

A Short Analysis of the Text Variables Affecting Reading and Testing Reading

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Abstract: This paper gives a short analysis of the text variables which affect reading and the test of reading. These variables include text topic and content, type and genre, linguistic variables, typographical features and others. It is found that these variables not only affect the reading process, but also affect the reading product—testing reading.

Key words: Reading; Testing Reading; Variable; Text Variable

Many of the reader variables often interact with text variables, and many aspects of text that might facilitate or make difficult the reading process have been studied.

1. TEXT TOPIC AND CONTENT

Just as it is commonly assumed that what readers know will affect what they understand when reading, so too it is commonly assumed that text content will affect how readers process text. It is generally assumed that abstract texts will be harder to understand than texts describing real objects, events or activities. The more concrete, imaginable and interesting, the more readable the text. Texts on mysterious topics are likely to be harder to process (although what is mysterious for one person may well be familiar to another). Texts located in familiar settings, on everyday topics, are likely to be easier than those that are not.

Most studies of reading test show that the choice of text has a marked effect. For example, Shohamy (1984) showed that the text had a significant effect on test scores.

Clapham (1996) suggests that in her research it is only with more specific texts that background knowledge has a significant effect on text comprehension. The more specific a text the more important the contribution of background knowledge, the less specific a text the more important the contribution of language proficiency. The content of a text should be sufficiently familiar to test-takers so that candidates of a requisite level of ability have sufficient existing schemata to enable them to deploy appropriate skills and strategies to understand the text. Test designers should avoid texts at the extremes of a familiarity continuum.

The development of tests of reading for specific purposes, usually subject-related, is an area where text and background effects might be thought to be crucial. Hock (1990, cited in Alderson, 2000) examined whether familiarity with test content or level of language proficiency was the better predictor

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of ability in reading comprehension. In all subjects under study—medicine, law and economics—she found that comprehension of a discipline-related text could be predicted by both knowledge of the subject area and by language level, but language level was the better predictor. Alderson and Urquhart (1985) argue that on relatively easy texts, linguistic proficiency might be sufficient to answer test questions adequately, whereas more difficult texts might require more subject matter knowledge, or higher linguistic proficiency. Clapham (1996) elaborated this issue, she investigated the relationship between the language ability of students taking the IELTS test of reading for academic purposes, and their ability to understand texts in and out of their own subject disciplines. She discovered two linguistic thresholds. The first one, at a score of roughly 60 percent on her grammar test, represented a level of linguistic knowledge below which students were unable to understand even in their own subject discipline. The second, at a score of roughly 80 percent on the same test, represented a level of linguistic knowledge above which students had little difficulty reading texts outside their own discipline. The crucial area in which subject knowledge could facilitate understanding of texts within one's own subject area was 60-80 percent on the test. In this case, knowledge could only facilitate comprehension once a minimum level had been reached.

Hale (1988) examined performance on TOEFL reading texts and established that students in the humanities/social sciences and biological/physical sciences performed better on passages related to their groups than on other passages. Hale concluded that TOEFL test developers were justified in seeking to maintain a balance of reading passages across the humanities/social sciences and the biological/physical sciences, in order to counter any possible bias.

Test designers should be aware that variation in text content might lead to different test results. Good tests of reading and good assessment procedures in general will ensure that readers have been assessed for their ability to understand texts in a range of different topics. It is more appropriate to take texts from popular fiction and non-fiction on the grounds that they are likely to be less biased in terms of difficulty, and therefore more suitable for test of reading. Weir (1990,1993) points out that the topic should be selected from a suitable genre, at an appropriate level of specificity, and should not be culturally biased or favor any section of the test population.

While one might expect text effects in specific purpose testing, especially in an academic context, such effects are not generally to be expected on general texts in non-academic contexts.

2. TEXT TYPE AND GENRE

Text type or genre has often been studied in reading literature. Texts are usually classified into narrative, descriptive, argumentative or expository types. It has been pointed out that there is a difference in the reading process according to the type of text read (Olson et al., 1980, 1981,1984, cited in Okumura, 1998). Olson et al. had college students think out while reading four different stories (two of which were well formed and the other two ill-formed) and two essays (each had a well formed and an ill-formed version, so the total was four), and then analyzed the protocols. The basic orientation of the reader of a story was prospective, the reader was looking ahead, trying to make specific predictions about where the story was going. In contrast, the reader of the essay appeared to adopt a retrospective orientation, the reader related each new element in the essay to earlier elements. The predictions given in the essays were few, and they were much more general. This difference in orientation on the part of the reader seems to result from the basic difference in underlying structures of the two text types.

