British Journal of Psychiatry (1985), **146**, 399–404

Language in Schizophrenia
The Structure of Monologues and Conversations

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Summary: Experimental research into language in schizophrenia has been guided traditionally by two main assumptions: that language disturbance is widespread among schizophrenic patients and easy to detect and measure, and that schizophrenia is fundamentally a cognitive disorder in which language disturbance is part of an inability or failure to regulate one's thoughts. However, recent findings have challenged both assumptions. Two experiments are reported here, the first based on monologues, the second on conversations, which were subjected to reconstruction and discourse analyses. Schizophrenic material is found to be harder to follow than normal, and is characterised by poor reference networks and inappropriate use of questions. While some of the results are specific to the schizophrenic group, others are found also in affective patients, but none is the product of formal thought disorder. The central problem lies less in cognition than in the social process of taking the role of the other.

For many years, experimental research into language in schizophrenia has been guided by two main assumptions: that language disturbance is widespread among schizophrenic patients and easy to detect and measure and that schizophrenia is fundamentally a cognitive disorder, in which language disturbance is part of an inability to regulate thoughts (Maher, 1966, 1972; Salzinger, 1973; Salzinger *et al*, 1978; Schwartz, 1978). Recent findings, however, have begun to challenge both assumptions (Brown, 1973; Schwartz, 1982; Rutter, 1982), and the purpose of this paper is to explore the issues further.

One piece of evidence against the traditional view came from a study by Rutter (1979), in which a technique of analysis called 'reconstruction' was used. One of the most widespread methods until then had been Cloze Procedure, in which uninterrupted monologues from schizophrenic speakers were recorded and transcribed, and every fourth or fifth word deleted from the typescript. Panels of readers were then asked to fill the gaps, and the more words they guessed correctly, the less disordered and the more communicative the passage was said to be. Many comparisons were made with normal speech during the 1960s and 1970s: sometimes schizophrenic language appeared to be disordered (Salzinger, 1973; Salzinger *et al*, 1978; Schwartz, 1978); sometimes it did not (Rutter *et al*, 1977, 1978; Schwartz, 1982).

One reason for the inconsistent results might well be that Cloze Procedure operated at too low a level of context, and that all it could detect were abnormalities *within* sentences. Might it be that there *is* a detectable and reliable abnormality in the structure of schizophrenic speech, but that it lies in the way sentences are *sequenced* one after another? If so, a different approach would be needed, and it was here that reconstruction was introduced (Rutter, 1979). As part of a standard interview, schizophrenic patients and normal control patients were asked why they had come into hospital. The passages were transcribed and punctuated into sentences by a 'blind' assistant, and the first ten sentences from each passage were typed onto separate strips of card, one sentence per card. The ten cards were then shuffled, except that the first always appeared on top, and students were asked to put the sentences into what they believed to be the original order. A simple system of scoring was used, so that each time a sentence was placed correctly after its immediate predecessor, one point was scored—up to nine for a perfectly reconstructed passage. There were two main findings. Firstly, the schizophrenic passages were reconstructed less accurately overall than the normal passages (though not quite significantly so), with the normal scores some 30% higher than the schizophrenic scores. Secondly, few long strings of sentences—three or more—were achieved in reconstructing the schizophrenic passages. Thus, there *was* evidence of language disturbance in schizophrenic patients, and it occurred in the way the patients sequenced their sentences; i.e. it lay, not within individual sentences, but in the way the discourse was structured.

Another piece of evidence against the traditional view came from Rochester *et al* (1977) and Rochester & Martin (1979) who used a formal

linguistic analysis of discourse structure. Three groups of subjects were tape-recorded as they delivered monologues to an experimenter: thought-disordered and non-thought-disordered schizophrenic patients, and normal controls. Two main differences were revealed. Firstly, the schizophrenic patients, especially those who were thought-disordered, used fewer cohesive ties than the other subjects, with the result that the links between their phrases and clauses were often weak and tenuous. Secondly, the thought-disordered group showed marked abnormalities in their reference networks. Sometimes they would present new information but then fail to follow it up, so that the listener was left wondering what had become of the loose ends; and sometimes they would assume information they had not in fact given, or make ambiguous references to earlier text, so that the listener was unable to trace the referent. What was happening, it seemed, was a failure to structure discourse in a way which the listener could understand and follow. The central problem, in other words, was not so much cognitive as social: a failure or inability to take the role of the other.

