EFFECTS OF CULTURE-SPECIFIC SCHEMA ON COMPREHENSION AND MEMORY

Zhang Shujing
PLA Foreign Languages University

Abstract
The present study investigated the effects of building culturally specific schema on comprehension and memory. 41 second year English majors from the PLA Foreign Languages University participated in the experiment. They were randomly divided into 4 groups, each group reading one of the 4 versions of a passage: English with and without a title, and Chinese with and without a title. After they read the passage, they were tested on their memory of the passage through a free recall task. The results of the statistical analysis indicated that students who read the passage with a title in both L1 and L2 did significantly better in their recall than those who read the passage without a title, which suggests that background knowledge has a significant effect on reading comprehension and memory.

Introduction

The notion of schema is generally associated with the early work on story recall by Bartlett 1932. In his studies, Bartlett attempted to show that remembering is not a rote or reproductive process but rather a process in which we retain the overall gist of an event and then reconstruct the details from this overall impression. He found that when college students were given stories that were inconsistent with their schemata, recall was usually distorted in the direction of the schemata. Bartlett suggested that when we encounter an event that is discrepant from our usual understanding, we have difficulty fitting it into our existing schemata and subsequently tend either not to remember it or to alter it, altering its details until it is congruent with existing schemata.

Later researchers developed his idea and formalized the role of background knowledge in language comprehension as schema theory. According to schema theory, a text only provides directions for readers as to how they should retrieve or construct meaning from their own previously acquired knowledge. This previously acquired knowledge is called the reader’s background knowledge and the previously acquired knowledge structures are called schemata. Comprehending a text is an interactive process between the reader, background knowledge, and the text.

Schema theorists distinguish 3 types of schemata: content schema, formal schema, and linguistic schema. A formal schema refers to the background knowledge of the formal rhetorical organizational structures of different types of texts. A content schema refers to the background knowledge of the content area of a text. Carrell 1983 and a linguistic schema is the linguistic knowledge of a learner. People used to put more stress on linguistic schema describing failure to comprehend a text to the reader’s deficiencies in language processing skills. Consequently, poor readers were encouraged to expand their vocabularies and to gain greater control over complex syntactic structures in order to improve reading comprehension. Carrell and Eisterhold 1983. However, most often a reader’s failure to comprehend a text is due to his failure to activate an appropriate schema: formal or substantive. The reader may be familiar with every word and every grammatical item in the text, yet still may fail to comprehend the text because he fails to activate an appropriate content schema. And most
often he fails to activate a schema because the schema is culturally specific and is not part of a particular reader's cultural background. A growing body of empirical research attests to the role of both content and formal schemata in reading comprehension. Johnson 1982 and a few other researchers, Hudson 1982, Alderson 1983, have shown the effects of content schemata. Several recent studies have shown the effects of formal-rhetorical schemata Carrell 1981, Ostler 1982. The present study has expanded this body of data: it seeks to determine specifically whether culture-specific schemata play a greater role in reading comprehension and memory than language familiarity. The researcher proposes the following hypotheses:

1. There are significant differences between the subjects' recalls of the passage with and without a title.
2. There are no significant differences between the subjects' recalls of the passage in L1 and L2.

II. Methodology

The participating subjects are 41 second year English majors from the PLA Foreign Languages University. The reading passage was taken from Clark 1977. This passage was chosen because it describes a wedding ceremony which may differ from culture to culture.

The two of them glanced nervously at each other as they approached the man standing there expectantly. He talked to them for about ten minutes but spoke loudly enough that everyone else in the room could hear too. Eventually he handed over two objects he had been given one to each of them. After he had said a few more words the ordeal was over. With her veil lifted, the two of them kissed turned around and rushed from the room arm in arm with everyone else falling in behind.

It was presented to the subjects in 4 versions. Version 1 was in English without a title. Version 2 in Chinese without a title. which was a Chinese translation of Version 1. Version 3 in English with the title The Wedding Ceremony added by the author and Version 4 in Chinese with a title. A Chinese translation of Version 3.

Generally speaking the passage was relatively easy for the subjects. In a pilot study it was found that the syntax was easy enough and there were no new words in the original passage except for the titles. So in the English version a definition of the word which was taken from the Longman Dictionary of Contemporary English 1978 was offered.

The subjects were randomly assigned to 4 groups with Group 1 consisting of eleven subjects and the other 3 groups of ten subjects each. Group 1 read Version 1. Group 2 version 2. Group 3 Version 3 and Group 4 Version 4.

