

MEMORY FOR DIALOGUE IN DIFFERENT MODES OF INTERACTION

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1. Introduction

Studies on memory for discourses make a distinction between memory for the meaning and memory for the surface structure of sentences. Sachs' (1967, 1974) experimental results have shown that the meaning of orally and visually presented sentences is durably represented in memory even after a long time, while their syntactic structure is retained only as long as the comprehension processes occur. More recent studies (Bates, Masling and Kintsch, 1977; Hjelmquist, 1984; Hjelmquist and Gidlund, 1985a, 1985b; Keenan, MacWhinney and Mayew, 1977; Kintsch and Bates, 1977), in which authentic material was used (i.e. real conversations, classroom lectures, or videorecorded conversations) have shown that the surface structure of sentences can be remembered quite well even after a long time, provided they are included in "natural" dialogues, having a strong interactional focus. It has also been shown that people engaged in conversation have a better memory of their own utterances than of those spoken by their interlocutors (Jarvella and Collas, 1974). However, methodological peculiarities of

different modes of discourse presentation and of different memory tasks used in the above experiments do not provide us with a general model of memory for conversations.

2. The hypotheses

The main hypothesis, based both on classical and on more recent literature on memory for dialogues was that real conversations are more likely to be retained in memory, being richer in interactional meaning in the coding phase, and offering more retrieval cues in the recalling phase. According to Jarvella and Collas (1974), it was also anticipated that subjects would remember more accurately those parts of the dialogues spoken by themselves than those spoken by their interlocutors. As for the modes of interaction, it was hypothesized that a dialogue presented orally would be better remembered than its written transcription. In fact a spoken conversation is richer in vocal markers (i.e. quality of the voices, intonation, pauses, and so on); as a consequence a larger number of retrieval cues would be available for the hearer in the retrieval phase.

A further hypothesis dealt with verbatim memory for sentences. Even though the modes of presentation of the material should hardly have any influence on memory task (as Bates, Kintsch, Fletcher and Giuliani (1980) found comparing video, audio and written material) we offered the hypothesis that in real conversations subjects' own sentences would be better remembered than those of their interlocutors. This difference could be due both to a deeper processing in the production phase and to the subjects' recognition of their own stylistic peculiarities in the recalling phase.

3. Method

3.1. Subjects

48 university students, males and females, took part in the experiment. They were divided into three groups, "Acting", "Listening" and "Reading", each of 16 subjects.

3.2. Material and Procedure

The experiment was developed in two phases. First phase: three groups of 16 students were presented with a conversation according to three different modes. The subjects of the first group (Acting) were personally involved, in pairs, in a conversation dealing with environmental pollution. The subjects of the second group (Listening) listened to a tape-recorded conversation between two speakers on the same topic. The subjects of the third group (Reading) read a written transcription of the same conversation.

The mean length of the real conversations was 10 minutes and 20 seconds. The conversation used in the Listening and Reading Groups lasted 12 minutes and 38 seconds, each speaker taking 25 turns, the mean time of turns being 19.1 seconds for one speaker and 11.2 seconds for the other. The slight variability in the length of conversations is due to the fact of these being real natural dyadic interactions.

After reading or listening to the conversation, the subjects of these two groups were presented with a short questionnaire asking which of the speakers had better expressed his ideas, which had seemed more competent and which he/she agreed with. This part of the procedure was aimed at leaving the subjects unaware of the real focus of the experiment (i.e. testing memory).

Second phase: after a 1-week interval, all 48 subjects were presented with an unexpected memory test concerning the conversation they had been involved in, or had listened to, or had read during the first phase. The memory test consisted in:

- 1) written recall of the content;
- 2) recognition of two sentences taken from the conversation; each sentence was presented visually together with three slightly different distractors: a) a syntactical variation, b) a lexical variation and c) a syntactical and lexical variation.

This latter task, due to the limited number of items considered, is meant to be a pilot investigation whose results could nonetheless cast further light on the topic.

4. Results

Two separate quantitative analyses were conducted on both the free recall of the gist of the dialogue and the verbatim recognition of the sentences taken from the dialogue. A further linguistic analysis was carried out on some qualitative indexes of the subjects' reports.

As for the first analysis, each recorded conversation was divided into a definite number of "ideas" (in the sense used by Hjelmquist and Gidlund (1984), not always coinciding with clauses). Each written recall protocol was scored by a number corresponding to the ratio between number of ideas mentioned by the subject and number of ideas in the original conversation that she/he had acted, read or listened to. An analysis of variance was carried out on these scores, with one between-subjects factor (experimental condition, at three levels). The difference was significant: $F(2,45) = 28.346$, $p < .001$. Newman-Keuls test revealed that the Acting Group remembered more ideas than the Listening Group ($p < .01$), while in turn this latter remembered more than the Reading Group ($p < .01$) (Figure 1).