Those were the considerations which led to the present paper, in which I wished to explore two main issues. The first was simply whether my own findings from reconstruction and Rochester & Martin's findings from discourse analysis would be confirmed with a larger sample of data. Thirty-five schizophrenic patients were therefore compared with 17 control patients, and the results of both types of analysis constituted Experiment 1. The second issue was concerned more directly with theory, for almost all the literature has been concerned with monologues and no experimental study has examined conversation, which one might argue is the most natural and most useful way to approach questions of communication, and likely to reveal the most important effects. Twelve schizophrenic patients were therefore recorded in two conversations each, one with another schizophrenic patient and one with a nurse, and comparisons were made with 12 psychiatrically normal chest patients, each of whom held two similar conversations, one with another chest patient and one with a nurse. Reconstruction and discourse analyses were both conducted, constituting Experiment 2.

Experiment 1—Monologues

Method

Rutter (1979) and Rochester & Martin (1979) had both used small samples of schizophrenic patients, and there were two main issues to investigate: would the findings be confirmed with a larger sample? and might they be especially noticeable in thought-disordered patients as has sometimes been suggested before (Rochester & Martin, 1979; Manschreck *et al*, 1979, 1980, 1981). Three hypotheses were therefore tested: (a) schizophrenic material will be reconstructed less accurately than control material; (b) schizophrenic material will produce a different discourse structure from control material, with weaker cohesion and poorer use of reference; and (c) the abnormalities will be most marked in thought-disordered schizophrenic patients.

Thirty-five schizophrenic patients, seven psychiatric patients with affective disorders, and ten psychiatrically normal orthopaedic patients took part in the experiment. All were recent admissions to hospitals serving Oxford and Edinburgh, and diagnoses were based on the conclusions of the admitting team. The schizophrenic and normal groups included the patients who had taken part in the experiment of Rutter (1979), and the remainder were selected at random from the available adult admissions of each type. As part of a routine interview with the author or an assistant, all the patients were asked why they had come into hospital, and the 25 schizophrenics who had not been used before were also asked to complete the Bannister-Fransella test of schizophrenic thought-disorder (Bannister & Fransella, 1966). The first ten sentences from each of the 52 'admission' passages were prepared in the same way as before, and each was then reconstructed by two or three undergraduates as part of a practical class in social psychology. The students were told only that the passages came from 'hospital patients', and each was asked to reconstruct three of them, as one of a number of tasks which were completed during the session. Scoring was the same as in the previous experiment—one point for each sentence placed correctly after its immediate predecessor, giving a maximum of nine per passage.

The analysis of discourse was based on the system used by Rochester & Martin (1979), and there were two parts. The first examined the number of cohesive ties in each passage, and the frequency of each type of tie: lexical, reference, conjunction, substitution, and ellipsis (Halliday & Hasan, 1976). The second analysis examined the reference network, and there were two types of reference: phoric, i.e. reference back to previous text; and non-phoric—generally the presentation of new material, which may or may not be followed-up (Berry, 1975, 1977). The unit of analysis was the nominal group, which corresponds approximately to the noun phrase in phrase-structure grammar, and the first stage was to calculate the proportions of nominal groups which were phoric and non-phoric respectively. Phoric units were then broken down into endophoric, exophoric, first-person, bridging, and ambiguous; and non-phoric units into initiating and non-initiating (i.e. followed-up and not followed-up). All the analyses of discourse were conducted by a trained linguist, and a sample was re-scored independently by a second trained linguist to check for reliability.

Results

The first prediction stated that schizophrenic material would be reconstructed less accurately than control material. Points from strings of two were separated from those from strings of three of more, as in Rutter (1979),

and all the 17 control passages were regarded as a single group, since there was no difference between the affective patients and the orthopaedic patients. The results are given in Figure 1, and the prediction was supported (T^2 = 9.1; df 2,49; P <0.02). Whereas in the earlier experiment the greatest difference occurred in strings of three or more, this time the two slopes were very similar, and an *overall* significant difference was therefore revealed. The reconstruction scores for control passages were some 20% higher than for schizophrenic passages.

