

# Content and formal schemata in esl reading essay



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3, September 1987 Content and Formal Schemata in ESL Reading PATRICIA L. CARRELL Southern Illinois University This article reports the results of an experiment investigating the simultaneous effects on ESL reading comprehension of both culture-specific content schemata and formal schemata, as well as any potential interaction between them. In the study, high- intermediate ESL students read, recalled, and answered questions about each of two texts. For each of two groups of readers (students of Muslim and Catholic/Spanish backgrounds), one text had culturally familiar content, the other culturally unfamiliar content. Within each group, one half of the subjects read the texts in a familiar, well-organized rhetorical format, the other half read the texts in an unfamiliar, altered rhetorical format. Results showed the conditions expected to yield good reading comprehension (familiar content, familiar rhetorical form) did so.

Similarly, the conditions expected to yield poor reading comprehension (unfamiliar content, unfamiliar rhetorical form) did so. More interestingly, the results for the "mixed" conditions (familiar content, unfamiliar rhetorical form; unfamiliar content, familiar rhetorical form) indicated that content schemata affected reading comprehension to a greater extent than formal schemata. Specific results are presented and discussed, as are limitations of the study and teaching implications. One type of schema, or background knowledge, a reader brings to a text is a content schema, which is knowledge relative to the content domain of the text. Another type is a

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formal schema, or knowledge relative to the formal, rhetorical organizational structures of different types of texts.

In empirical tests of these two different types of schemata, it is fairly easy to separate out and to test for the effects of one type, while holding the effects of the other type constant. For example, in testing for the effects of content schemata, one keeps the formal rhetorical structure of a text constant, manipulates the content, and has comparable groups of subjects process each different content. Any differences on the dependent measures (answers to literal or 461 inferential questions, written or oral recall protocols, summaries, and so on) are then presumed to be due to the manipulation of content and readers' background knowledge of that content. This type of research has in fact been typical in the field. The seminal study of Steffensen, Joag-dev, and Anderson (1979) is a good example of this type of cross-cultural research on content schemata. In that study, two groups of subjects with different cultural heritages were investigated—a group of Asian Indians living in the United States and a group of Americans.

Each subject was asked to read and recall two personal letters, both of which were constructed with similar rhetorical organization. However, the cultural content of the two letters differed; one described a traditional Indian wedding, the other a traditional American wedding. It was assumed that all adult members of a society would have a well-developed system of background knowledge about the marriage customs of their own culture and a relative lack of knowledge about the marriage customs of more distant cultures. This is exactly what Steffensen et al. found. Both the Indian and

American groups read the material dealing with their own cultural background faster and recalled more of the content.

Furthermore, members of the culture provided appropriate cultural elaborations; nonmembers provided inappropriate cultural distortions, frequently outright intrusions from their own culture. In short, the study showed the clear and profound influence of cultural content schemata on reading comprehension. Johnson (1981), who also investigated content schemata while holding formal schemata constant, used two authentic folktales and two groups of readers—a group of Iranian students studying in the United States and a group of Americans. Both groups read a Mullah Nasr-el-Din story from Iranian folklore and a story about Buffalo Bill from American folklore. Of the two folktales, Johnson says, “both contained similar motifs which were culturally distinct yet were equivalent in plot construction” (p. 170).

Thus, as with the Steffensen et al. study, Johnson manipulated the content and held the form constant. Johnson’s results were much like those of Steffensen et al. -superior performance on a given text by members of the cultural group, poorer performance by non-members of the cultural group- thus clearly showing strong effects of cultural content schemata.

Johnson, 1982, was omitted from consideration because it was not possible to determine, on the basis of the author’s description, whether or not the two experimentally contrived texts were rhetorically equivalent. ) Thus, at least these two studies clearly show the separate effects of content schemata, specifically cross-cultural content schemata, on ESL reading. TESOL

QUARTERLY 462 Likewise, one can test for the effects of formal schemata by keeping the content of a text constant, varying the rhetorical organization, and having comparable groups of subjects process each different rhetorical pattern. Again, one measures differences between the groups on some dependent measure(s) expected to be affected by the differences in comprehension due to the manipulation of form. The same types of dependent measures have been used in this type of schema research: scoring recall protocols or summaries for the number and types of propositions or idea units they contain compared with the original text, or looking at the way different types of literal and inferential questions about the text are answered.

At least two different studies of this type have been conducted in ESL reading, one with narrative text (Carrell, 1984b) and one with expository text (Carrell, 1984a). Carrell (1984b) investigated the effects of a simple narrative formal schema on reading in ESL and found differences among ESL readers in the quantity and temporal sequence of their recall between standard and interleaved versions of simple stories. Quantity of recall was enhanced when the story's rhetorical organization conformed to a simple story schema-one well-structured episode followed by another. When stories violated the story schema, the temporal sequencing of the readers' recalls tended to reflect the story schematic order rather than the temporal order of presentation in the story.