The subjects were asked to read the passage twice. Then the experimenter conducted a small talk with the subjects. Five minutes later the subjects were asked to write down whatever they could remember.

The subjects' written recalls were evaluated according to the number of propositions. A proposition is a component of the underlying representation of a sentence. It is generally accepted that short-term memory has a limited capacity and lasts a very short period of time. Sachau 1967 found that people are quite accurate on all test scales. But after 40 syllables about 12 seconds they have lost most verbatim content. However, in Anderson's study 1974 people were able to recall some information verbatim even after a 2-minute interval. In any case verbatim wording is lost very rapidly but meaning is retained over a much longer period. And there is much evidence to show that propositions are units of memory. Anderson 1973 Bower 1973 So the written recalls of the subjects are evaluated according to the number of propositions recalled.

Altogether there are 20 propositions contained in the original passage. So if a subject recalled all the propositions he got 20 points. Grammatical and spelling errors were ignored.

Data obtained from the subjects' recall protocols were computer analyzed using one-way ANOVA.

III. Results and analysis

The numbers of propositions recalled by each group are shown in the following table.
Table 1: Number of proportions recalled by the subjects

<table>
<thead>
<tr>
<th>Group</th>
<th>N1</th>
<th>N2</th>
<th>N3</th>
<th>N4</th>
<th>N5</th>
<th>N6</th>
<th>N7</th>
<th>N8</th>
<th>N9</th>
<th>N10</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11</td>
<td>17</td>
<td>3</td>
<td>19</td>
<td>4</td>
<td>11</td>
<td>5</td>
<td>13</td>
<td>14</td>
<td>13</td>
<td>11.33</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>11</td>
<td>15</td>
<td>10</td>
<td>17</td>
<td>15</td>
<td>14</td>
<td>13</td>
<td>12</td>
<td>13</td>
<td>13.33</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>17</td>
<td>16</td>
<td>18</td>
<td>17</td>
<td>20</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>13</td>
<td>14.33</td>
</tr>
<tr>
<td>4</td>
<td>18</td>
<td>18</td>
<td>16</td>
<td>18</td>
<td>19</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>15</td>
<td>17</td>
<td>17.33</td>
</tr>
</tbody>
</table>

One-way ANOVA analysis shows that there is a significant difference between groups. The results of post hoc tests are summarized in the following table.

Table 2: The results of post hoc tests

<table>
<thead>
<tr>
<th>Group</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>13.82</td>
<td>10.08</td>
<td>9.00</td>
</tr>
<tr>
<td>Group 2</td>
<td></td>
<td>12.29</td>
<td>11.27</td>
</tr>
<tr>
<td>Group 3</td>
<td></td>
<td></td>
<td>12.84</td>
</tr>
</tbody>
</table>

The results of the present study support the hypotheses. To be more specific:

1 There were no significant differences in the number of propositions recalled by Group 1 reading the English without a title version and Group 2 reading the Chinese without a title version. That is, without a title, the subjects recalled a few more propositions in their L1 than in L2. However, the difference was not significant.

2 There were no significant differences in the number of propositions recalled by Group 3 reading the English with a title version and Group 4 reading the Chinese with a title version. The fact that there were no significant differences between Groups 1 and 2 and Groups 3 and 4 indicated that language familiarity made no significant difference.

3 There were significant differences in the number of propositions recalled by Groups 1 and 3.

4 There were significant differences between the number of propositions recalled by Groups 2 and 4. The fact that Group 3 did significantly better than Group 1 and Group 4 better than Group 1 indicated that the title made a significant difference in the number of propositions the subjects recalled.

Therefore, we can say that when there was no title, language familiarity helped little with comprehension and memory. For both Group 1 and Group 2, although most of the subjects could recall a little more than half of the propositions, 1.12 and 1.44, a lot of the details were omitted and some of the propositions recalled could not reflect the relations between idea units as the following examples from the written recalls of the subjects showed:

1 They glanced at each other [8] as the man was approaching to them [9]
2 The ordeal went on for 10 minutes [10]
3 The two waited nervously [11] when the man approached them [12]

In [22] the subject remembered the approach proposition but obviously he got it wrong because the original proposition is they approached the man while in his recall, it became the man approached them therefore it was not counted as recalled which was also the case with [23] In [24] the recall is a blend of two original propositions one is that the talk lasted 10 minutes and the other is that the ordeal ended. In [25] here are 4 propositions recalled But the sequence of action was incorrect. The original passage has they glanced at each other as they approached the man while the subject recalled they glanced each other as she lifted her veil. Though all 4 propositions were counted as recalled we could not say the subject obtained a full comprehension. The first half of [26] was meaningless as compared with the original passage so only the propositions in the second half were counted as recalled. In [27] the turn around proposition was remembered but again the subject got it the wrong way it was not the man who turned around but the man.

