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What do they understand and how? Second time round

Reading comprehension of students in DEUG Social Sciences

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What do they understand and how?

Second time round

Reading comprehension of students in DEUG Social Sciences

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- 1 “What”, as presented in the first round of this paper in 1991, is authentic English language documentation in the field of social sciences. “They” are second year DEUG students in Law, Economics and Administration. “How” is their cognitive treatment of such pre-professional texts. The “first time round” explored the relation between second language reading, first language reading and second language acquisition. The “second time round” briefly summarizes and completes results of that first part of the study and explores the product of reading comprehension in relation to the process of comprehending.¹
- 2 Reading comprehension is seen as a complex interactive process between reader and text encompassing a wide range of variables on the reader side and on the text side.
- 3 But the central question in second or foreign language reading research is often posed in terms of whether L2 reading comprehension is basically a language problem or a reading problem, or both... Few authors address this question from a multi-variable standpoint and in the same individual (Clarke 1979; Laufer & Sim 1985; Block 1986; Cohen 1986; Carrell 1989, 1991). The most methodologically sound of these studies suggest, in support of Alderson (1984), a combined effect of both first language (L1) reading proficiency and L2 acquisition, with the latter weighing in more heavily at lower levels of language competence. Finally, studies concerned with reading strategies also raise questions about reading behavior in L1 and L2 and the transfer from the former situation to the latter.
- 4 The present study attempts to determine the competence of French university students at specified levels of L2 acquisition in reading authentic documents in their field of study in English (L2) in relation to their reading proficiency in French (L1) and to their strategic approach in each language. How does the same person read in L1 and L2? What is the relation between this process of comprehending and the product of comprehension?

“First time round”: the initial investigation

- 5 A brief summary of the results of the initial inquiry provides background for the present investigation. L1 and L2 comprehension of authentic pre-professional texts was explored in 144 randomly selected French students for **four styles of reading**: scanning, search reading, skimming and receptive reading (Pugh 1978). The French students' L2 comprehension scores were also compared to those in L1 of 28 Anglophone student controls. Original “paper-and-pencil” tests in contexts as realistic as possible were devised for each style of reading using authentic documents published in both languages. Equivalent English and French versions were pre-tested before being administered under our sole direction during the 1990-1991 academic year.
- 6 In all four reading styles, the French students' L1 comprehension scores proved significantly higher than those in L2. The difference between scores in the two languages increased from scanning –the “easiest”, most mechanical style– through receptive reading, the most “difficult”, most reflective style.
- 7 French scores in L2 were lower than those of the Anglophone controls in all cases but scanning, and significantly so for search reading and receptive reading. Scores of each sample in its respective native language were comparable.
- 8 **English language acquisition** was explored using two standardized measures and an original, bilingual one developed from authentic documents and pre-tested: Sections 2 (structure) and 3 (vocabulary and “reading comprehension”)² of the Test of English as a Foreign Language (TOEFL), and a cloze passage emphasizing structural and lexical proficiency. French students' L1 cloze score proved significantly higher than their L2 score. The difference between their scores on all three language tests and those of the Anglophone controls were *highly* significant. Comparison of L1 cloze scores for both samples also differed significantly; the small group of Anglophones, somewhat more select, performed better.
- 9 As for the relative influence of each independent variable –L1 reading and L2 acquisition– on the dependent variable –L2 reading–, multiple regression analyses revealed that in three out of four reading styles (search reading, skimming, receptive reading), L2 acquisition plays a more significant role in L2 reading comprehension than does L1 reading proficiency in this sample of students for whom English is a foreign –not a second– language. Scanning is the exception, where L1 reading competency is statistically more significant.

“Second time round”: the present investigation

The nature of reading strategies

- 10 Reading strategies are seen as the **reflection** of the complex interaction of the many variables in the reading process. The reader more or less consciously chooses to use certain forms of behavior in function of contextual constraints and his/her own flexibility.
- 11 In addition, s/he is more or less conscious of his/her own cognitive management of the reading task (“metacognitive awareness”). So reading strategy research concerns not

only the identification of the strategies themselves, but also the question of whether conscious knowledge –and discussion– of same help the reader to use the strategies effectively. The relation between the reader's approach to the reading task and his/her comprehension, then, is not necessarily one of cause and effect, but rather is one of complex mutual influence.

- 12 As considered in the present study, the relation between both dependent and independent variables and the translation of cognitive processing into reading strategies is represented in the following equation (see fig. 1).