The second prediction moved to discourse structure, and the expectation was that schizophrenic material would be characterised by weaker cohesion than control material, and by poorer use of reference. For cohesion, the results were very straightforward, since neither the frequency nor the type of ties revealed any difference between the schizophrenic and control material. For reference, however, the pattern was more complex, around 70% of nominal groups being phoric and 30% non-phoric for both schizophrenic and control patients, with no difference in frequency between the two groups of subjects. There was also no difference in the types of non-phoric reference, but differences did emerge in the types of phoric reference. The means for the three groups of subjects are given in Table I. When the two control groups were combined, giving 35 schizophrenic patients against 17 controls, three of the five measures produced a significant difference, so that schizophrenic patients were less likely than controls to refer to previous text (t = 3.4; df 50; P <0.002), but more likely to refer to themselves (t = 2.4; df 50; P <0.025) and to make references which were ambiguous (t = 2.2; df 50; P <0.05). However, a closer inspection revealed that for two of the three significant measures (first person, and ambiguous), the orthopaedic control patients were themselves significantly different from the affective control patients, so that what had really emerged was that orthopaedic controls were using their reference networks more appropriately and coherently than *both* the psychiatric groups. There were no other differences between the two control groups, nor were there any significant correlations between discourse measures and reconstruction scores for either the schizophrenic patients or the combined control subjects.

The third prediction stated that the abnormalities in schizophrenic material would be most marked among thought-disordered patients. The Bannister-Fransella test revealed that, of the 25 patients to whom it was administered, five were clearly thought-disordered and ten were clearly not. The means for the two groups were

TABLE I

Experiment 1. Phoric reference: mean proportion (%) of nominal groups in each category

	Schizophrenic		*Affective Control*		*Orthopaedic Control*	
	Mean	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Endophoric	40.2	15.1	42.5	11.9	64.4	9.9
Exophoric	7.3	8.7	5.4	7.1	8.9	11.1
First person	44.1	16.0	45.3	8.7	24.9	12.2
Bridging	1.3	2.9	2.7	3.9	0.0	0.0
Ambiguous	6.8	9.7	3.8	7.0	1.5	2.3

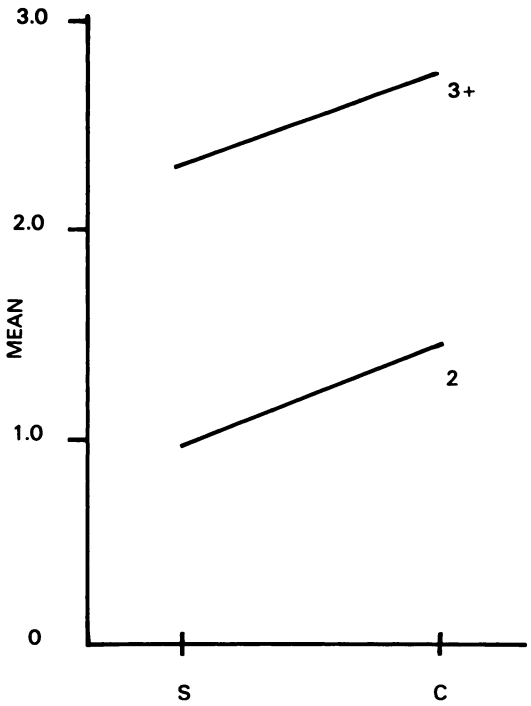

FIG. 1 Experiment 1. Mean reconstruction scores

then compared by t-tests. No significant differences were revealed for any of the measures of reconstruction or discourse, and the prediction was therefore rejected.

Experiment 2—Conversation

Method

It was clear from Experiment I that the traditional 'cognitive' view of schizophrenic language was over-simplified. What lay at the heart of the problem was much less a difficulty in regulating thoughts than one in expressing and communicating them in a way which the listener could understand and follow. Thus, *social* processes were the most important ones to tackle and so I turned to conversations. Dyadic conversations involving schizophrenic patients should be harder to reconstruct than normal conversations. This would be especially so if there were two schizophrenic patients, and there might well also be differences in discourse structure. Three predictions were therefore made: (a) schizophrenic conversations will be reconstructed less accurately than normal conversations; (b) schizophrenic-schizophrenic conversations will be the least accurately reconstructed of all; and (c) schizophrenic and normal conversations will differ in discourse structure.

