were calibrated to require a force of 600 g through 0.5 cm to close the contact.

† The voice-operated relay was also manufactured by Grason-Stadler (Model No. E7300A). Speech transients or "grammatical stresses" were selected to operate the relay by adjusting the attack and release times of the relay in addition to the gain.

longer maintain the required rate. The rate requirement was then lowered to the highest maintained required rate for the duration of the interview. This individually adjusted procedure was followed because exploratory data had suggested that (1) the records were most sensitive to discrete and subtle changes in content variables at the highest requirement rates, and (2) there were wide individual differences in the highest requirement rate that could be maintained. Manipulation of response cost by changing the force required to press the switches was not attempted in this experiment.

RESULTS

Absence of methodological distortion

Although most of the patients interviewed were acutely disturbed at the time of interview and these were the first interviews between the patients and physician, all but two women (both later diagnosed as chronic schizophrenic) began responding almost immediately and continued to respond at rates high enough for the interview to proceed satisfactorily. Several patients spontaneously said that after a few minutes, they "forgot" about having to press the switches to look and listen. No patient objected to the television or switch-pressing required by the method. The interviewer suggested, in addition, that patients seemed to focus on significant admission determinants even more quickly when using television than in office interviews over a desk. He thought this was due to a reduction in the patients' anxiety which is often quite high in office encounters.

The interviewer was surprised to find that he himself felt less anxious using the television, because he had previously thought himself free of anxiety in office admission interviews. If this observation is supported by further research with this method, it will indicate that the interviewer (as well as the patient) has no absolute indication of his anxiety level. Only relative information is available to him, and he will never know if he is "anxiety-free" or merely "anxiety-stable" until his asymptomatic anxiety is further reduced by some change in himself or the interview situation.

Relation of response rates and severity of illness

Patients' rates of looking, listening and talking appear to be negatively related to the severity of their illness. Two withdrawn patients who were mute and isolated on the admission ward did not press to look at or listen to the interviewer and talked to him relatively infrequently. Eleven patients in intermediate degrees of social contact looked, listened and talked at intermediate rates. Three patients, all considered in good contact, looked and listened at very high stable rates (above 120 responses/min) during most of the interview and talked at correspondingly high rates.

Effect of content variables on patterns of responding

The free-operant interview technique is sensitive to subtle admission interview content variables. Cumulative records of interviews with three patients demonstrate that speech content of significance to a patient produces decreased rates of looking and listening. These patients were in moderate social contact on their wards and were in varying degrees of remission from their psychiatric illnesses.

Figure 2 is the record of an interview with a 16-year-old boy who was accused of raping a 9-year-old girl. This patient was not considered withdrawn by the interviewer and maintained socially appropriate behaviour on the wards. During the first part of the admission inter-

view, the interviewer asked the patient about his school history, home life and aspirations for the future ("Background" in Fig. 2). The patient's looking and listening rapidly stabilized at rates above 120 responses/min with only occasional pauses of more than 3 sec. Talking behaviour was maintained at a high, fairly even rate (above 100 grammatical stresses/min). After approximately 22 min, the patient began to discuss his "hallucinations" ("Halluc." in Fig. 2), which he later reported had not actually occurred. Although the patient's talking and listening continued at about the same rates as during the "background" segment, there were more frequent pauses in looking during the "hallucination" segment (shown most clearly by the increased frequency of hatchmarks on the horizontal line at the bottom of the record). The patient was then asked to describe the events of the rape ("Rp." in Fig. 2). He continued to listen to the interviewer, but his talking rate decreased significantly and became less stable. During approximately one-fourth of this segment he did not respond to look at the interviewer. During the last 7 min of the interview, when the patient's ward activities were discussed ("Wrd." in Fig. 2), he responded at more even rates as he had in the first or "background" segment.

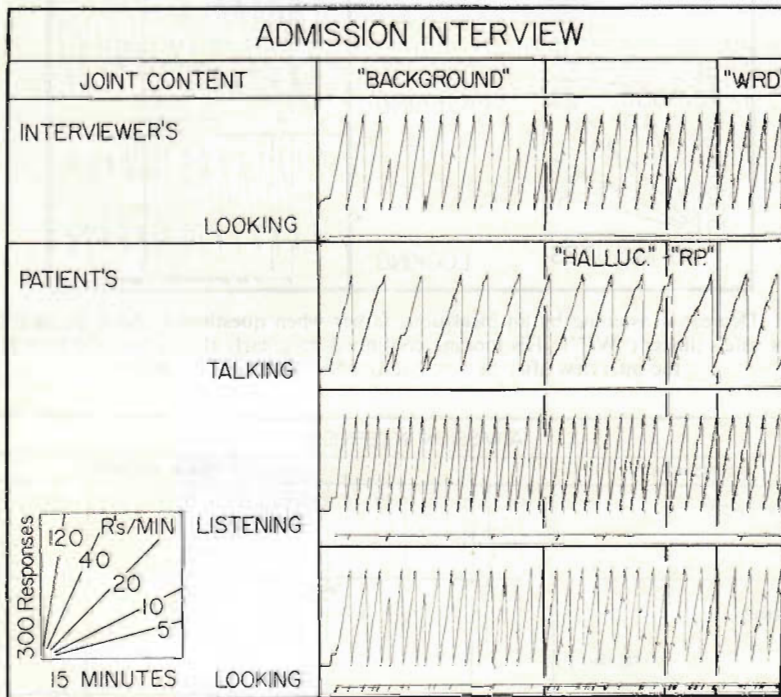


FIG. 2. Increased variability and pausing in adolescent patient's looking at the psychiatrist when the patient lied about having hallucinations ("Halluc.") and when he discussed a rape ("Rp.") of which he had been accused.