Figure 1

- 13 The “+... +... +...” represent the influence of the other variables involved in the interactive process of reading, controlled insofar as possible, as well as personal variables such as age, sex, educational background, socioeconomic status...
- 14 Practically speaking, reading strategies, as presented in reading textbooks, include such “traditional” reading skills as scanning, chunking, distinguishing key information, guessing unknown words, inferencing, and more recently recognized strategies such as developing and activating formal and contextual schemata, treating authentic documents, adapting strategies to different situations. Authors involved in strategy research (Hosenfeld 1977; Cohen 1986; Fransson 1984; Harri-Augstein & Thomas 1984; Block 1986) have tended towards a classification into “general” or “global” techniques and “local” or “problem solving” techniques, as well as an identification of metacognitive awareness (Devine 1988; Block 1986; Barnett 1988; Carrell 1989).

Exploration of reading strategies

- 15 The inherent difficulty in any strategy research, however, is that of exploring a hidden process. Several different techniques have been used in an effort to look inside the reader's head as s/he is reading: “thinking-aloud”, where the reader regularly verbalizes what s/he is thinking while reading (Block 1986); describing what the reader remembers having done after reading (Cohen *et al.* 1979; Cohen 1986); recording eye or head movements while reading (Pugh 1974; Harri-Augstein & Thomas 1984).
- 16 All imply an exchange between examiner and reader and a certain metacognitive awareness on the part of the latter, actively involved in understanding his/her own understanding (and pedagogically speaking, in improving his/her performance).

Reading strategies: from L1 to L2

- 17 Finally, what happens on the strategy level in passing from L1 to L2? The universal nature of the cognitive activity implied in the reading process argues for the same “list” of possible reading strategies in L1 and L2, and for the transfer from one to the other (Cummins 1980; Cziko 1980). On the other hand, the specific nature of reading in L2

suggests that the choice and utilization of these strategies differ from one reading situation to the other (Hosenfeld 1977; Cohen *et al.* 1979; Nuttall 1982; Carrell 1989; Favreau & Segalowitz, 1983; Devine 1988; Cohen 1986; Barnett 1988; Gaonac'h 1990).

- 18 The truth most likely lies somewhere between the two positions: there is a strategy link between reading in L1 and L2, but the relativity of the reading process necessarily implies an adaptation in the second case (Clarke 1979; Canale 1983; Block 1986) which may differ between a foreign language and second language reading context (Carrell 1989).

Method

- 19 The reading style in question is that of receptive reading, the most cognitively demanding of the four styles previously investigated.
- 20 The study involves four sub-groups chosen from the original sample of 144 French students according to their performances on tests of the two independent variables, L1 reading and L2 acquisition. Reading comprehension is retested in a different manner (recall protocol), and strategic approach to reading is explored by means of a questionnaire in an interview format.

Subjects

- 21 Scores of the original sample of 144 students on the receptive reading test in French and the three tests of English language proficiency were ranked and divided into deciles.
- 22 Subjects at one extreme or the other on all tests were identified to make up each of the four sub-groups. Good L1 reading scores ranged from the sixth decile to the tenth decile; poor scores, from the first to the third. Good English test scores ranged from the seventh decile to the tenth; poor scores, from the first to the fifth. The following breakdown resulted:
- Group 1: + L1 reading, + L2 acquisition = “+ +” (N = 12)
 - Group 2: + L1 reading, - L2 acquisition = “+ -” (N = 12)
 - Group 3: - L1 reading, - L2 acquisition = “- -” (N = 12)
 - Group 4: - L1 reading, + L2 acquisition = “- +” (N = 3)
- 23 Maximum group size was purposely limited to 12 individuals, given the nature of the tests administered and the in-depth data analyses. This figure was intended to enable us to compare the groups among themselves, each one characterizing a specific profile, and at the same time to consider individual subjects within each group. Group 4 comprises only three subjects, and was retained more for qualitative than for quantitative reasons; it was not possible to obtain a larger sample from the original group of 144 students.

Materials

- 24 Texts for this part of the study responded to the same criteria as those used in the large-scale study. Taken into consideration were original language of the text, source, length and number of idea units, readability, contextual schemata, type and function, formal schemata, and cohesion. Two equivalent texts were chosen on the subject of verbal and non-verbal communication. Unable to find bilingual ones to our liking, we settled on

English language texts, translated them, and had them verified by two bilingual francophones.

