BRAZILIAN READERS AND CONTEXTUAL REFERENCE

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This article describes an experiment carried out using Brazilian university students at UFSC, the purpose being to check comprehension relationships between two types of contextual reference and two languages, Portuguese and English. A major stimulus for the research was the question: are Brazilian students' difficulties in reading English related more to English language difficulties or to difficulties in processing text in general?

Among several crucial factors in the interpretation of text is reference, involving as it does not only superficial relationships at the level of cohesion, but also the making of inferences from a knowledge of the world which must be shared by the two main participants in the discourse, writer and reader. In other words, comprehension of reference involves seeing coherence in what otherwise might seem a merely cohesive tie. "Referential coherence is probably the most important single criterion for the coherence of text bases" (Kintsch and van Dijk, 1978).

The idea of researching reference derived from study of the work of Haviland and Clark (1974), and although the experiments they carried out were in several ways different from that reported here, the theoretical model they helped to develop fits here too. Their 'given-new' strategy, deriving from Halliday's textual function, deals with the capacity to distinguish elements presented as 'new' by the writer (or speaker) from those which are 'given' (ie, recoverable from context of situation or co-text).

According to such a model, the major function of communication is, on the one hand, to convey new information, and on the other, to relate and incorporate it into previous knowledge (Ausubel, 1963). Rules of textual organization, both

semantic and syntactic, come into play to define the available options in the language. These options, as far as the relation between 'given' information and 'new' information is concerned, include the contrast between the use of the definite or indefinite article, use of cleft-sentences, or reduction of thematic elements to cohesive elements such as pronouns or connectives.

Haviland and Clark, in three experiments, timed readers' reactions to pairs of sentences such as those cited below, to test the hypothesis that referents with direct antecedents would be more quickly and therefore more easily comprehended than indirect antecedents, which would themselves prove easier than referents with direct negative antecedents. For instance, in the three pairs:

(1) Last Christmas Eugene became absolutely smashed. This Christmas he got very drunk again. (Direct antecedent)
(2) Last Christmas Eugene went to a lot of parties. This Christmas he got very drunk again. (Indirect antecedent)
(3) Last Christmas Eugene couldn't stay sober. This Christmas he got very drunk again. (Direct Negative antecedent)

the hypothesis (accepted) was that the order of difficulty would be 1,2,3. The parallelism between 'Last Christmas' and 'This Christmas', plus the item **again** provide the speaker's signal that something in the first sentence of 1), 2) or 3) is supposed to have been 'given':

> The listener's success with the Given-New Strategy depends critically on whether the Given information, as so marked by the speaker, actually does match information already in memory. (1974:513)

Haviland and Clark then showed how this is related to inference, in that if the 'given' information is not in memory, not having been processed, the receiver has three alternatives: 1) to build a 'bridge' between 'given' and actual information through inference, 2) to treat every bit of information as new,

which indicates the beginning of an unrelated information unit (eg.,a change in topic), or 3) to try again to decode the given-new structure in that information unit.

Why might this be so? Part of the answer must lie in the amount of mental processing involved, reflected in shorter or longer reaction times in Haviland and Clark's experiments. Such mental processing itself must in turn be related to (short-term) memory, which is where the receiver is presumably holding information (eg, that Eugene "became smashed" last Christmas, that he "went to a lot of parties", or that he "couldn't stay sober").

In the present experiment, it was hypothesized that a noun or short noun phrase antecedent would be more easily processed than one involving a whole stretch of discourse, because the short antecedent would be more quickly and easily recovered from memory and also more easily related to the sentence being processed. The question was: if this happens, does it happen in both languages?

PROCEDURE

24 short paragraphs were taken from different sources, 12 originally written in Portuguese and 12 from English originals. In each language 6 contained a referent with a'short' antecedent (R1) and 6 a referent with a 'longer' antecedent, hypothesized to be more difficult to identify (R2).

Examples:

R1:   In the nineteenth century economists believed that there
       were limits to human wealth. In their opinion, when one
       man became richer, another grew poorer. If a country
       wished to improve **its** standard of living, it had to
       export more than it imported.

R2:   Once every eighty to a hundred years the bamboo forests
       in China's Sinchuan Province burst into flower and then
       die off. And **that** is bad news for the Giant Panda, which
       feeds on bamboo shoots.