With expository prose, Carrell (1984a) has shown the effects of four different English rhetorical patterns on the reading recall of ESL readers of various native language backgrounds. Using texts in which identical content

information was structured in four different expository patterns, that study showed that the more tightly organized patterns of comparison, causation, and problem/solution generally facilitated the recall of specific ideas from a text more than a more loosely organized pattern called collection of descriptions. There were, however, additional differences among the four native language groups and the four expository text types. Some studies of schematic effects have apparently confounded content and formal schemata-failing to distinguish clearly the two types of schemata. (See Carrell, 1983, for a more extensive discussion of the problems of confounding content and formal schemata.

) Kintsch and Greene (1978), who argue that the simple structural story grammars typical of stories of European background may not be typical of stories of other cultural origins, reported differences in the comprehension by American college students of texts of European origin (e. . , Grimm's fairy tales) and texts of American Indian origin (e. g. , Apache Indian tales). They concluded from their results that the subjects' prior familiarity with the European-based rhetorical organization and their lack of familiarity with the rhetorical organization of the American Indian tales-that is, their formal schemata-was the cause of the American students' better comprehension of the European texts.

But since the texts differed not only in rhetorical organization but also in cultural content, one cannot rule out the possibility that the Americans' superior performance on the Grimm's fairy tales was due to the more familiar cultural content of those tales or to some combination of formal and content schemata. Finally, one of my own earlier studies (Carrell, 1981), with <https://assignbuster.com/content-and-formal-schemata-in-esl-reading-essay/>

groups of Japanese and Chinese subjects reading English translations of folktales from their own native culture, as well as from Western European culture and from American Indian culture, suffers from the same potential confounding of content and formal schemata. Although differences in performance related to the cultural origin of the texts were found, it was not possible to determine to what extent these differences were due to content schemata or formal schemata, or to an interaction of the two. Thus, formal and content schemata have been investigated separately and have been confounded in a single study.

But to date, no research has been reported which shows the combined effects of both content and formal schemata, in a single controlled study. Although Berkowitz and Taylor (1981) did combine both formal and content schemata in a single study, the design was incomplete. That study investigated the effects of text type (narrative versus expository text) and content familiarity (familiar versus unfamiliar) on native English-speaking sixth graders, but content familiarity was varied only for the expository texts, not the narrative texts. Clearly, prior research on content schemata suggests that texts on content from the subjects' cultural heritage, that is, texts with familiar content, should be easier to read and comprehend than texts on content from a distant, unfamiliar cultural heritage. Similarly, research on formal schemata clearly suggests that texts with familiar rhetorical organization should be easier to read and comprehend than texts with unfamiliar rhetorical organization. However, without research on the combined, simultaneous effects of content and formal schemata, no specific



predictions can be made about the separate or possibly interactive effects of these two types of schemata.

The relative strengths of content and formal schemata in relation to each other are unknown. While previous research leads to the prediction that reading a familiar content in a familiar rhetorical form should be relatively easy and that reading an unfamiliar content in an unfamiliar rhetorical form should be TESOL QUARTERLY 464 relatively difficult, no specific hypotheses follow from the previous research about reading a familiar content in an unfamiliar rhetorical form, or about an unfamiliar content in a familiar rhetorical form. The study reported in this article addressed the simultaneous effects of both content and formal schemata in an attempt to formulate and test hypotheses for these conditions. METHOD Subjects This study was conducted with two groups of high-intermediate- level ESL students enrolled in Levels 4 and 5 in the intensive English program for foreign students at the Center for English as a Second Language (CESL) at Southern Illinois University at Carbondale. TOEFL scores of students in Levels 4 and 5 generally fall in the range of 450 to 525. The subjects included all Level 4 and 5 students who were of Catholic or Muslim religion and who participated in both testing sessions for the study.

To obtain large enough sample sizes for each group, the study was run in three separate CESL terms: two terms during the fall of 1985 and one term in the spring of 1986. Group 1 consisted of 28 students of Muslim background, approximately half of whom were Muslim Arabs: 7 from Iran; 4 each from Saudi Arabia and Indonesia; 2 each from Jordan, Palestine, and Malaysia; and 1 each from Egypt, Lebanon, Kuwait, Qatar, Turkey, Pakistan,

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and Mali. Group 2 consisted of 24 students of Roman Catholic background, predominantly Catholic Spanish speakers from Central and South America: 4 each from Colombia and Panama; 2 each from Brazil, Costa Rica, El Salvador, and Korea; and 1 each from Mexico, Peru, Honduras, Venezuela, Argentina, Malaysia, Poland, and Senegal. Muslim and Catholic were the two cultural groups targeted. For the purposes of this study, religion was considered the defining characteristic of each cultural group. The cultural origin of the texts was also based on religion.