In addition, protocols of the Acting Group were scored with the aim of separately reckoning memory for the sentences spoken vs. memory for the sentences listened to. An analysis of variance was carried out on these data, with one within-subjects factor (conversational role, at two levels): it reached significance: $F(2,25) = 33.136$, $p < .001$ (Figure 2), confirming the hypothesis that subjects do remember what they had said in the role of speakers better than what they had heard in the role of listeners.

As for the recognition task, correct recognitions were computed and analyzed by Chi-Square test (for independent groups) and McNemar test (for dependent groups). Results are shown in Figure 3 and 4. No statistic difference was found between conditions, while the subjects in the Acting Group recognize their own sentences better than those uttered by their interlocutors (McNemar statistics = 4, $p < .05$). In addition, the sentences uttered by the interlocutors in the Acting Group are remembered less than those listened to in the Listening Group.

As before mentioned, given the small number of sentences used in the recognition task, results are to be considered only as showing a trend that deserves further investigation.

The qualitative analysis of verbal reports was conducted on the percentage of paraphrases containing "key-words" of the original text in subjects' protocols. A "key-word" was defined by Hjelmquist and Gidlund (1985a, pag. 176) as "a content word (nouns, verbs, adjectives, adverbs) being important in the idea". The scoring of this index showed that on the whole the subjects of the Acting Group have a better memory: in fact, there was to be found a much larger amount of paraphrases containing key-words (22% in the Acting Group, vs. 3% in The Listening Group and 3% in the Reading group). The same trend can be observed within the Acting Group comparing the recall of one's own sentences vs. interlocutors' sentences (29% vs.10%).

5. Discussion

By and large, after a 1-week interval, the gist of dialogues is remembered better by subjects involved in real conversations than by subjects who only listened to them or read them. The difference can be explained on the ground of a different interactional value of discourses in the three experimental situations; however, as far as the recognition memory of surface structure is concerned, such difference does not occur.

The better memory of one's own sentences in comparison to those spoken by the interlocutor can be interpreted taking two factors into account:

- a) a deeper personal involvement and a more accurate "monitoring" of one's contribution to the conversation (i.e. of one's sentences) in the production phase;
- b) the identification of individual stylistic and content variables in the recognition phase.

On the other hand, how can the worse memory of the interlocutor's sentences be explained, compared with the average memory of sentences in the Listening condition? It can be argued that, during the production and adaptation of one's own sentences with respect to the ongoing conversation, the speaker

takes into account her/his interlocutor's sentences as long as she/he can extract the meaning (that in fact is rather well preserved in memory); thereafter the surface structure soon begins to deteriorate.

In conclusion, significant differences were found among the three experimental conditions as for memory of the gist, but no differences as for sentence recognition memory. Though results of the recognition task, as stated before, are hardly generalizable, because of the low number of items, we could consider them as a trend, hopefully to be confirmed in future research.

These results backen the model of a dual memory process involved in the two tasks, as already pointed out by Garrod and Trabasso (1973). On the other hand, other studies have shown that verbatim memory is relatively independent both from modes of interaction with the material (Bates *et al.*, 1980) and from mental representations of a text (D'Urso and Johnson-Laird, 1985; Mani and Johnson-Laird, 1982).

As far as the memory of sentences is concerned, are we always good in the role of speakers and poor in the role of listeners? It might depend on the broad aim of the conversation. In the present research the subjects' aim was talking (or listening to, or reading) about a topic on which most opinions were shared. However, in other circumstances, people engage in a conversation aiming at other goals: for instance, getting information, persuading the addressee, getting better acquainted with her/him, to know if she/he is informed, and so on. In each of these varieties of conversation, information coming from the interlocutor has a rather different relevance. As a consequence, the attention load devoted to one's own sentences will be different from that devoted to the sentences uttered by the interlocutor, and that can result in a different memory performance.

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Figure 1 - Free recall task: mean percentages of ideas correctly recalled by subjects of the three experimental groups

