SHORT REPORTS

CONTEXT EFFECTS IN SENTENCE MEMORY

MARCIA K. JOHNSON, THOMAS J. DOLL, JOHN D. BRANSPORD, AND ROBERT R. LAPIERRE

State University of New York at Stony Brook

The effects on recall of unrelated sentences of both appropriate and inappropriate contextual information relative to no contextual information were studied. In addition, the materials were presented at either fast or slow rates on study trials. Inappropriate contexts retarded performance under the fast presentation rate and, contrary to expectation, the beneficial effects of appropriate contexts did not diminish under the slower presentation rate. Overall, the results provide further evidence of the importance for recall of the semantic context active during sentence processing.

This experiment was designed to extend previous research on the effects of semantic context on memory. Doobin and Luchman (1971) and Bransford and Johnson (1972) have shown that appropriate contextual information can facilitate recall of paragraphs that are specifically constructed to be difficult to understand. In the present study, S's task was to learn a list of unrelated sentences, each of which was constructed so that it did not clearly specify a particular referential situation (e.g., John could see his face in the box). One independent variable was the availability and appropriateness of the semantic context provided for each sentence. In the appropriate-context condition, a cue preceding each sentence designated an appropriate referential situation (e.g., football). In the inappropriate-context condition, Ss were given cues that would induce them to try to relate each sentence to an inappropriate semantic context (e.g., football). Bransford and Johnson (1972, Experiment 1) had included a partial-context condition, in which the context was not completely appropriate for the paragraph used. Recall in their partial-context condition did not differ significantly from their no-context condition. However, since some of the elements used in the partial context were relevant to the paragraph, both positive and negative effects probably were operating. Under the present conditions, a clear negative effect of inappropriate contextual information was expected.

A second independent variable was presentation rate. In previous studies, involving fairly long passages and relatively rapid rates of presentation, Ss who were not provided with appropriate contexts frequently requested that they were "searching for something the passage might be about." We expected that with a sufficiently slow rate of presentation, no-context Ss would be more likely to discover meaningful interpretations of the individual rela-

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2 Requests for reprints should be sent to Marcia K. Johnson, State University of New York at Stony Brook, Stony Brook, New York 11790.

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context was separated by at least four context sentence pairs from its appropriate sentence. For the no-context conditions, the word *ready* preceded each sentence.

In the fast conditions, the presentation rate approximated that of ordinary conversation. The interval between the end of each sentence and the beginning of the next context was about 1 sec, and the total time for one presentation of the 18 items was approximately 1 min, .33 sec. For the slow conditions, the interval was increased to about 7 sec, and the total presentation time was approximately 3 min, 23 sec.

For a practice list, four additional context-sentence pairs were chosen from the original pool of items. The rate of presentation and type of context for the practice list were the same as those for the experimental condition which followed it.

Procedure. A group testing procedure was used, with experimental sessions assigned randomly to conditions. The Ss were instructed that they would hear a set of 18 sentences a total of three times and that they would have 5 min after each presentation of the list to write down in any order as many sentences as they could recall. Appropriate and inappropriate-context Ss were further instructed that there would be a phrase preceding each sentence that might help them understand the sentence, but that only the sentences need be recalled. Prior to the acquisition list, the practice list was presented, 2 min, were allowed for recall, and any questions about the procedure were answered. Response sheets were collected after each recall period.

Subjects. The Ss were 159 male and female undergraduates enrolled in introductory psychology courses at the State University of New York at Stony Brook. Data from 21 Ss were randomly discarded to equate the n at 23 Ss per cell. The Ss received credit toward a course requirement and the S with the best performance in each group received $5.

Results and Discussion

Protocol were scored for complete sentences. Each response was scored by two of three “blind” raters. Responses containing only minor changes, such as change of tense, reordering of phrases, or rephrasing of proper names by pronouns were judged as correct. In the case of a discrepancy between the raters, S was not given credit for the response.

The means are given in Table 1. Separate analyses were done comparing the appropriate-context vs. no-context conditions and the inappropriate-context vs. no-context conditions, since the no-context conditions are the relevant baseline in each case. These analyses will be considered separately below.

### Table 1

<table>
<thead>
<tr>
<th>Condition</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate fast</td>
<td>1.80</td>
<td>1.81</td>
<td>1.80</td>
<td>1.80</td>
</tr>
<tr>
<td>Appropriate slow</td>
<td>1.38</td>
<td>1.37</td>
<td>1.39</td>
<td>1.37</td>
</tr>
<tr>
<td>No-context fast</td>
<td>1.22</td>
<td>1.22</td>
<td>1.23</td>
<td>1.22</td>
</tr>
<tr>
<td>No-context slow</td>
<td>1.45</td>
<td>1.44</td>
<td>1.45</td>
<td>1.45</td>
</tr>
<tr>
<td>Inappropriate fast</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
<td>1.60</td>
</tr>
<tr>
<td>Inappropriate slow</td>
<td>1.20</td>
<td>1.20</td>
<td>1.20</td>
<td>1.20</td>
</tr>
</tbody>
</table>

Interaction, F (2, 176) = 3.79, p < .05, indicates that the acquisition rate was greater under appropriate- vs. no-context conditions.

Our original expectation was that the slower presentation rate would be most beneficial to no-context Ss. However, the overall advantage of appropriate-context Ss was actually somewhat, but not significantly, greater under slow as compared to fast presentation conditions. It may be possible to set up conditions where no-context Ss profit more from increased processing time than evidenced in the present study. For example, giving no-context Ss a set to generate referential situations by showing them examples of contextual “solutions” and comprehension for these types of materials might produce more effective use of available time. On the other hand, even if the slower rate did allow no-context Ss to generate meaningful interpretations, any time saved searching for meaning probably reduces time available for other uses of the study interval—e.g., rehearsing, imaging, and/or interesting sentences. Therefore, it may be that the advantage derived from having an appropriate context immediately available would persist under an even wider range of conditions.

Inappropriate context versus no context. As indicated in Table 1, recall increased over trials, F (2, 176) = 2.88, p < .001, and when the presentation rate was decreased, F (1, 88) = 11.35, p < .01. There was also a main effect of context, F (1, 88) = 4.28, p < .05, indicating that providing inappropriate contexts retarded overall recall. The Context X Rate X Trials interaction was also significant, F (2, 176) = 3.15, p < .05. Additional analyses yielded the following outcomes: Under fast-presentation conditions, inappropriate contexts produced both lower overall recall and slower acquisition, F (1, 44) = 4.33, p < .05; and F (2, 88) = 4.10, p < .025, respectively. However, performance of inappropriate- and no-context Ss did not differ significantly under the slower presentation rate. There are numerous possible explanations of this triple-order interaction. For example, the slower presentation rate may have allowed inappropriate-context Ss to discover the re-arranged arrangement of contexts and sentences, or Ss may have used this information under the slow rate. On the other hand, Ss may have been able to disregard the contexts entirely at the slow rate.

In any event, under the fast rate, the inappropriate
ate contexts presumably decreased the probability that Ss would arrive at stable, meaningful interpretations of the sentences. The fact that acquisition of linguistic information may actually be retarded if S is attempting to relate sentences to inappropriate contexts extends previous research and lends further support to the notion that recall depends on the semantic context that is active during acquisition.

REFERENCES


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