The 24 texts were then translated into the other language, and a random selection was made so as to form 4 groups of 12

texts, each group containing 6 translated and 6 texts in the original form. In each group, likewise, the 12 texts were 6 in Portuguese, 6 in English, and 6 with an R1 problem and 6 with an R2 problem. Thus the design controlled for original versus translated text, and balanced the design allowing for study of the variables **language** and **type of reference**.

Subjects, 102 undergraduates of various disciplines, taking an English BA or English for Specific Purposes at UFSC, were told to choose the correct antecedent of the underlined referent from 4 multiple-choice   alternatives. Alternative d) was always of the type 'None of the previous'. Examples were supplied in Portuguese. A further 3 texts were given for each group, where alternative d) was correct. The multiple choice format was chosen after pretesting on 12 students and 5 colleagues in the English Department at UFSC, where subjects were asked to mark the antecedent with a line, and where it became apparent that such marks were unclear.

Subjects were allocated to one of the four groups (A, B, C, D) at random. Each student was allowed to use a bilingual dictionary, and took one version of the test only. They were told not to worry about results, as these would not count for final grades in their normal term work.

RESULTS

Of the 102 tests, 8 were discarded on the grounds that they had not answered most of the items. Table 1 shows overall scores as percentages for all students. The actual scores were out of 282 (94 students' scores for 3 items of each type: R1 in Portuguese, R2 in Portuguese, R1 in English and R2 in English. The texts where alternative d) (nenhum desses) was correct were excluded from the calculations as being of a different order of difficulty altogether.

	R1	R2	R1 + R2
Portuguese	88%	83%	86%
English	74%	67%	71%
Port. + Engl.	82%	75%	84%

Table 1 - Overall scores as percentagens. N = 94.

For a subset of 32 of the 94 subjects, data were also available as to their scores in the 'Vestibular' University Entrance Exam, in which they were tested on English (comprehension & grammar) and Portuguese.

A matrix of Pearson product-moment correlations was calculated for these students with results shown in Table 2.

	R1E	R2E	R1P	R2P	V.E	V.P
R1 English	-	.54**	.06	.30	.30	.26
R2 English		-	.16	.35*	.18	.17
R1 Portuguese			-	.25	-.02	-.28
R2 Portuguese				-	.03	.03
Vest. English					-	.20

Table 2 - Correlation Matrix. N = 32. ** = p < .01, * = p < .05

A t-test analysis was also carried out on the scores of these 32 students, to check whether the difference of mean scores was statistically significant with reference to the variables **language** and **type of reference**. The results are shown in Table 3.

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English	R1 v R2	1.42
Portuguese	R1 v R2	1.22
R1	English v Portuguese	0.66
R2	English v Portuguese	-1.24
English	(R1+R2) v Portuguese (R1+R2)	-1.14
R1 (Engl.+ Port.) v R2 (Engl. + Port.)		1.93*

Table 3 - T-Test (comparison of means). N = 32.
* = p < .05 (one-tailed)

DISCUSSION

The results of Table 1 seem to show that students found it easier to locate antecedents correctly in Portuguese than in English, and also that they got better results on 'short' R1-type antecedents than on R2 antecedents relating to longer stretches of text.

However, the t-tests (on a subset of 32 students only) indicate that these differences may not reach the 5% level of statistical confidence customarily required for belief that the differences are not due to chance factors in the experiment. The only significant difference established, interestingly, was the R1-R2 difference (Table 3).

Table 2 seems to show no relationships between the variables, except between R1 and R2 in English (r = .54) and between R2 in English and R2 in Portuguese (r = .35). In other words, a student who can find the harder R2 type of antecedent seems to be able to do so in both languages, though this tendency is fairly weak.

One other interpretation can be drawn from Table 2, examining the correlations which did **not** reach statistical significance: the Vestibular questions (in either language) do not seem to measure the reference ability at all, or only slightly. In view of Kintsch and van Dijk's opinion stated above, one might wonder why not.

Some texts may have been harder to process in Portuguese than in English. Consider the following item:

Quando um dente tem de ser removido, é preciso substituí-lo por um artificial para que o equilíbrio da mastigação se mantenha. Sempre que possível esse trabalho deve ser fixo. Na impossibilidade de se confeccionar uma prótese fixa, usa-se a prótese removível. Isso acontece quando os dentes conservados são insuficientes para suportar os esforços de mastigação do conjunto, ou quando o paciente perdeu os dentes posteriores.

A) substituí-lo por um artificial; B) quando os dentes conservados são insuficientes; C) usa-se a prótese removível; D) nenhum desses.