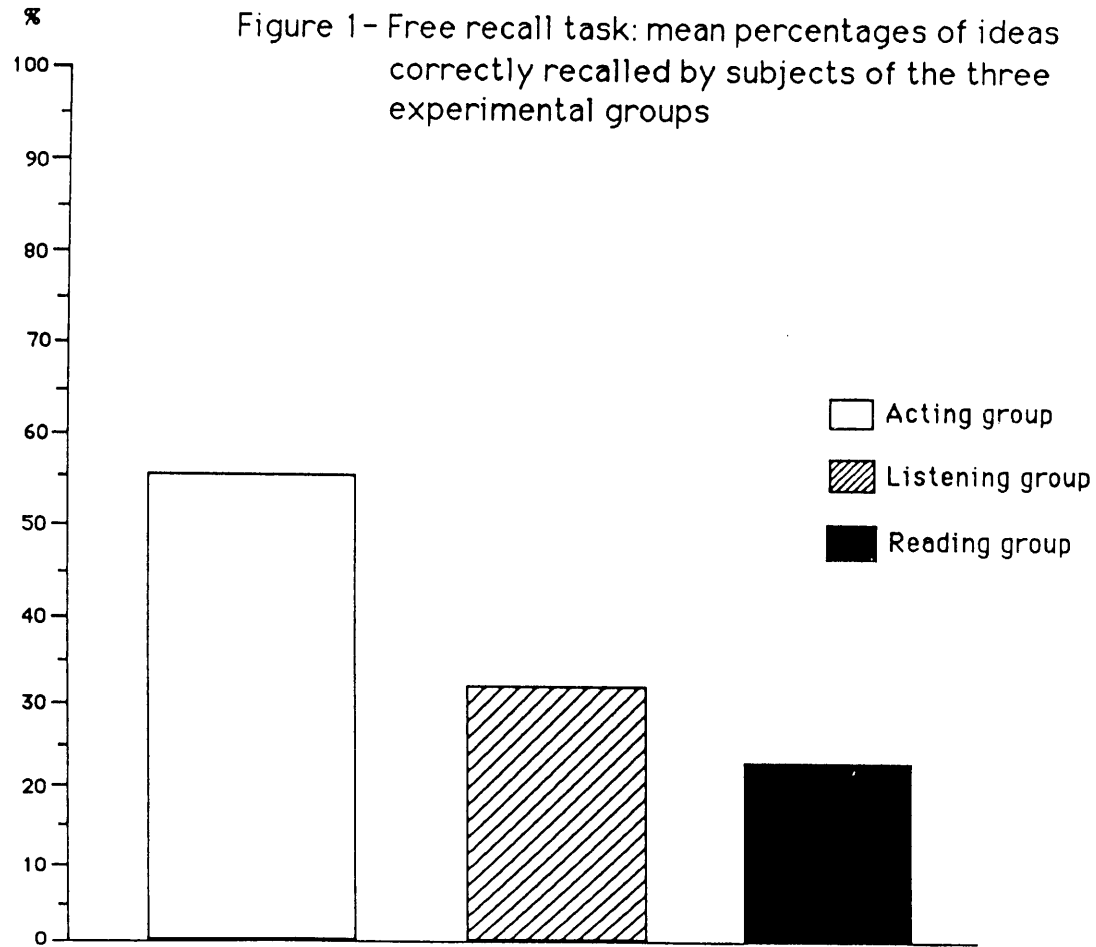


FIGURE 2 - Free recall task in the Acting group: mean percentages of subjects' own ideas and interlocutors' ones correctly recalled