- 25 The test used to assess receptive reading in the original sample of 144 students was of “pencil and paper” type, involving multiple choice questions on factual content of the texts, inferences and main ideas. But as a question of any type, however, provides a “prompt”, it was thus decided to use a non-inductive test method for the second part of the study, the recall protocol.
- 26 Many variations exist on this theme; we opted for an immediate oral recall (tape recorded) in L1 without the aid of the text: immediate to lessen the role of long-term memory; oral to minimize reader evaluation and censorship; L1 to demonstrate language-free comprehension and avoid introducing the added variable of foreign language production (Swaffar 1988); without the aid of the text, to avoid both rereading the text and literally translating it (Barnett 1986).
- 27 Strategy use was assessed by means of an immediate retrospective report of reading behavior providing specific probes in the form of a reading strategies questionnaire (see Appendix) and a discussion to elaborate thereupon, both in L1. The questionnaire results from earlier assessment instruments (notably Block 1986; Barnett 1988; Carrell 1989). It consists of 38 closed questions to be answered by “yes”, “no”, or “non applicable”, and ends with open questions to clarify readers’ personal additions, memory gaps, and recognition of formal schemata. Strategies cover both the reader’s general approach - subdivided into five categories concerning contents (Questions 1-7), reader response (8-10), concrete techniques (11-19), perception of the reading task (20-23), and state of mind (A-C)-, and his/her local problem solving techniques 1“L”-9“L”).

Procedures

- 28 Appointments for interviews were made with the 39 subjects; these took place at different moments of the day in a small, quiet room. After explaining to the subject why s/he had been selected (diplomatically so in the case of the ineffective readers...), we presented the recall protocol.
- 29 This entailed taking the time desired to read a first text (alternatively in L1 or in L2), immediately recalling what the subject remembered as fully as possible, answering the strategy questionnaire with our help (text in hand), and checking any remaining comprehension difficulties. The procedure was then repeated with the text in the other language. The entire interview lasted generally an hour and a half.

Analyses

- 30 Scoring a recall protocol is a theme of many variations centered around the question “what constitutes a good recall?”
- 31 Pertinent literature suggests considering both quantitative data: the number of propositions (idea or thought units) produced, their relative importance (microstructures, macrostructures; see Swaffar 1988), reading time, the number of errors and additions (Steffensen *et al.* 1979), and qualitative data: the type of recall (mentioning, descriptive, conclusion-oriented; see Fransson 1984), the mode (analytical and text-

centered or subjective and reader-centered; see Block 1986), and the sequence of the ideas recalled.

- 32 Quantitative analyses (means comparisons, analyses of variance, frequency comparisons, rank correlations, regressions) were performed where appropriate on the quantitative and qualitative aspects of performance. The present report, due to limited space, presents only those data concerning the percentage of idea units recalled (total and by higher and lower level of importance). The division of texts into micro/macrostructural units, and ponderation of same, was done independently by ourselves and two other judges. Consensus was reached on a final interpretation to apply to student protocols. Where doubts existed as to the scoring of the latter, the two judges were consulted.
- 33 Processing the strategy questionnaire meant transforming the “raw” “yes/no/not applicable” answers into cases of positive or negative strategy use. The use of any one strategy may be either positive and aid comprehension, or negative and hinder it, according to the situation. For instance, reading a text several times (Question 16) may be profitable if each rereading satisfies a different specific objective (skimming, rereading for detail, rereading to summarize...).
- 34 But reading and rereading may be considered negative when only fruitless repetition. Thus, each student’s replies were coded “+” or “-” in function of the quantitative and qualitative profile of his/her recall in each language.³
- 35 Quantitative analyses (means comparisons, analyses of variance, frequency comparisons, rank correlations) were performed where appropriate.

Results

- 36 Results of the product of comprehension –the recall protocols in both languages– are presented first, followed by the process of comprehending –subjects’ strategy profiles–, to conclude with the relation between product and process.

Recall protocols

- 37 Presented first are within group comparisons of the percentage of idea units recalled, followed by between group comparisons, and finally by the proportion of higher and lower level idea units recalled per group.

Percentage of idea units recalled

- 38 Table 1 presents and compares means in L1 and in L2 for all groups (Group 4, given its limited number, being presented for information’s sake). Where the difference is significant, the absolute value of the statistic (Student’s “t” for normal distributions, verified by the Kolmogorov-Smirnov one-sample test) is given. Scores are shown for total percentage recalled, for higher level (levels 4 + 3) and lower level (2 + 1) idea units.