Many studies have proved that expository texts are harder to process than narrative texts perhaps because of the greater variety of relationships among text units, possibly due to greater variety of content. The conventionalized macro-structures associated with stories seem to facilitate comprehension by allowing readers to quickly construct a model of the text, and simple story grammars are easier to follow than more complex ones, or ones that violate expectations.

Okumura (1998) carries out a study, he finds that when a typical expository reading text and two typical narrative reading texts are given to Japanese high school students, a more highly significant correlation is found between the reading scores of the two narrative texts than between the reading score

of the expository text and that of the narrative text. So there tends to be a difference between a L2 learner's reading ability according to text type, and that the same reading ability level is shown when the reader reads the same type of reading material.

One thing that distinguishes one text type or genre from another is the way the text is organized. Text organization—how the paragraphs relate to each other, how their relationships between ideas are signaled or not signaled—has long been an object of study. Even within one genre, researchers have considered how different organizations might lead to different outcomes or processes.

Mandler (1978) found that when the text content was kept constant but the rhetorical structure varied (a simple story schema as contrasted with a deliberate violation of such a schema), first language readers found the text harder to understand. Carrell (1981) replicated this study with second language learners, and found that when stories violating the formal story schema were processed by learners of English as a second language, both the quantity of recall and the temporal sequences of recall were affected.

Meyer (1975, cited in Alderson, 2000) suggested that the organization of texts might make some text easier to follow and more memorable than others. Text that is coherent is much easier to comprehend than less coherent text.

3. TRADITIONAL LINGUISTIC VARIABLES

Much research has been concerned with the issue of whether the language of the text affects readers. The effect of syntax on language processing has been intensively studied in reading literature. It has long been recognized that syntactic parsing of some kind is necessary in order to impose meaning on the words recognized. In a classic study, Schlesinger (1968, cited in Alderson, 2000) tested the hypothesis that syntactic complexity caused processing difficulties for first language readers. However, his result indicated that syntax was not a significant factor. He showed at least for first language readers, syntax only becomes a problem when it interacts with other factors in the text.

Alderson (1993) has produced evidence of a strong connection between grammar and reading. He finds very high correlations between the grammar test and different tests of reading in a battery of IELTS test. Alderson concludes that "it must be the case that, in some intuitive sense, a reader must process the grammar in a test in order to understand it", and that "the evidence certainly does not support any claim that one can successfully understand text without grammatical abilities"(p.219).

Vocabulary difficulty has consistently been shown to have an effect on understanding for first language readers as well as for second language readers. It has also been found that topic unfamiliarity can not be compensated for by easy vocabulary: both difficult vocabulary and low familiarity reduce comprehension. Vocabulary difficulty, especially the meaning of idiomatic expression, makes texts hard to read for second language readers too.

Factor analytic studies of reading have consistently found a word knowledge factor on which vocabulary tests load highly. Tests of vocabulary are highly predictive of performance on tests of reading comprehension (Alderson, 2000). Vocabulary plays a very important role in reading tests. But without separate treatments for background knowledge and lexicon, one is not sure which one is mainly responsible for higher reading comprehension scores. Vocabulary tests may not simply be measures of lexical knowledge. Clearly, vocabulary is important to text comprehension, and thus to test performance. However, more subtle definitions of vocabulary are needed.

As has been shown above, the language of texts is highly relevant to the testing of reading. However, identifying text variables which consistently cause difficulty is a complex task. Clearly, at some level the syntax and lexis of texts will contribute to text and thus test difficulty, but the interaction among syntactic, lexical, discourse and topic variables is such that no one variable can be shown to be paramount.

Researchers have long been concerned to identify what features make text readable, in order to adjust difficulty to the intended readership. Many attempts have been made to develop formulae or other simple procedures, which could be used to estimate text readability, based on empirical research into difficulty.

Since syntax and lexis can cause problems in text, as has been shown above, estimates of the syntactic complexity and lexical density of text are commonly used. However, it is clearly not very practical to have to analyze texts for such features (Alderson, 2000), and so indices have been developed to allow rough estimates.

Readability research has been complemented and paralleled by research into text simplification: how to simplify texts if they are found to be too difficult for the intended readership. Different methods of text simplification have been studied for their effects on readers and textual understanding. Distinction is often made between “simplification” and “simple”. A simple account is an authentic piece of discourse; a simplified account may or may not be authentic, and is usually pedagogic in intent, it may, however, not be simple. As many researchers have shown, making a text less syntactically complex may distort the message or increase difficulties in other text features.

Although it might be assumed that a simplification of the syntax of texts will make the text more readable, some research finds that simplifying syntax does not necessarily make texts more readable, since a thorough syntactic analysis of text may be unnecessary.