This does not mean that for other purposes and in other contexts, religion would necessarily be a stronger determinant of cultural affiliation or identification than, for example, national origin. For example, on nonreligious content, a Catholic from Malaysia may have more in common with a Muslim from Malaysia than with a Catholic from Colombia. (For other studies with religion as the culture-specific determinant, see Lipson, 1983, and Markham & Latham, 1987. )

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Materials Texts.

The two texts, originally authentic historical biographies of little-known religious personages, were fictionalized in terms of the main character and the events surrounding the main character. This was done to assure that aside from the general cultural-religious knowledge each reader would bring to the text, no one would have specific information about the particular individual or the particular events.

Each text carried the name of the fictionalized main character as its title: The Muslim text was entitled " Ali Affani"; the Catholic text was entitled " Saint Catherine. The fictionalized texts preserved the overall rhetorical structure of the original texts-historical narrative. Each text was edited down, however,

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to two episodes. Therefore, each text began with a historical setting, introducing the main character and setting the time in history. The setting was followed by a two-episode narrative about events in the life of the fictional character.

Episode 1 concerned events in the life of the character as a young person; Episode 2 concerned events in the latter part of the character's life. Each text concluded with the death of the character. Thus, these versions were well-formed historical narratives, a common type of rhetorical organization. Furthermore, since the texts each originated from the respective religions/cultures, each represented a rhetorical organization presumed to be familiar to the subjects in the study. To manipulate the rhetorical form of these texts, altered versions were created by interleaving the events from Episode 1 (about the character as a young person) with the events from Episode 2 (about the character as an older person). To assist the reader in keeping track of the different times and/or locations from each episode, the altered texts contained a few additional phrases to help clarify time and place.

The texts were considered "fair" because these phrases were sufficient to enable a careful reader to keep track of the sequence of events surrounding the main character. The settings and conclusions of the texts remained unchanged. Thus, these systematically altered versions of the texts presumably represented an unfamiliar rhetorical organization for this type of historical, biographical narrative. The unaltered and altered rhetorical organizations of these texts (straight temporal order/interleaved order) are presumed to be related to formal schemata the reader has internalized

(Mandler 1978a, 1978b; Mandler & Johnson, 1977). The relative ease or difficulty of cognitively processing one rhetorical organization versus another is claimed to be due to, and to be explicable by, the formal schemata of the reader. The reader's internalized formal schema for straight temporal sequencing of simple narratives is TESOL QUARTERLY 466 what should make processing such texts relatively easy.

The absence in the reader of a formal schema for interleaved, or scrambled-order, texts is what should make processing such texts relatively difficult. Hence, it is not the rhetorical structure of the text per se which makes it relatively easy or difficult to process, but how that structure relates to a reader's internalized formal schemata. In fact, in the case of both content and form, what we are interested in is the interaction between the content and form of texts and the content schemata and formal schemata, respectively, of readers. This use of the word interaction-to describe an assumed relationship between reader and text-should not be confused with the other way that word is used in this article-to describe a potential statistical relationship between the two independent variables, content and form, in a two-factor research design.

) The title of this article is taken from the perspective of the reader, the research design of the study manipulates the text, but the constructs (familiar and unfamiliar content, familiar and unfamiliar form) must be interpreted in terms of the interaction. A text is neither familiar nor unfamiliar, neither easy nor difficult in an absolute sense, but only as a function of the interaction between a reader and that text. Familiar content and familiar form in this study were defined as texts which reflected the <https://assignbuster.com/content-and-formal-schemata-in-esl-reading-essay/>

content domain of the reader's cultural- religious group membership and a well-organized temporal sequence ordering, both presumed to be related to the reader's content and formal schemata, respectively. Unfamiliar content and unfamiliar form in this study were defined as texts which reflected a content domain opposite to the reader's cultural-religious group membership and an interleaved/scrambled organization, both presumed to be unrelated to the reader's content and formal schemata, respectively. In addition, various other formal aspects of the texts were controlled. Both versions of both texts were of approximately equal length (between 250 and 257 words), consisted of approximately the same number of clauses (34 or 35), the same number of T-units (18-22), the same average number of clauses per T-unit (1.

-1. 9), and the same average number of words per T-unit (11. 4-14. 3) (Flahive & Snow, 1980; Hunt, 1965). On the Dale-Chall (1948) readability formula, the texts were determined to be at the fifth- sixth grade reading level.