Table 1: Scores: means comparison by group L1, L2

	Group 1		Group 2		Group 3		Group 4	
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Level	(N=12)	"t"*	(N=12)	"t"*	(N=12)	"t"*	(N=3)	"t"***
Total L1	46,52	ns	36,09	3,23	35,67	8,42	40,65	ns
Total L2	52,00		22,14		14,71		34,71	
4+3	63,98	ns	55,89	2,73	40,92	2,04	51,52	ne
	68,72		34,53		20,08		38,13	
2+1	40,99	ns	30,70	2,15	35,19	4,63	38,14	ns
	47,94		18,84		14,01		34,26	

* significant at 0,05 from 1,80 for 11 df, one-tailed

** significant at 0,05 from 2,92 for 2 df, two-tailed

- 39 For Group 1, the recall in L1 does not differ statistically from that in L2; the percentages in L2 are generally higher than in L1, the case for six subjects out of 12. Five subjects have similar scores; only one has a higher score in L1.⁴ For Groups 2 and 3, however, the situation is reversed, with values of "t" generally higher in Group 3 (with the exception of level 4, the only non significant difference). On an individual level, eight subjects out of 12 in Group 2 show marked or very marked differences between L1 and L2, four subjects have similar scores. Within Group 3, only one subject scores similarly. As for Group 4, no significant difference exists between languages, although performance is generally better in L1. In all groups, in both languages the percentage of idea units recalled decreases from the higher levels to the lower.
- 40 Table 2 presents means comparisons between the three major groups (ANOVA) in L1 and in L2. The "t" value per pair is indicated where the "F" value is significant.

Table 2: Scores: inter-group means comparison L1, L2

			Groups 1-2 “t”	Groups 1-3 t	Groups 2-3 t
Level	“F”	Prob			
Total	(2,80)	(0,08)	1,96*	1,98*	(0,09)
	58,01	0,00	8,43**	10,13**	
4+3	ns				
	21,53	0,00	4,37**	5,82**	2,21 **
2+1	ns				
	46,76	0,05	8,83**	8,97**	

* significant at 0,05 from 2,07 for 22 df two-tailed; from 1,72, one-tailed

** significant at 0,05 from 1,72 for 22 df, one-tailed

- 41 In L2 reading, the three groups differ on all levels: Group 1 leads all across the board; the performance of Groups 2 and 3 is rather similar. Generally speaking, the differences become more marked towards the lower levels. Group 4, for information's sake, hierarchically occupies second position, significantly below Group 1 and not far from Group 2. The correlation (Pearson r) of the recall scores for the entire sample of 39 subjects with scores on the first test of receptive reading (multiple choice questions) is strongly positive: 0,75 (significant at 0,31 for 37 df).
- 42 As for L1 reading, a significant difference exists between Groups 1 and 3. Between Groups 1 and 2, similar scores had been expected: on a two-tailed test the difference in means is non significant. But given the resemblance of the latter group's average with that of Group 3, a one-tailed test reveals a significant difference between Groups 1 and 2. This apparent incoherence may be explained by a relative lack of homogeneity within Groups 2 and 3, despite their statistically normal distributions. In Group 2, three subjects out of 12 have a rather low score (more than one SD below the average); in Group 3, three subjects out of 12 have a rather high score, more than one SD above the group average.
- 43 Nevertheless, considering the “F” value for the total percentage (significant at 0,08) and the qualitative analyses of the recalls (not reported herein) which reveal clear differences between the groups, we do not believe the L1 reading proficiency of the three groups to be, in fact, similar. Group 2, at least on the criteria of the number of idea units recalled, does not reach the level expected in L1, but if the protocols of these subjects are generally less rich than those of Group 1, they are, on the contrary, far more complete than those of Group 3.
- 44 In any case, the resemblance between the three major sub-groups is stronger in French than in English. Group 4 follows Group 1, whereas the first receptive reading test put this group just ahead of Group 3. The correlation of the recall protocol test of receptive

reading with the “pencil and paper” test in L1 is not surprisingly, not significant: 0,22 (significant at 0,31 for 37 df).

Proportion of higher and lower level idea units recalled

- 45 We have seen from Table 1 that the percentage of idea units recalled decreases from higher levels to lower levels, but what is the relative importance of the different levels in the total percentage recalled by each group in each language? The correlation (r) of the total percentage recalled with that of the higher and lower levels offers such an insight for the three major sub-groups.

Table 3: Correlations: total percentage /levels per language

	Group 1		Group 2		Group 3	
%/Level	L1	L2	L1	L2	L1	L2
%/ 4+3	0,62*	0,75*	0,22	0,61*	0,50	0,44
%/ 2+1	0,96*	0,77*	0,93*	0,94*	0,85*	0,93*
4+3/2+1	0,38	0,18	-0,14	0,33	-0,03	0,08

* significant at 0,05 from 0,58 for 10 df

- 46 The difference between groups in L2 appears clearly here: the difference between correlations on higher and lower levels is lowest in Group 1; in the recalls of these excellent readers, the higher level idea units play a relatively more important role.
- 47 In L1, the differences are less marked, but in Group 1 the higher levels still covary more strongly with the total score than in Group 3 or in Group 2 (with its unexpectedly low average).
- 48 Finally confirmation of the distinct role played by the idea units of higher and lower levels, no significant correlation exists between the two.