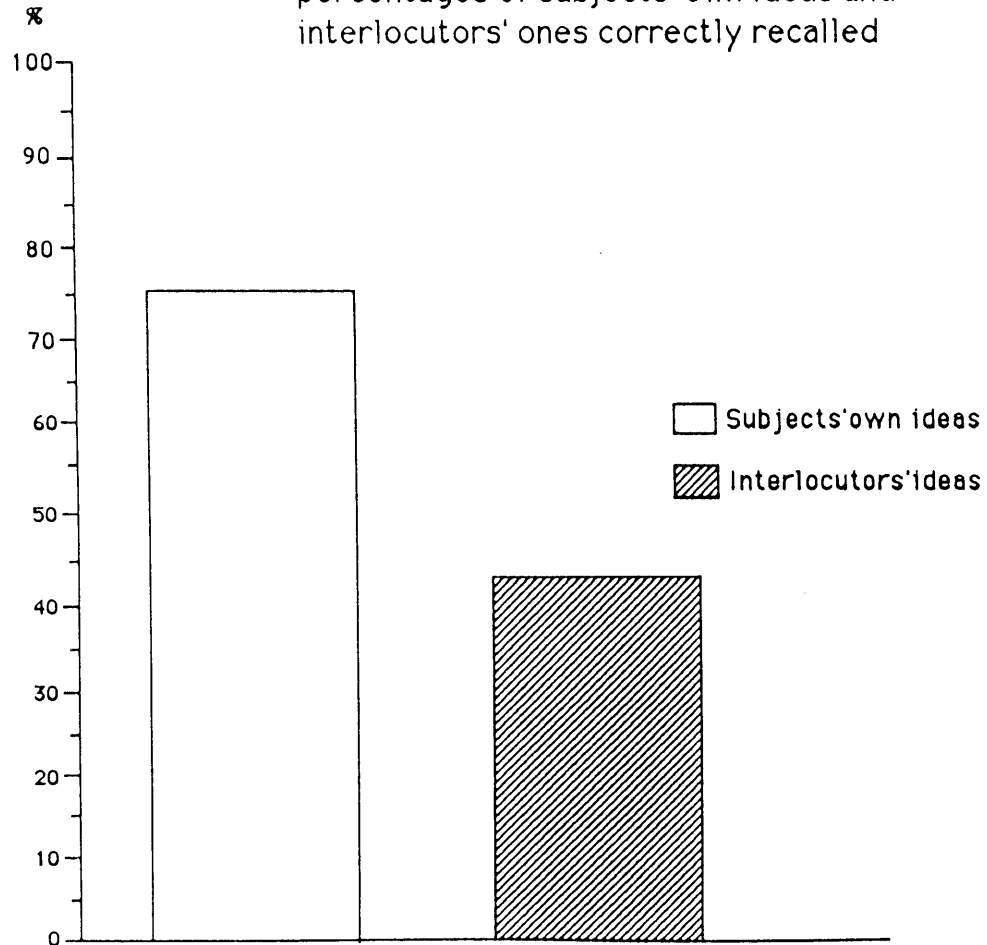


FIGURE 3 - Recognition task: mean percentages of correct recognitions in the three experimental groups

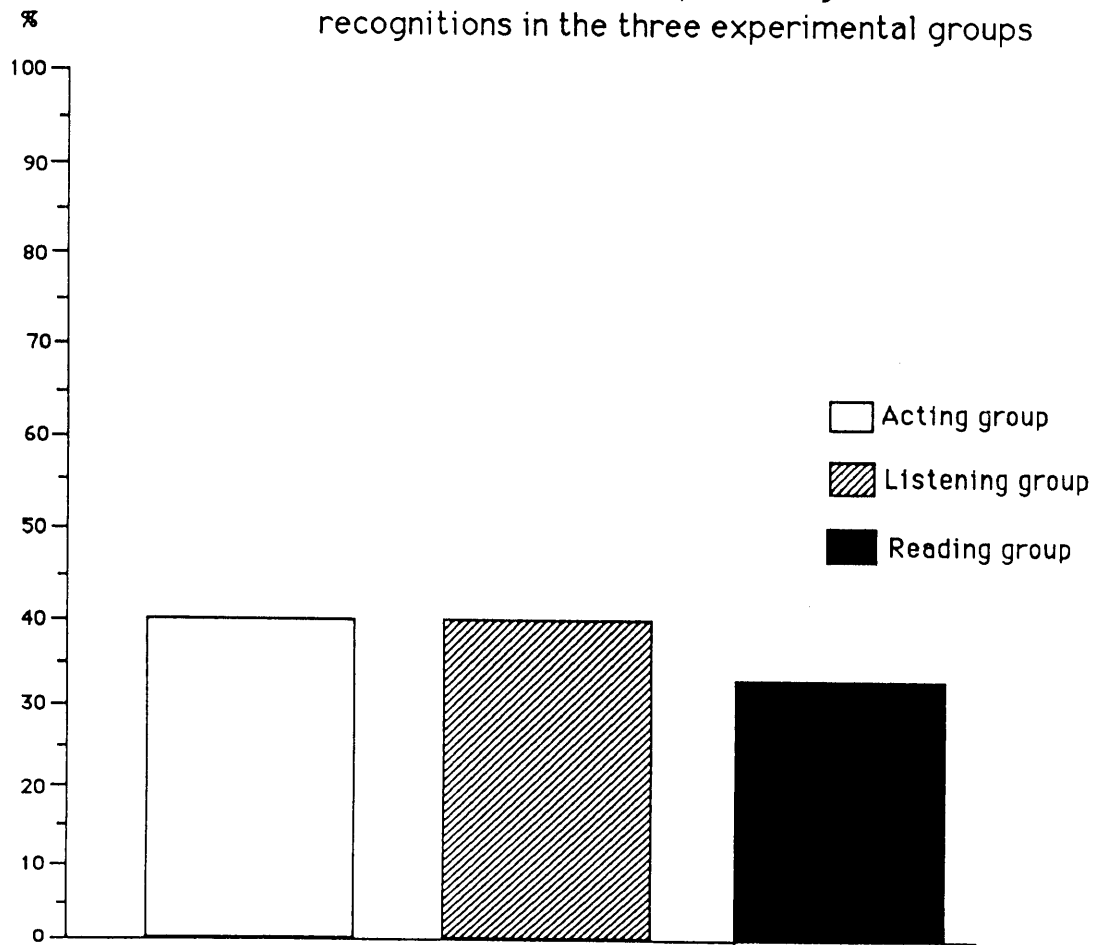


FIGURE 4 - Recognition task in the Acting Group: mean percentages of correct recognition of subjects' own sentences and of interlocutors' ones