Figure 3 is a record of the interview between the admissions director and a 33-year-old man who had committed incest with his 14-year-old daughter. Brief decreases in the patient's rates of looking and listening occurred when he was questioned about the incest ("Inc." in Fig. 3) and about his wife's illness ("Wf.") which resulted in her hospitalization. At both these points, the patient stopped pressing briefly and was therefore unable to see or hear

the interviewer. After a question about the incest, the patient's looking at the psychiatrist was disturbed until the end of the interview, but he continued to listen at rates comparable

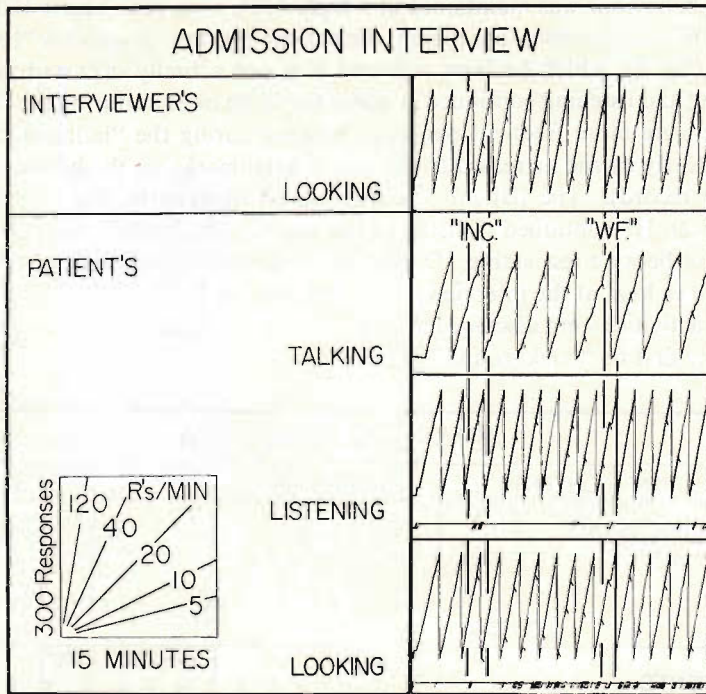


FIG. 3. Decreased listening by an incestuous father when questioned about incest ("Inc.") and his wife's illness ("Wf."). His looking continued irregularly throughout the later part of the interview after he was questioned concerning the incest.

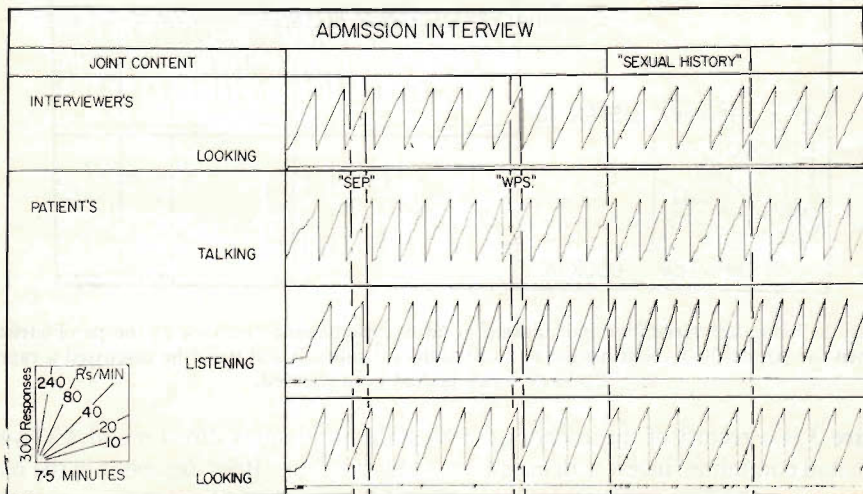


FIG. 4. Brief pauses in a young wife's listening rate when she described a separation from her husband ("Sep.") and when she wept during her interview ("Wps."). She looked at the psychiatrist unevenly while she described a lengthy sexual history involving several men.

to those achieved in the beginning of the session. Throughout the interview, the patient's talking rate and the interviewer's looking rate remained uniformly high, though the talking rate became variable subsequent to the incest question and remained so until the conclusion of the interview.

Figure 4 is the record* of an interview with a 35-year-old woman who was later diagnosed as suffering from a character disorder. During most of the interview, her rates of talking, looking and listening were high and stable, with few pauses and little variability in responding. However, this patient decreased her rate of listening responses and paused for short periods of time when she talked of a recent separation from her husband ("Sep." in Fig. 4) and when she wept after discussing her marital discord ("Wps."). In addition, when she was asked to relate her sexual history, she continued to press to listen to the interviewer but frequently paused in looking at him.