The material for the experiment was taken from recordings made by Rutter (1977) as part of a study of gaze and turn-taking. Twelve recently admitted schizophrenic patients were selected at random from the two principal psychiatric hospitals serving Oxford, and were compared

https://doi.org/10.1192/bjp.146.4.399 Published online by Cambridge University Press

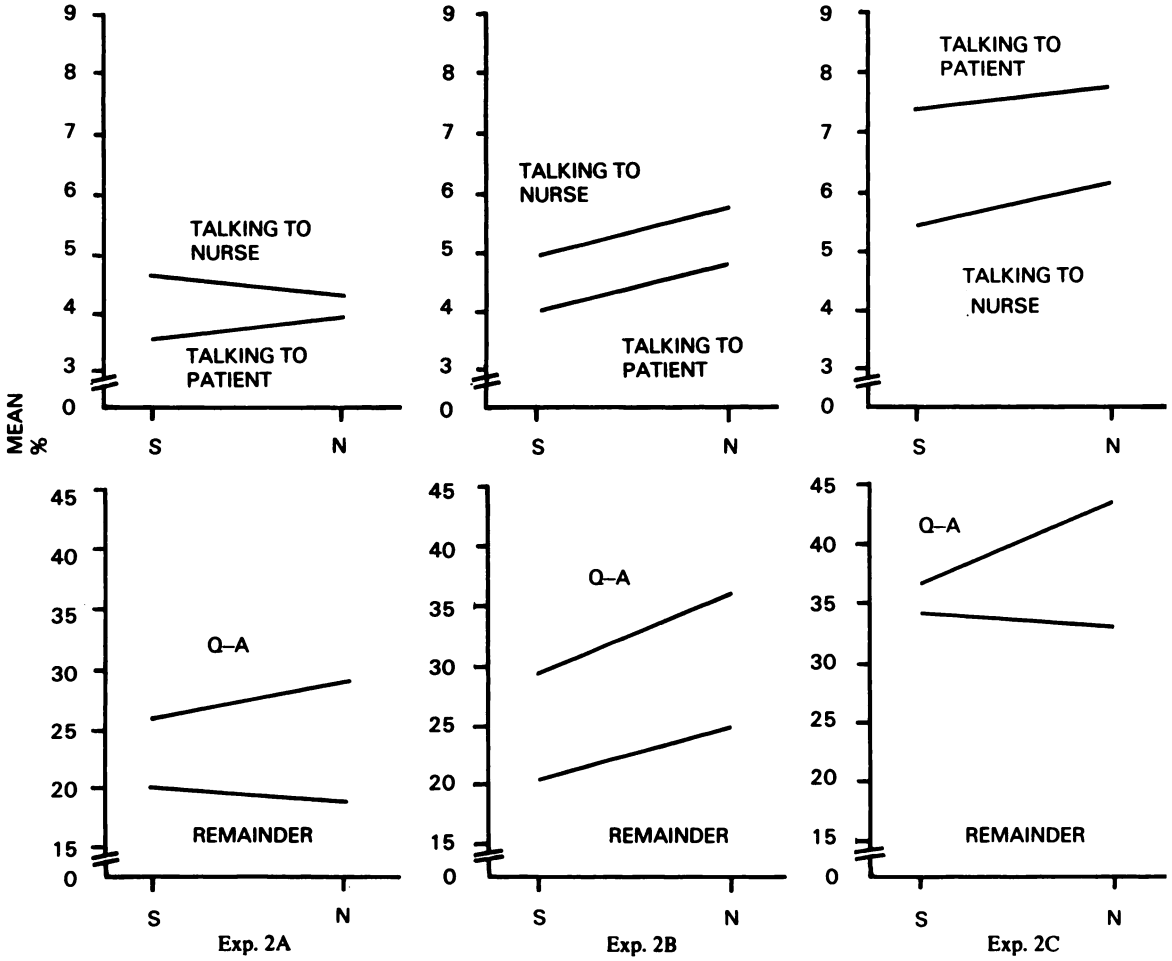

FIG. 2 Experiment 2. Mean reconstruction scores from schizophrenic and normal conversations.

with a control group of psychiatrically normal chest patients from a neighbouring general hospital. Diagnosis was based on the conclusions of the admitting team, and both groups consisted of six men and six women, aged 18 to 60. The sessions were held within ten days of the patient's admission (the majority within six days) and each subject was asked to hold two five-minute conversations—one with a partner from the same diagnostic category and one with a member of the hospital staff, who was generally a nurse. Different partners were used for every conversation, the topics for discussion being adapted from the Choice Dilemmas Questionnaire of Kogan & Wallach (1964). The task was to try to agree a solution.