Reading strategies

- 49 If results of the product of comprehension –the recall scores in L1 and L2– indicate that, depending on the individual, the reader recalls nearly as many idea units in L2 as in L1 (Group 4), or even more (Group 1), or on the contrary, far fewer (Groups 2 and 3), what happens on the strategy level? Do a reader’s strategies differ between languages according to L1 reading proficiency and L2 language proficiency? Strategy use of each group between languages is compared below both within groups and between groups.
- 50 The following table compares positive strategy use by category per language per group (Student’s “t”).

Table 4: Different behavior, similar behavior: L1-L2. Number of positive strategy utilizations per category and per group

Category of strategy utilization	Group 1	"t"*	Group 2	"t"*	Group 3	"t"*	Group 4	"t"***
Contents L1 (1-7 = 7) L2	6,67 6,58	ns	6,42 5,42	4,69 4,00	5,80 6,00	4,01	6,00	ns
Reader response (8-10= 3)	3,00 3,00	ns	3,00 1,75	2,50 1,17	5,93	6,00	2,33 1,67	ns
Concrete techniques (11-19= 10)	9,33 9,25	ns	7,83 7,08	2,02 6,33	7,30 6,33	2,57	8,00	ns
Task perception (20-23 = 4)	3,83 3,75	ns	3,42 3,00	1,82	2,92 3,00	ns	3,00 2,67	ns
"State of mind" (A-C = 3 / 4)	2,42 2,75	ns	2,92 2,83	ns	2,50 2,50	ns	2,33 3,00	ns
Total generals (1-C=26) (1-C=27)	25,25 25,33	ns	23,58 20,83	5,87	21,08 17,00	5,65	21,67 19,67	ns
Locals Problem solving (1-9 = 11)	11,00 10,83	ns	10,75 6,17	6,17	10,05 6,08	6,30	10,67 8,67	3,46
Total: generals + locals (39) (38)	36,25 36,17	ns	34,33 26,25	7,41	31,58 23,08	9,27	32,33 28,33	ns

* significant at 0,05 from 1,80 for 11 df, one-tailed

** significant at 0,05 from 2,92 for 2 df, one-tailed

- 51 Group 1 shows no significant difference between L1 and L2. Tiny Group 4 reveals the same tendency, but to a lesser degree, with only one significant difference for local strategies. The strategy use average for two out of the three subjects of this group is somewhat higher in L1; the third subject behaves similarly in both languages. Groups 2 and 3 also resemble each other: their strategy utilizations differ significantly from L1 to L2 on all levels except "state of mind" (stress level, motivation and interest for the texts read) and task perception (barely significant for Group 2). Only two subjects from Group 2 and one from Group 3 have similar profiles in both languages, ranging from quite average to very weak. The determining role of local strategies in L2 reading comprehension is thus highlighted: the "t" value is consistently the highest in the three groups where it is significant. Following, among the general strategies, are those relative to reader response, to contents and to concrete techniques.
- 52 Summarized as percentages, the members of Group 1 demonstrate positive behavior in passing from L1 to L2 in 93,42 % of strategy utilizations, Group 2 in only 66,44 %, Group 3 in 64,90 %, and Group 4 in 78, 06 %.

- 53 Inter-group strategy use comparisons (ANOVA) by category are shown for the three major sub-groups in the following table. The “t” value is given where the “F” value is significant.

Table 5: Inter-group comparison: strategy utilization means L1, L2

Category of strategy utilization	“ F”	Prob	Groups 1-2 “t”	Groups 1-3 “t”	Groups 2-3 “t”
Contents (1-7= 7)	3,14 15,17	0,04 0,00	ns 3,60	2,53* 5,95*	1,76* 3,26**
Reader response (8-10= 3)	5,50 12,08	0,00 0,00	ns 4,49	2,57* 6,78*	2,57* ns
Concrete techniques (11-19= 10)	4,99 14,85	0,01 0,00	3,82** 6,01*	3,66* 5,52*	ns ns
Task perception (20-23 = 4)	4,12 4,92	0,13 0,01	ns 3,45	3,24* 3,00*	ns ns
“State of mind” (A-C = 3 /4)	3,01 ns	0,04 –	2,93* –	ns –	2,42* –
Total generals (26) (27)	7,91 25,28	0,00 0,00	2,49** 6,30*	4,31* 8,25*	2,48* 2,87**
Locals Problem solving (1-9 = 11)	ns 25,33	– 0,00	– 7,63*	– 9,28*	– ns
Total: generals + locals (39) (38)	6,10 37,54	0,00 0,00	2,51** 8,69*	3,74* 10,41*	2,07* 2,08**