*When a tooth has to be removed, an artificial one has to replace it so that the chewing balance is maintained. Whenever possible, this substitute must be fixed. In the impossibility of making a fixed prosthesis, a removable one may be used. **This** happens when the remaining teeth are insufficient to bear the chewing load of the whole set or when the patient has lost his back teeth.*

A) an artificial tooth has to replace it; B) when the remaining teeth are insufficient; C) a removable prosthesis may be used; D) nenhum desses.

The expectation was that these items of demonstrative reference would be similarly difficult in both languages. Non-linguistic factors might have come into play in the processing of the two texts. Most of the wrong choices fell on letter A for both languages, a fact that may be accounted for in terms of topicalization or thematization of preferred antecedents, an argument defended by Sanford and Garrod (1981). Reinforcing this argument is the case of the following text:

*Com a fundação da Comunidade das Nações, a Austrália e a Nova Zelândia ficaram independentes. O fim da primeira guerra mundial teve como uma de suas conseqüências a retirada da Alemanha de todas as **suas** possessões na Oceania, as quais foram então assumidas pela Austrália e o Japão.*

A) a Comunidade das Nações; B) a Alemanha; C) Oceania; D) nenhum desses.

*With the foundation of the Commonwealth, Australia and New Zealand became independent. The end of the First World War had as one of its consequences the retreat of Germany from all **its** possessions in Oceania, which were then held by Australia and Japan.*

A) the Commonwealth; B) Germany; C) Oceania; D) nenhum desses.

Again, from the wrong answers, letter A was the most marked. According to Sanford and Garrod "principal entities in a situation are generally topicalized." The antecedent for the possessive adjective is not in thematic position in the texts,

but letter A answers were, a fact which may account for their treatment as possible antecedents.

The difficulty observed in the last text may stem from the fact that, in Portuguese, all adjectives must agree in gender and number with the noun they modify. Therefore while **suas** agrees with **possessões**, which is in the plural, the antecedent in the text is in the singular (Alemanha). In English, the different form for each person (with the exception of the second person, which is the same both in the singular and plural), **its** referring only to third person singular despite the final **s**, may have facilitated the task a little. In this case, not only referential processing ability but also language knowledge was involved.

Another instance of demonstrative reference:

Um parágrafo é composto de sentenças interligadas, mas não interligadas arbitrariamente; uma sentença pressupõe (e inclui referência a) informações contidas em sentenças anteriores. Num curso, isso deveria valer para as unidades que o compõem. A) sentenças ligadas arbitrariamente; B) uma sentença pressupõe informações contidas em sentenças anteriores; C) um parágrafo é composto de sentenças interligadas; D) nenhum desses.

A paragraph is made up of sentences connected together but not connected together in an arbitrary order; one sentence presupposes (and includes reference to) information carried by earlier sentences. In a course this should be true of the course units. A) sentences connected together in an arbitrary order; B) one sentence presupposes information carried by earlier sentences; C) a paragraph is made up of connected sentences; D) nenhum desses.

Again the text in English got higher scores than its Portuguese version. This and the previous case of demonstrative reference can be explained in terms of differences in the translations of the correct choices in the two languages.

LIMITATIONS

There are several important limitations inherent in the

methodology of this piece of research. First, the procedure required recognition of a correct alternative, which can hardly be said to be characteristic of natural reading. Second, Tables 2 and 3 are based on a subset of 32 out of the 94 subjects, for practical reasons of computation. Third, the study used several types of referent (possessive adjetives, personal pronouns, demonstratives, relative pronouns, and clausal substitutes), and these were not controlled in number. It would have been better to stick to one type (perhaps the item **this**) only. Fourth, 7 items out of the 48 were answered 100% correct - of these 5 were in Portuguese. All 7 were possessive adjectives or personal pronouns and therefore of type R1.

These limitations mean that this should be taken as an exploratory study, whose conclusions suggest avenues for further research efforts rather than definitive answers.

CONCLUSIONS

The study suggests that contextual reference is probably not as much a language problem for Brazilian university students as it is a cognitive, text-processing problem. Anaphoric reference where the antecedent consists of a whole phrase can be a load on memory processing regardless of language for such subjects. On the whole, students were able to find the antecedent, or rather choose it when presented with alternatives, fairly well, but those who were poor at finding the harder antecedents (R2) were poor at this in both languages.

This should have implications for the teaching as well as the testing of Portuguese, just as for the teaching and testing of English.