Both versions of both texts appear in the Appendix. Multiple-choice questions. A set of 14 multiple-choice comprehension-inference questions was also developed for each text. The CONTENT AND FORMAL SCHEMATA 467 questions were based upon factual information in the text and could not be answered correctly without having read and understood the relevant part of the text. However, each question required the subject to combine the factual information in the text with appropriate inferences. Among the five answer options for each question, the correct choice included culturally appropriate extensions of the information given in the text, and the

distractors contained culturally in- appropriate extensions of the information given in the text, including some with a probable basis in the opposite cultural- religious group.

For example, the “ Ali Affani” text said: “ Towards the end of the year 405 .. .” One question on this text said: Ali’s story most likely took place . . . (a) 405 years after Mohammed left Mecca.

[the culturally correct answer] (b) 405 years after the birth of Mohammed. (c) 405 years after Mohammed came to Mecca. (d) 405 B. C. (e) 405 years after the death of Mohammed. It was anticipated that those foreign to the culture of the text but familiar with Catholicism-Christianity might choose the distractor involving B.

C. or those involving the birth or death of Mohammed. Such choices might result from schema transfer from the Christian calendar, which dates events relative to the birth of Christ. In another part of the “ Ali Affani” text, Ali is in the sanctuary, Al- Haram, in the Holy City, and, the text said, he “ prayed constantly. ” One question about this part of the text was as follows: While praying, Ali probably faced ..

. (a) Mecca. (b) the Great Mosque. (c) the Kaaba. [the culturally appropriate answer] (d) the west.

(e) the east. It was anticipated that those who were unfamiliar with how Muslims pray once they are inside Mecca but who knew something about Muslims facing Mecca or facing the east when they pray would select those

distractors. It was anticipated that only insiders to the culture/religion would know the culturally appropriate answer. Debriefing questionnaire.

A one-page debriefing questionnaire was developed to elicit relevant information on the subjects' country, native language, religion, degree of religiousness (on a 1-10 scale), TESOL QUARTERLY 468 degree of prior familiarity with the information in the text (on a 1-5 scale), knowledge of the religion represented by the text (on a 1-5 scale), and ratings of the difficulty of the grammar, vocabulary, content, and overall organization of the text (all on 1-5 scales). Procedures Subjects were tested on 2 successive days in their regular CESL reading classes. Both groups of subjects were exposed to "Ali Affani" on the first day and to "Saint Catherine" on the second day. Rather than counterbalance the order of presentation of the two texts, it was decided to control for possible contamination which might result from subjects who were exposed to a text on the first day discussing the content with other subjects who would be receiving that text the next day. Both groups of subjects-Muslims and Catholics-read, recalled, and then answered the questions about each text. Subjects were instructed to read the passage at their own reading rate, not to try to memorize the text but to understand it.

They were also informed that they would be asked about the passage later. Recall instructions asked the subjects to write down as much as they could remember from the passage, as exactly as they could, using complete sentences. They could use the words from the texts or their own words, but they were not allowed to refer back to the passage during recall. Within each group, one half of the subjects read the familiar, rhetorically well-organized

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version, and the other half read the unfamiliar, rhetorically altered version. In addition, between the reading and recall tasks, the debriefing questionnaire served to minimize the effects of short-term memory as well as to elicit relevant information on the subjects.

Analyses Data in the study consisted of the answers to the multiple-choice comprehension-inference questions, the variables from the debriefings, and various analyses performed on the written recall protocols. The recall protocols were analyzed for the quantity of idea units recalled from the original text and the quality of the idea units-that is, whether the ideas recalled were top-level ideas representing the two central episodes; high-level, or main, ideas within each episode; midlevel ideas, or subtopics; or low-level ideas, or details. Analysis of the reading passages into idea units and into levels of idea units was accomplished by the researcher, with cross-validation by two CONTENT AND FORMAL SCHEMATA 469 research assistants, one familiar with Catholic/Spanish culture/ religion and the other familiar with Muslim culture/religion. In addition, the recall protocols were scored for elaborations and distortions, as well as other errors of recall. Elaborations are culturally appropriate extensions of the text, produced when someone knowledgeable about the culture provides additional culturally correct information not found in or logically inferable from the text; distortions are culturally inappropriate modifications of the text, often outright intrusions from another culture, in which unfamiliar ideas are interpreted, remembered, and recalled in terms of another cultural schema. Because of the cross-cultural nature of the study, every recall protocol was analyzed by two different scorers, one intimately familiar with



Catholic/Spanish culture/religion and one intimately familiar with Muslim culture/religion.

Reliability between the two judges in scoring the recalls was  $r = .94$ .

Conflicting scores on the ideas recalled and on elaborations and distortions were resolved by discussion among these two scorers and the experimenter.

Statistical analyses were performed with the SAS package of statistical programs on Southern Illinois University's IBM 3081-370 computer, using the General Linear Models procedure, which is comparable with analysis of variance. An alpha level of .05 was chosen as the significance level.