* significant at 0,05 from 1,72 for 22 df, one-tailed

** significant at 0,05 from 2,07 for 22 df, two-tailed

- 54 In L1, the use of all general strategies –but not local– differs from group to group, despite the low, close range “F” values. In descending order, the strategy categories responsible for inter-group differences are reader response, concrete techniques, task perception, contents and “state of mind”. In a more detailed perspective, Group 2 differs unexpectedly from Group 1 on the level of concrete techniques, strategies nonetheless among the least “critical” in relation to comprehending the author’s message.
- 55 A difference also exists for “state of mind”; this is the result of the stressful feeling expressed by several members of Group 1, not Group 2. Between Group 1 and Group 3, however, the behavior of the latter reflect their ineffective performance; they differ significantly on the most critical levels of contents and reader response, as well as those of concrete techniques and task perception. Between Groups 2 and 3, the key strategy

categories of contents and reader response, as well as those concerning the “state of mind” of these poor readers, are all source of statistically significant differences.

- 56 In L2, every category except “state of mind” (many “neutral” responses) separates strategy use of the good readers in Group 1 from all the others. Contrary to the situation in French, the strategies most differentiating subjects are the local ones, followed by those relative to contents, to concrete techniques, to reader response and to task perception. The joint effect of positive utilization of all these general strategies parallels that of the local strategies: 25,28/25,33. In detail, Group 2 performs better than Group 3: higher “t” values between Groups 1-3 than between Groups 1-2, significant values of “t” between Groups 2 and 3 on key strategies relating to contents.
- 57 Insofar as all reading behavior must be interpreted *in situ*, the answer to our question “how does the same person reads in L1 and L2?” depends, as seen in the product of comprehension, on the person. Certain strategies are problematic for certain readers in both languages (notably the key strategies of guessing information –2–, getting off the track –3– and feeling efficient –23). Far more pose problems for a greater number of subjects in L2. Overall, Group 1 maintains a positive approach from one language to the other. Group 4 also maintains similar behavior, but somewhat less positive. The members of Groups 2 and 3, however, clearly evolve towards an ineffective approach in L2, those of Group 3 experiencing more difficulties in both languages than those of Group 2.
- 58 In L1, differences in performance hinge upon the most crucial general strategies; the “hierarchy” based on the number of positive strategy utilizations is that predicted from the outset: Group 1, Group 2, Group 4, Group 3.
- 59 In L2, between group distinctions revolve around the same general strategies “completed” by others –practically all categories are included–, but as well around nearly all the local strategies. The hierarchy in this case is the same as that observed for the recall protocols: Group 1, Group 4, Group 2, Group 3.

Relation: product and process

- 60 The reflection of the product of comprehension offered by the strategy profiles of the four sub-groups may be statistically described, first, by the correlation (r) for the entire sample of 39 subjects of the recall scores (percentage of idea units recalled) and the number of positive reading strategy utilizations. In L2 where the range of scores and positive strategy utilization is wide, this correlation is very strong: **0,88**.⁵ In L1 where the range of scores and strategies is more restricted –subjects differ less–, it is of medium strength: **0,55**.
- 61 Next we shall consider the product-process relation by strategy categories for the entire sample. Analysis of variance (ANOVA) of recall scores in function of positive strategy utilization reflects the influence of the latter. The table below summarizes these results by language.

Table 6: Relation of recall score to positive strategy utilization by category

	<u>L1</u>		<u>L2</u>	
Category of strategy utilization	F	Pro	F	Prob

Contents(1-7)	2,85	0,05	10,42	0,00
Reader response (8-10)	ns	–	21,99	0,00
Concrete techniques (11-19)	3,26	0,02	6,44	0,00
Task perception (20-23)	ns	–	7,34	0,00
“State of mind” (A-C)	ns	–	ns	–
Total generals	3,77	0,00	15,84	0,00
Locals: Problem solving (1-9)	ns	–	17,70	0,00