The clear relevance of research into text readability and simplification to test developers is that they need to consider the readability of the texts used for testing comprehension, and should only use texts that are appropriate in difficulty for the population being tested. However, just as Alderson (2000) notes, readability formulae give only crude measures of text difficulty, and are rarely suitable for second or foreign language readers. Moreover, cloze techniques are themselves testing procedures, and so will give a biased estimate of text difficulty.

4. TYPOGRAPHICAL FEATURES

Much early research in reading was concerned with the perception of print, and how readers could turn it into sound. Later, scholars tended to downplay the importance of the print itself. However, more recent research has shown that perceptual features influence how rapidly readers can recognize print and thus process meaning. Researchers remain interested in what features of print, fonts and layout might be important in causing reading ease or difficulty.

Experiments have shown that the top half of normally printed English word is more informative than the bottom half. There is also more information in the first half of English words than in the second half (Alderson, 2000).

Since difficulty in processing letters is related to automaticity of word identification, and speed of word recognition affects speed and efficiency of reading, second or foreign language readers processing different orthographies or scripts might experience greater difficulty.

The layout of print on the page is considered especially important for beginning readers, partly for perceptual reasons, and partly in order not to overwhelm readers with too much information.

Although research is not entirely clear on the effect of typographical features in reading in a second or foreign language, test developers would be well advised to ensure that texts are suitably presented, and are at least as clear as normal texts of any given genre in the target language. It is clearly undesirable for readers to be penalized because of poor or untypical text layout or reproduction.

5. OTHER TEXT VARIABLES

5.1 Language and Non-Language Information

Texts usually contain language as well as non-language information, or verbal and non-verbal information. Many genres use tables, diagrams and other forms of presentation of data, partly to offer an alternative and complementary way of processing information. Information presented in tabular and

other forms often provides support for the processing of the verbal information. Readers often need to read both the tables and the text in order to understand fully, especially in order to read the data critically. The text often describes and interprets the data in the tables in a partial rather than complete manner, and a different view of results can often be gleaned from critical and close inspection of the tables.

Sometimes, the text can not be understood without the non-verbal, graphic data. In some so-called information transfer reading tests, the non-verbal information in texts is separated from the verbal and the information in the illustrations is deleted, then the readers are asked to restore the illustrations by reading the text. The problem of such practice is that the separation of the two forms of presentation, and the deletions of the information from the illustrations or diagrams, make readers heavily dependent on the text, the task becomes much harder than the original text with diagrams.

The implications for testing are clear: not only must the normal relationship between the verbal and the non-verbal information in text be maintained, but testers should consider assessing readers' ability to understand that relationship, as well as their ability to use the graphic information to understand the verbal, and vice versa. Any test task that disturbs such a verbal-graphic relationship is to be avoided, as in many information transfer techniques.

5.2 The Medium of Presentation

The medium by which the text is presented is also relevant to reading. In academic settings information is often presented on overhead slides or on TV screens, especially in distance learning contexts.

More and more information is now available on computer screens, especially with the development of the Internet and the World Wide Web, and the use of computer based self-instructional materials. Interestingly, many readers prefer to print out text and process it at leisure, but much information is still simply processed on screen. One limitation of this is that readers can only process one screen at a time, and scrolling forward and backwards is more time-consuming and less efficient than turning pages.

Today more and more tests are being delivered by computer, but it is important to know whether processing text on screen is different from processing print—not only because of the potential fatigue effect due to screen glare, but also generalizations from screen based reading to print based reading may not be justified.

5.3 Text Length

A problem all reading test developers face is how long the texts should be. Johnston (1984) notes that texts used in reading comprehension tests tend to be many and brief. The length of texts that candidates are exposed to will influence the strategies and skills that the candidates may be asked to deploy. If texts are too short, it may not be possible to test expeditious reading, but only careful reading.

Engleer (1977) found that when texts longer than 1,000 words were used, the abilities that could be measured changed. The suggestion is that longer texts allow testers to assess more study related abilities and to reduce reliance on sentential processing abilities that might tap syntactic and lexical knowledge more than discourse processing abilities. And the ability to identify the main idea of long texts might be qualitatively different from the ability to identify the main idea in shorter texts. It is also likely to be much easier to measure reading speed using longer texts than with a number of short passages with associated questions.

A common argument in favor of the use of longer texts is that this practice reflects more closely the situation where students have to read and study long texts. However, in many reading tests a number of short passages are used for the reason that this allows a wider range of topics to be covered thus may reduce the potential bias from a restricted range of topic areas. In developing reading tests, test developers should be aware of the compromise between maximizing authenticity by using the sort of long texts that students might have to read in their studies, and minimizing content bias by using several short passages.

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