Nonsignificant results are indicated by n. s. ; significant results have the exact probability levels reported. RESULTS Analysis of Debriefing

Questionnaires Analysis of subjects' responses to the debriefing questionnaire enabled us to check and compare the two groups of subjects.

First, there was the expected significant interaction between the groups and their reported degree of knowledge of the religion reflected in the texts,  $F = 53.$

$62, p = .0001$ . Subjects were asked to indicate, on a 1-5 scale (1 = nothing, 5 = very much), how much knowledge they had of the religion reflected in the text. The Muslims reported significantly greater knowledge of the Muslim religion ( $M = 4.11$ ) than of the Catholic religion ( $M = 1.$

$80$ ), and the Catholics reported significantly greater knowledge of the Catholic religion ( $M = 3.3$ ) than of the Muslim religion ( $M = 1.94$ ). Second, when asked to indicate, on a 1-10 scale (1 = not at all religious, 10 = very

religious), how religious they felt they were, the two groups were significantly different: Muslims,  $M = 6.5$ ; Catholics,  $M = 5.6$ ;  $F = 4.29$ ,  $p = .0410$ . Thus, the Muslims perceived themselves to be more religious than did the Catholics.

TESOL QUARTERLY 470 There was the expected significant interaction between the groups and their reported degree of prior familiarity with the information in the text,  $F = 67.6$ ,  $p = .0001$ . They were asked to report, on a 1-5 scale (1 = all of it, 5 = none of it), how much of the information in the reading was familiar to them before they read it. The Muslims reported significantly greater prior familiarity with the information in the Muslim text ( $M = 2.39$ ) than that in the Catholic text ( $M = 4.04$ ), and the Catholics similarly reported significantly greater prior familiarity with the information in the Catholic text ( $M = 3.29$ ) than that in the Muslim text ( $M = 4.04$ ).

04). Subjects also assessed, on a 1-5 scale (1 = very easy, 5 = very difficult), the degree of difficulty of each reading in terms of grammar, vocabulary, content, and overall organization. Subjects' assessments of the relative ease or difficulty of content were significantly related to the difference in content-familiar versus unfamiliar-and subjects' assessments of the relative ease or difficulty of overall organization were significantly related to the difference in form-familiar versus unfamiliar (see Table 1).

TABLE 1 Difficulty Ratings as a Function of Familiar and Unfamiliar Form, Content, and the Interaction of Form and Content Criterion Overall Grammar Vocabulary Content organization Form n. s. n. s. n. s.  $F = 4.60a$   $p = .0001$

s. n. s.  $F = 4.60a$   $p = .0001$

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0369 Content n. s. n. s.

$F = 4.72$  n. s.  $p = .0346$  Form x Content n.

s. n. s. n. s.

n. s. Note: The scale of difficulty was 1 (very easy) -5 (very difficult). a

Familiar form  $M = 2.09$ , unfamiliar form  $M = 2.$

69. b Familiar content  $M = 1.83$ , unfamiliar content  $M = 2.04$ . It is noteworthy that this effect, while statistically significant at the .

05 level, is not as robust as the other statistical differences found in this study, most of which are significant at .0001. This relatively weak effect on the part of subjects reporting differences in the difficulty of the texts due to content and form may be related to a similar finding by Carrell and Wallace (1983). In that study, neither context nor prior familiarity significantly affected ESL readers' ratings of text comprehensibility. Carrell and Wallace concluded CONTENT AND FORMAL SCHEMATA 471 that as a group, the ESL readers tended not to have a sharply honed sense of how easy or difficult a text was for them to understand and that they tended to overrate their comprehension relative to the level of their recall. Texts perceived as equally "easy" were not recalled equally well.

The weak effect here may be due to the same lack of metacognitive sensitivity. Analysis of Question Answers and Recall Protocols Descriptive data for the mean number of questions answered correctly and the mean percentage of idea units recalled from the original texts are reported in Table 2. Even superficial inspection of TABLE 2 Mean Scores for Question Answers <https://assignbuster.com/content-and-formal-schemata-in-esl-reading-essay/>

and Quantity of Recall Passage type M Question answers Familiar content, familiar form 6. 58 Unfamiliar content, familiar form 3. 38 Familiar content, Unfamiliar form 6. 08 Unfamiliar content, unfamiliar form 3.

62 Quantity of recall Familiar content, familiar form 43. 5 Unfamiliar content, familiar form 35. 73 Familiar content, unfamiliar form 39. 58 Unfamiliar content, unfamiliar form 33. 15 these data shows that content was a stronger predictor of performance than was form or any interaction between the two.