- 62 In French, only positive use of the strategy categories “contents” and “concrete techniques” influence score. In English, aside from “state of mind”, all categories are influential. By order of importance (“F” value), strategies relative to reader response head the list, followed by those concerning problem solving, contents, task perception and concrete techniques.
- 63 More specifically, only a few strategies in French exert a significant influence on score: 3, 7, 12, 14, 16, 19 23 (the latter to the greatest extent). In English, **24 out of 39 strategies** statistically influence the comprehension score: in decreasing order, 3BL, 2bL, 9, 10, 5L, 12, 7, 3, 7L, 14, B, 23, 5, 1L, 8L, 20, 8, 6, 6L, 19, 17, 18, C.
- 64 And the four sub-groups? Since recall score proved to be significantly linked to efficient or inefficient strategy use in both languages, a final ranking of all subjects was performed per language to determine the global profile of each group. This consisted of separately ranking both recall scores and number of positive strategy utilizations for each language, and calculating each subject’s final average rank. The problem of those subjects “deviant” from their group on either scores or strategy use is thus averted. Each subject in the global score/strategy ranking is identified by the first letters of his/her name and by his/her group. Table 7 shows the hierarchy of subjects by group in L1 to be rather mixed.
- 65 This is the result of the ten “deviant” subjects: four weak subjects from Group 2, four rather strong subjects from Group 3 and two from Group 4.⁶ Such a distribution, somewhat top heavy, is not entirely unexpected in university students reading in their mother tongue. The apparent resemblance in L1 reading performance is, nevertheless, only relative when compared to the situation in L2. There, the tendency is reversed, with the distribution settling more heavily towards the bottom and the expected hierarchy clearly emerging: Group 1, 4, 2, 3 with fewer “deviant” subjects.

Table 7: Average rank by score and strategy use

L1		L2	
Oli.	1	Lam.	1
Rou.	1	Ram.	1
D-Th.	1	Rou.	1

Ali.	2	Gau.	1
Bon.	1	D-Th.	1
Sar.	3	Saj.	1
Pic.	3	Roy.	1
Lam.	1	Bon.	1
Rig.	2	Oli.	1
Gau.	1	Bar.	1
Boe.	2	Reu.	1
Roy.	1	Bou.	1
Bar.	1	Lar.	4
Rum.	3	Fra.	2
Faj.	2	Faj.	2
Des.	3	Rig.	2
Lac.	4	Ali.	2
Ram.	1	Lac.	4
Saj.	1	Lau.	4
Rey.	2	Rau.	2
Sco.	2	Rum.	3
Lau.	4	Le S.	3
Bor.	2	Roq.	2
Reu.	1	Sco.	2
Bou.	1	Sar.	3
Le S.	3	Pic.	3
Lab.	2	Des.	3
Laq.	3	Pec.	3
Fra.	2	Boe.	2
Sal.	3	Rey.	2

Pec.	2	Rec.	3
Rec.	3	Laq.	3
Roq.	2	Sal.	3
Sen.	3	Lab.	2
Lar.	4	Lag.	3
Lag.	3	Mai.	3
Rau.	2	Bor.	2
Mai.	3	Sav.	3
Sav.	3	Sen.	3

- 66 On score and/or strategy use, only six subjects from Groups 2 and 3 perform similarly in passing from one reading situation to the other. It must, of course, be remembered that rank “x” in L1 does not necessarily correspond in absolute performance to rank “x” in L2; if the subjects in Group 1 at the top of both rankings perform similarly, we have seen that such is not the case for the subjects in the other three groups located lower down the scales.
- 67 Thus, on the whole, the three main groups each manifest reasonably homogeneous behavior in passing from L1 to L2 –good or even better for Group 1, worse for Group 2, even worse for Group 3. As for tiny Group 4, whereas two subjects fall midstream in both languages –indication of less efficient performance in real terms in L2–, the third member of this Group does markedly better in English.

Conclusion

- 68 In answer to our research questions –how does the same person read in L1 and L2? What is the relation between his/her approach to the reading task?–, we may first conclude that, depending on the nature of his/her L1 reading proficiency and L2 linguistic competency, the reader will perform in characteristically different ways. Good readers in L1 who are good “linguists” in L2 (Group 1) pass from reading in one language to reading in the other with no apparent difficulty; their recalls and their strategic approach are similar.
- 69 But for the other subjects of mixed reading and linguistic proficiencies (“+ -“, ”- +“; Groups 2 and 4) or uniformly weak (“- -“, Group 3), the passage is not so easily accomplished. Their relative degree of success –or failure– in pre-professional L2 reading depends more on their L2 proficiency than on their L1 reading, as observed in the hierarchy of Groups 4-2-3.
- 70 Secondly, we can confirm the existence of a significant relation between reading comprehension in L1 and in L2 and reading strategies.⁷ This relation is more marked in L2, where both factors play an equivalent role in subjects’ global performance. On the

level of reading strategies, the local problem solving techniques are the most significant. In L1, students' global performance relates more to positive use of certain general strategies than to their recall score.