From each of the 48 conversations, the first 20 utterances were typed onto strips of paper, one utterance per strip.* The strips were then placed in random order, except that the first always appeared on top, and students were asked to reconstruct what they believed to be the original sequence. Reconstruction scores were thus obtained for 12 schizophrenic-schizophrenic, 12 schizophrenic-nurse, 12 chest patient-chest patient, and 12 chest patient-nurse conversations. The experiment was run three times, each time under slightly different conditions, and the subjects were similar students to those in Experiment 1. They were told simply that the conversations had been recorded from 'hospital patients', and the only important difference between the three replications was that subject and partner were labelled 'S' and 'P' on the strips of paper in the third replication, but there were no labels in the first and second. Each student reconstructed one conversation, and each conversation was reconstructed at least once in every replication. Scoring was conducted in the same way as before—one point for each utterance placed correctly after its immediate predecessor—and the maximum was thus 19 points per passage.

*Two of the conversations were shorter than 20 utterances, one from the schizophrenic group and one from the normal group, but they were retained nevertheless and the scores were scaled up.

https://doi.org/10.1192/bjp.146.4.399 Published online by Cambridge University Press

Results

The first prediction stated that schizophrenic conversations would be reconstructed less accurately than normal ones. The results are given at the top of Figure 2 and, although tending in the predicted direction, they failed to reach statistical significance. The prediction was therefore rejected. Scores for all four conditions were higher in the third replication than the other two, because it was there that the 'S' and 'P' labels were introduced, making the task a little easier. The schizophrenic conversations were also a little shorter than the normal ones ($F = 5.5$; df 1,22; $P < 0.05$).

The second prediction, in contrast, received good support, at least from the first two replications. The prediction stated that schizophrenic-schizophrenic conversations would be the least accurately reconstructed, and in the first two replications they were. In the first, the greatest difference was between schizophrenic-schizophrenic and schizophrenic-nurse conversations ($t = 2.4$; df 22; $P < 0.025$), while in the second it was between schizophrenic-schizophrenic and chest patient-nurse ($t = 2.5$; df 22; $P < 0.025$). In the third replication, there was an apparent reversal of the usual pattern, with conversations between patients and patients more accurately reconstructed than those between patients and nurses. But, in fact, the schizophrenic-schizophrenic conversations were not significantly different from those in the other conditions, despite the appearance of the curves.

The third prediction stated that schizophrenic and normal conversations would differ in discourse structure, and it is here that we come to perhaps the most important findings. One of the principal characteristics of normal conversations is that we ask questions, and in the main we ask appropriate questions and give appropriate answers. Question-answer sequences are therefore predictable and redundant, so that they should be easier to reconstruct than other sequences. For normal conversations, that is exactly what happened (bottom of Figure 2), but for schizophrenic material, the pattern was quite different. For chest patient conversations question-answer sequences were reconstructed significantly more accurately than other sequences, at least in both the first ($t = 1.9$; df 22; $P < 0.05$) and second ($t = 2.4$; df 22; $P < 0.025$) replications. For schizophrenic conversations, there was no difference at all. Schizophrenic patients, it appeared, had asked inappropriate questions and given inappropriate answers, as well as asking significantly more questions overall than in normal conversations ($F = 10.1$; df 1,22; $P < 0.01$). The structure of their discourse was thus very different from normal. The third prediction was supported.

Discussion

The purpose of this paper has been to re-examine the traditional, *cognitive* view of language in schizophrenia, and to argue that an alternative, *social* approach may be more fruitful. Two experiments have been reported. The first was concerned with monologues: schizophrenic monologues were reconstructed less accurately than normal material, and there were noticeable abnormalities in discourse structure, particularly in the use of phoric reference. The findings for reconstruction were specific to the schizophrenic group, but those for reference were equally marked in affective patients, despite the small numbers. Thought disorder had no effect, despite the suggestions of Manschreck & Rochester. There was an important difference in methodology, however, which may well explain the difference in outcome, for, in the earlier research the measurement of thought disorder was based on readers' impressions of the passages themselves, whilst here it was objective.

The second experiment used conversations in an attempt to tap the social processes of communication, and it was here that the most important findings were to emerge. The hardest conversations of all to reconstruct were generally schizophrenic-schizophrenic ones, and part of the problem at least was the way the patients used questions and answers. Schizophrenic patients asked inappropriate questions and gave inappropriate answers; what was missing was the redundancy and predictability of normal encounters. In conversations, just as in monologues, the problem for schizophrenic patients was much less the *cognitive* processes of regulating and organising their thoughts than the *social* processes of expressing and communicating those thoughts in a way which the listener could understand and follow. Where their difficulty really lay was in taking the role of the other and it is that which seems to be the key.

Acknowledgements

I am very grateful to Joan Kirk and Patricia Grounds for helping to collect and analyse the data.

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(Received 21 May; revised 14 June 1984)