And indeed, inferential statistical analysis confirms that impression (see Table 3). In other words, based on these results, not only are TABLE 3 Question Answers and Quantity of Recall as a Function of Familiar and Unfamiliar Form, Content, and the Interaction of Form and Content Question answers Quantity of recall Form n. . n. s.

Content  $F = 64.43$   $F = 13.65$   $p = .0001$   $p = .0005$  Form x Content n. s.

n. s. TESOL QUARTERLY 472 the predictions of the original hypotheses confirmed (familiar content-familiar form = easy; unfamiliar content-unfamiliar form = difficult), but it would appear that reading familiar content even in an unfamiliar rhetorical form is relatively easy, whereas reading unfamiliar content even in a familiar rhetorical form is relatively difficult. However, lest we conclude too hastily that the rhetorical form of a text has no effect on ESL reading comprehension, when familiarity of content is also a factor, the analysis of the type of information, or the kinds of idea units, recalled revealed one very interesting, significant effect of form (see Table 4).

When recalls TABLE 4 Type of Idea Units Recalled as a Function of Familiar and Unfamiliar Form, Content, and the Interaction of Form and Content Type of idea unit Top High Mid Low Form  $F = 32.2a$  n. s. n.

s. n. s.  $p = .0001$  Content n.

s.  $F = 19.72b$  n. s.

n. s.  $p = .0001$  Form x Content n. s. n.

s. n. s. n. s.

Note: The scale ranged from 0-100% of idea units recalled at each level. a Familiar form  $M = 96.15$ , unfamiliar form  $M = 62.50$ . b Familiar content  $M = 42.$

79, unfamiliar content  $M = 28.08$ . were scored for whether they clearly expressed the two top ideas of each text, that is, the two central and separate episodes in each text, the form of the text was found to be a significant factor. Subjects who read the versions of the texts in which the events from the two episodes were interleaved failed to express clearly the separateness of these two episodes in their recalls. It appears that these subjects did not clearly understand that each text was about two separate time periods in the life of the main character.

Events from the second episode, the latter part of the character's life, were confused with events from the first episode, the early part of the character's life. Subjects in this condition tended to recall the text as one single episode and had no sensitivity to the time differences of the events. Table 4 also

shows a significant main effect for familiarity of content at the high level of idea units, that is, at the level of main ideas within each episode. Subjects familiar with the content of a text recalled significantly more main topics and major idea units CONTENT AND FORMAL SCHEMATA 473 from each episode than did subjects unfamiliar with the content.

Familiar versus unfamiliar content and form had nonsignificant effects on the recall of midlevel idea units (subtopics within each episode) and of low-level idea units (details). The results of scoring culturally appropriate elaborations and culturally inappropriate distortions and other errors are shown in Table 5. Superficial inspection of the data in Table 5 indicates that TABLE 5 Mean Number of Idea Units Elaborated or Distorted per Recall Protocol Passage type M Elaborations Familiar content, familiar form 2. 5 Unfamiliar content, familiar form 0. 19 Familiar content, unfamiliar form 2. 42 Unfamiliar content, unfamiliar form 0. 31 Distortions Familiar content, familiar form 0. 08 Unfamiliar content, familiar form 3. 38 Familiar content, unfamiliar form 0. 15 Unfamiliar content, unfamiliar form 3. 15 content is a stronger source of elaborations and distortions than form, and indeed inferential statistical analysis confirms this impression (see Table 6).

Those familiar with the cultural-religious background of the text engaged in culturally appropriate elaborations in their recall protocols; those unfamiliar with the cultural-religious background of the text made culturally inappropriate modifications of the text, including obvious intrusions from their own cultural-religious background. Whether the form was rhetorically

familiar or unfamiliar had no significant effect on subjects' engaging in culturally based elaborations or distortions. TABLE 6 Elaborations and Distortions as a Function of Form, Content, and the Interaction of Form and Content Elaborations Distortions Form n. s. n. s.

Content  $F = 65.80$   $F = 80.43$   $p = .0001$   $p = .$

$0001$  Form x Content n. s. n. s.

TESOL QUARTERLY 474 Examples of culturally appropriate elaborations provided by insiders to the culture/religion include the following from a Muslim on the "Ali Affani" text: "he went to Mecca because he wanted to pray in Al Haram, because when you pray one time in Mecca it's equal one thousand than other place. The following elaborations were provided by Catholics on the "Saint Catherine" text: "She wanted to join the Dominican Order, a religious order," "She carried for the sick in a Catholic hospital," "when she was 21 she became a nun," and "Catherine died at 33 years old, the same age than Christ." One Catholic even ended his recall protocol with the word Amen. Examples of culturally inappropriate distortions by those outside the culture/religion of the text include the following from Catholics on the "Ali Affani" text: "when he was walking to the church" and "he went to live in a monastery. The following was typical of the distortions provided by Muslims on the "Saint Catherine" text: "She lived in Italy with her holy family." Finally, recall protocols were scored for three different kinds of errors: (a) sequence errors, that is, the number of idea units which were involved in distortions of the chronological sequence of events; (b) blends, that is, the number of pairs or sets of idea units blended together in recall;

and (c) other errors, including lexical errors, syntactic errors, and errors whose source was otherwise inexplicable.