DISCUSSION

This article is one of a series reporting the development and refinement of a new method for measuring interpersonal communication behaviour with special application to psychiatric interviews and psychotherapy. This new method was suggested in two earlier articles (Lindsley, 1963a, 1963b). In a third article the method was first applied to major communication variables in recording looking and listening of chronic psychotic patients in interviews with a psychologist (Lindsley, 1962a). The exploratory data showed that the method is sensitive to (1) type of therapist, (2) nature of therapist's speech, and (3) psychotic state of the patient. This paper continues the development of the method and reports its application to more subtle communication variables in recording the looking and listening behaviour of acutely ill psychiatric patients in their first admission interview.

Exploratory data derived from the first application of this method (Lindsley, 1962a) showed that chronic psychotics responded at high rates for short periods of time to communicate with a psychologist, though they did not do so with fellow patients. The present data indicate that patients with various other psychiatric diagnoses will respond at high rates for longer periods of time to look at and listen to a psychiatrist interviewing them on admission to a state hospital. Although the interview presumably produced a high degree of anxiety in the patients interviewed, all but two of them did respond at rates high enough for the interview to proceed satisfactorily. In addition, although some patients employed the operant schedule of looking and listening to avoid discussing stressful admission determinants, most of them were eventually brought to these topics. Several patients not only talked voluminously about their reasons for coming to the hospital but also showed corresponding altered patterns of operant behaviour while doing so. It is concluded that this new method is sensitive to changes in the affective value of verbal content in interpersonal communication, even though environmental factors that might decrease its sensitivity are present. It is also concluded that the method, first applied in the laboratory, can be used in the clinical setting with minimum disruption of on-going clinical processes.

Early research with this technique found that chronic schizophrenic subjects' operant communication behaviour often varied directly with the frequency of a partner's speech. The present research indicates in addition, that frequency and variability of communication behaviour in subjects in good psychiatric remission often vary independently of a partner's

*The cumulative recorders were run twice as fast in the later interviews as shown in Fig. 4 in order to reveal more clearly slight and brief changes in response rates. The subtle content variables of interest are often brief and therefore require such a fine grain temporal analysis.

verbal behaviour. Changes in a subject's operant behaviour often occurred in the absence of marked changes in the interviewer's rate of talking. These results are attributed to the effect upon communication behaviour of variables more subtle than rate of partner's talking. Some of these variables are probably characteristic emotional responses to specific verbal content in interpersonal communication while others are probably verbal and non-verbal cues given by a communication partner. The more subtle variables affecting communication are extremely difficult to isolate and describe, especially those peculiar to the individual. It is apparent, however, that this method is sensitive to certain of these and that continued development of the method will both increase this sensitivity and aid in the description, isolation and definition of a variety of variables affecting communication behaviour.

Previous research with this technique was confined to chronic schizophrenic subjects. They did not respond to communicate at high rates for more than a very few minutes. The present research utilized both chronic and acute schizophrenics as well as patients with less severe disturbances. Most of the latter patients continued to respond at high operant rates during their interviews, while the more seriously disturbed patients in this research either did not respond at all or did so at very low rates for short periods of time. It is possible that the operant communication response rate can serve as an index of severity of psychiatric illness, since severity of illness (judged from diagnosis and ward behaviour) and rate of operant communication behaviour consistently correlated negatively in this research. Two chronic schizophrenic patients, severely regressed in their ward behaviour, did not respond at all to communicate with the interviewer. At the other extreme, several patients who were in very good social contact on the wards and who were diagnosed as being neurotic, responded at very high rates to communicate with the interviewer.

As reiterated above, the major purpose of this research was to extend the applicability of this method from the experimental laboratory to the clinical situation. While accomplishing this, the sensitivity of the method was increased by functionally calibrating the voice-operated relay to reflect more accurately the frequency of talking. This was achieved by programming each subject's characteristic differential rate requirement to maximize the sensitivity of this index of communication behaviour, and by accelerating the speed of the recorder paper so that it would more clearly reflect changes in subjects' response rates. These apparatus alterations are detailed above.

The study also suggested further refinements of technique to be employed in the future. Among these are increasing the force required to operate the switches, since the present data suggest that this method's sensitivity is enhanced by increasing response cost. In addition, the use of foot rather than hand switches will be investigated as a further possible aid to increase the method's sensitivity. Finally, two more response channels, to record the interviewer's listening and talking rates, will be added, in order to record automatically the entire communication relationship.

Beyond the pressing need to delineate the above-mentioned variables, the method can be used clinically to train neophyte therapists, by providing them with immediate feedback on the effect of their behaviour on their patients. It might also gauge progress in psychotherapy and supervision, by reflecting an increase or decrease in subjects' response rates through several sessions, in order to measure the changing reinforcement value to the subjects of their partners. Finally, the method might allow the early assessment in a prospective therapeutic relationship of its chances of success, judged from the pattern and frequency of operant communication responses produced by its proposed participants.

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