There were many more such errors in the subjects.
Some subjects thought "the two of them" referred to two young men, some recalled that the man who talked to them kissed her, others recalled that they rushed away from each other. So we can see that the subjects tried hard to make a plausible and connected interpretation of material which was not fully comprehended. Only the results were not so satisfactory. As mentioned above, for Groups 1 and 2, the reading passages had no title so some of them could not identify the topic of the passage. They did not know what the right schema was and could not relate the new information to their existing schema. With no existing schema guiding them, their comprehension and recall were poor. In fact, the recalls of three subjects from Group 1 were extremely poor. No.3 recalled 3 propositions and No.5 recalled 4, and No.7 recalled 5. What these subjects remembered was only a few isolated propositions and no meaningful relationships could be established between them.

The recall results seemed to indicate that language familiarity helped a little with the recall. Group 1 read the English without a title version and recalled 14 propositions. Group 2 read the Chinese without a title version and recalled 14 propositions. However, statistical analysis showed that there were no significant differences between the two. It suggested that when the subjects could not build a global representation of the passage, they could not identify the topic of the passage and activate an existing schema, and language familiarity could not compensate for their failure. Therefore, their comprehension was poor. Since comprehension was poor, memory was poor.

This is also the case with Groups 3 and 4. Both groups read a version with a title. Group 3 the English version, and Group 4 the Chinese version. Group 4 performed a little better than Group 3 (17 vs. 15) 2 propositions. But again, there were no significant differences between the two. That is to say, language here played a minor role. This seems to be contradictory to Carroll's findings (1983a). In his experiment, Carroll drew the conclusion that linguistic schema played a more important role than content schema. As mentioned earlier in the present study, the language in the original passage was relatively simple and therefore posed no problem for the subjects. The subjects might know every word in it, yet still might fail to identify the topic and therefore fail to make a meaningful interpretation of the words and sentences.

However, the subjects who read the version with a title did perform significantly better. Group 3 recalled 14 propositions while Group 1 recalled 17 and statistical analysis showed there were significant differences between the two. Group 4 recalled 17 propositions and Group 2 recalled 13 propositions and again statistical analysis showed there were significant differences. The title told the subjects about the topic of the passage therefore they could build a global representation of it. Knowing that the passage is about a Western wedding ceremony allowed them to make a meaningful interpretation of every word and every sentence and build a meaningful relationship between sentences.

The title plus the passage may permit the subjects to build a schema about the wedding ceremony, but if there is no existing schema prior to reading the details of the specific western custom would be new information to them. Therefore, they might not be able to recall accurately. Let us take the veil detail for example. In a traditional Chinese wedding the bride used to wear a veil. But in a modern Chinese wedding the bride does not wear a veil at all. So this detail was a potential difficulty for the subjects. And surely enough, they did rather poorly on this point. In Group 4, 7 subjects recalled the detail inaccurately. Of them, wrote Ta female, liaogi miansha while the original sentence is the veil was lifted, but there was no indication that it was she who lifted the veil and usually it was he who lifted the veil. The other 2 did get the passive part right, but they wrote that Ta female de hunsha bei jiekai le meaning her wedding dress was opened which was of course ridiculously wrong. Since the subjects could not relate the new information to an already existing schema in their long term memory, the newly built schema could exercise a significant but somewhat limited effect.

IV Conclusion

The study indicates that schema plays a significant role in comprehension and memory. When there was no title, the subjects could not activate an existing schema and their comprehension and recall were poor. When there was a title, the subjects could build an overall interpretation of the passage. Even if the schema was not an already existing schema in their memory, they performed significantly better. It also indicates that sometimes the activation of an appropriate schema is more important than knowing all the words in a text. For the reader may know every word in a
text but still he may not have the least idea what it is about. From the present study it is possible to extract some general implications for foreign language teaching. Failure to comprehend a text may not necessarily be due to language problems. Sometimes language poses no problem while the content is difficult to understand due to a lack of existing schemata for a certain aspect of the culture in the foreign language. So while teaching language the teacher should simultaneously teach culture in the target language both directly and indirectly. As for the learner himself he should pay as much attention to the culture of the target language as he does to the language itself to enrich his own background knowledge. The more background knowledge he has the easier it is for him to comprehend and the more knowledge he can store in his permanent memory. So the snowball gets larger and larger and the language learning will be more successful.

References