The third category included such errors as a subject's recalling that Ali Affani found his mother in a tree or in a chair, rather than in the street, or recalling about St. Catherine that " she didn't nurse sick" instead of " when she was not nursing the sick. " As can be seen in Table 7, no significant effects were obtained for blends or other errors. Only sequence errors showed significant effects, and these were due to form.

As previously mentioned, those TABLE 7 Errors as a Function of Form, Content, and the Interaction of Form and Content Type of error Sequence Blend Other Form  $F = 10.57$  n. . n. s.  $p = .$

0021 Content n. s. n. s. n.

s. Form x Content n. s. n. s.

n. s. a Familiar form  $M = 0.62$ , unfamiliar form  $M = 6$ .

00. CONTENT AND FORMAL SCHEMATA 475 who read the unfamiliar, rhetorically altered forms of the texts tended to confuse sequences of events and relationships between events. For example, in the Saint Catherine text, Catherine told her parents that she wanted to become a nun, and did become a nun, before she had a vision. Readers of the unfamiliar, rhetorically altered form often recalled her telling her parents she wanted to become a nun after she had had her vision. DISCUSSION The overall finding of this study seems to be that when both content and rhetorical form are



factors in ESL reading comprehension, content is generally more important than form.

When both form and content are familiar, the reading is relatively easy; when both form and content are unfamiliar, the reading is relatively difficult. When either form or content is unfamiliar, unfamiliar content poses more difficulties for the reader than unfamiliar form. However, perhaps not too surprisingly, rhetorical form is a significant factor, more important than content, in the comprehension of the top-level episodic structure of a text and in the comprehension of event sequences and temporal relationships among events. In other words, each component—content and form—plays a significant, but different, role in the comprehension of text. Further research on the combined effects of content and form in ESL reading comprehension is clearly needed. This study is a first of its kind and involved only one particular manipulation of content and only one particular manipulation of form, with rather specific cultural groups of ESL readers at one proficiency level (high-intermediate).

Further studies are needed to examine other proficiency levels, other cultural groups, and other types of manipulation of content and form. For example, other kinds of manipulations of a text's rhetorical organization, related to the formal schemata of various types of readers, may yield results different from those obtained in this study. Failing this additional research, the teaching implications of this study should not be overstated. However, I do not believe it would be an overstatement to say that this study suggests, as have others before it (for example, Carrell & Eisterhold, 1983), that in the ESL reading classroom, content is of primary importance. As Steffensen et al.

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(1979) have said, “ the schemata embodying background knowledge about the content of a discourse exert a profound influence on how well the discourse will be comprehended, learned, and remembered” (p.

9). Teachers of ESL reading need to be aware of the important role TESOL QUARTERLY 476 in ESL reading of background knowledge of text content, especially cultural content, and they must often be facilitators of the acquisition of appropriate cultural content knowledge. Stevens’s (1982) observation about L1 reading teachers applies equally, if not more so, to ESL reading teachers: “ A teacher of reading might thus be viewed as a teacher of relevant information as well as a teacher of reading skills” (p. 328). In addition, however, as I have suggested elsewhere (Carrell, 1985) based on related research, ESL reading teachers also need to be cognizant of the rhetorical organization of texts and should teach students to recognize and use the top-level rhetorical organization of text to facilitate comprehension and recall. ACKNOWLEDGMENTS I wish to thank my research assistants, Jo Ellen Rayyan and Aida Perez, for their assistance with various aspects of this project.

I also thank my colleagues in the Center for English as a Second Language who facilitated my access to the international students who took part in the study. Further, I would like to thank two colleagues, Sandra Silberstein and Ulla Connor, for reading and commenting on an earlier draft of this article; they bear no responsibility for any remaining difficulties. Finally, this article has benefited from the comments of two anonymous reviewers, to whom I am grateful. This research was partially supported by an internal grant from

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Carrell is Professor of Linguistics/ESL and Psychology and Associate Dean of the Graduate School at Southern Illinois University. Her previous research on content and formal schemata and ESL reading, for which she was awarded the 1985 Paul Pimsleur Award for Research in Foreign Language Education by the American Council on the Teaching of Foreign Languages, has been published in the TESOL Quarterly, Language Learning, and The Modern Language Journal and will also appear in forthcoming volumes co-edited with Dave Eskey and Joanne Devine. REFERENCES Berkowitz, S. , & Taylor, B. (1981).

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Form) About six hundred years ago, there was a young woman named

Catherine. She lived with her parents in Italy. As a young child, because she

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was born on the Feast of the Annunciation, Catherine loved the Blessed Mother and the Holy Family very much. Whenever she climbed up or down stairs, she would kneel on each step and say a Hail Mary. She never went anywhere without her rosary. When she was sixteen years old, a rich man was eager to marry Catherine. Her parents liked him and wanted her to marry him, but Catherine did not want to. After refusing to marry the rich man, Catherine told her parents she wanted to become the bride of Christ. Her parents were angry, but they finally agreed. When she was twenty-one years old, Catherine joined the Dominican order. She worked in the hospitals with the other young women of the order. When she was not nursing the sick, she was at Mass. One day, on Ash Wednesday, after receiving communion as a Dominican, Catherine had a remarkable vision. While looking at the cross, five blood-red rays of light came from the cross and touched her hands, feet, and chest. After her vision, Catherine fainted. She got better quickly, but the scars remained on her body for the rest of her life. This was not long, however; she died when she was thirty-three. Because of this, and other remarkable things about her life, she is known today as Saint Catherine.

Saint Catherine (Unfamiliar, Altered Form) About six hundred years ago, there was a young woman named Catherine. She lived with her parents in Italy. As a young child, because she was born on the Feast of the Annunciation, Catherine loved the Blessed Mother and the Holy Family very much. Whenever she climbed up or down stairs, she would kneel on each step and say a Hail Mary. She never went anywhere without her rosary. When she was twenty-one years old, Catherine joined the Dominican order. She worked in the hospitals with the other young women of the order. When she was not nursing the sick, she was at Mass. CONTENT AND FORMAL

SCHEMATA 479 When she was sixteen years old, a rich man was eager to marry Catherine. Her parents liked him and wanted her to marry him, but Catherine did not want to. One day, on Ash Wednesday, after receiving communion as a Dominican, Catherine had a remarkable vision. While looking at the cross, five blood-red rays of light came from the cross and touched her hands, feet, and chest. After refusing to marry the rich man, Catherine told her parents she wanted to become the bride of Christ. Her parents were angry, but they finally agreed. After her vision, Catherine fainted. She got better quickly, but the scars remained on her body for the rest of her life. This was not long, however; she died when she was thirty-three. Because of this, and other remarkable things about her life, she is known today as Saint Catherine. Ali Affani (Familiar, Well-Organized Form)

There once was a young man named Ali Affani. He lived in Jidda with his widowed mother. Towards the end of the year 405, young Ali's mother agreed that he could go to Mecca as all good men do. While in the desert, on his way to Mecca, something happened which made young Ali unfit to continue his trip. Believing that his trip had begun badly, he returned to Jidda. Upon returning to Jidda, young Ali found his mother sitting in the street, crying and tearing her clothes and hair like a crazy woman. She told Ali that since he had left, she had been in the street. She would not enter the house without her son. Ali really wanted to go to Mecca, but could not leave her sitting outside, so he stayed home. Ali was finally able to go to Mecca, several years later, after his mother died, in the year of 420. Ali spent the rest of his life in the sanctuary, Al- Haram, in the Holy City. He only left once each day to buy food. He did not need to buy water because God provided it. As an old man, Ali was very religious and prayed constantly. Each day he

would read from the Koran while walking around the Kaaba a number of times. In the sanctuary in Mecca, whenever Ali walked around the Kaaba, he would show his respect for the precious stone. Ali died in the Great Mosque, his home for thirty years. Ali Affani (Unfamiliar, Altered Form) There once was a young man named Ali Affani. He lived in Jidda with his widowed mother. Towards the end of the year 405, young Ali's mother agreed that he could go to Mecca as all good men do. Ali was finally able to go to Mecca, several years later, after his mother died, in the year of 420. Ali spent the rest of his life in the sanctuary, Al-Haram, in the Holy City. He only left TESOL QUARTERLY 480 once each day to buy food. He did not need to buy water because God provided it. While in the desert, on his way to Mecca the first time, something happened which made young Ali unfit to continue his trip. Believing that his trip had begun badly, he returned to Jidda. As an old man in Mecca, Ali was very religious and prayed constantly. Each day he would read from the Koran while walking around the Kaaba a number of times. Upon returning to Jidda, young Ali found his mother sitting in the street, crying and tearing her clothes and hair like a crazy woman. She told Ali that since he had left, she had been in the street. She would not enter the house without her son. Ali really wanted to go to Mecca, but could not leave her sitting outside, so he stayed home. In the sanctuary in Mecca at last, whenever Ali walked around the Kaaba, he would show his respect for the precious stone. Ali died in the Great Mosque, his home for thirty years.

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