- 71 The picture emerging from the passage from L1 reading to L2 is thus rather one in black and white than in shades of grey: the majority of the 39 subjects tend towards one pole or the other of reading proficiency; few behave “hazily”. Thus, considering the combined results of the reading product and process investigation for all subjects, “deviant” or not, the following table summarizes our results (see table 8).

Table 8. Passage from L1 reading to L2: comprehension and strategic approach

Strategic comprehension in L2 (in relation to L1)	Approach in L2 (in relation to L1)	Number of subjects	Group
1) good, equivalent or better	good, equivalent	12	1
2) rather good, equivalent or better	rather good, equivalent	3	2, 2, 4
3) average, equivalent	average, worse	3	2, 2, 3
4) poor, worse	poor, equivalent	1	3
5) poor, worse	poor, worse	20	2, 3, 4

- 72 The second category of subjects, comprising three “deviants”, may actually be considered a sub-class of the first category, its performance parallel but on a lower level. The very small third and fourth categories, also formed by “deviants”, are the exceptions which, on one level or the other, prove the rule. That, for the majority of these subjects, translates into more or less inefficient reading in English, on the level of comprehension as well as on that of comprehending.
- 73 Pedagogical implications, although not the aim of this paper, would suggest adapting the treatment –teaching effective reading– to the affliction. Students like those in Group 1 are already successfully autonomous L2 readers, although their language proficiency can always be further developed. Students of the Group 2 type need to improve their L2 language proficiency and learn how to transfer their normally good L1 reading practices to the L2 context. They lend substance to Clarke’s (1979) and Laufer and Sim’s (1985) notion of an L2 competency threshold. Group 3 type students need both L1 reading and L2 language help: which to emphasize depends on the specific objective to be achieved.
- 74 Finally, students of the Group 4 type, somewhat unusual in our environment, would benefit from more careful L1 reading; seconded by reasonable L2 language proficiency, this type of student should fairly easily be able to make the jump to successful L2 reading.
- 75 We cannot, of course, extrapolate the proportion of “average French university students” corresponding to the profiles of Group 1, 2, 3 or 4, although we may suppose that Group 1 types are in the minority. Generally speaking, it is our feeling that these French students need to increase their self-awareness as L2 readers, to take stock of their situation to be able to act on it. Our objective as language teachers, in this domain, should be helping

those all too often passive students with low self esteem in English to become autonomous, confident professional L2 readers.

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ANNEXES

Appendix: Reading strategies questionnaire (as presented to students in French)

Name _____ Lang. _____ No. _____

Lors de votre lecture, est-ce que vous :

1. avez consciemment lié des informations dans une phrase à celles d'une phrase précédente ?
oui non NA
2. avez « deviné » des informations à venir ?
oui non NA
3. avez, à un moment donné, corrigé ou changé une idée formée antérieurement dans votre lecture ?
oui non NA
4. avez gardé des idées du texte en tête tout en poursuivant votre lecture ?
oui non NA
5. avez différencié les points importants des détails ?
oui non NA
6. avez identifié une organisation des idées ?
oui non NA
7. avez appris quelque chose de nouveau ?
oui non NA
8. avez réagi intellectuellement aux informations textuelles ? (confirmer, infirmer, douter de...)
oui non NA
9. avez interprété le texte (inférences, conclusion) ?
oui non NA
10. avez réagi « émotionnellement » aux idées du texte ?
oui non NA
11. avez tenté de pousser plus loin lors d'une difficulté de compréhension, quitte à revenir après ?

oui non NA

12. vous êtes servi consciemment de la ponctuation, des majuscules ?

oui non NA

13. avez essayé de mémoriser des éléments du texte ? oui non NA

14. avez compté le nombre d'arguments dans le texte ? oui non NA

15. avez remarqué le titre ? en L1 _____ (quand) _____ en L2 _____ quand) _____

16. Combien de fois avez-vous lu le texte ?

17. avez fait des retours en arrière ? _____ (où ?) _____

18. avez reformulé des segments du texte ? oui non NA

19. avez vérifié ou évalué votre compréhension ? oui non NA

20. avez trouvé que, pour comprendre, il fallait savoir prononcer chaque mot ?

oui non NA

21. avez senti qu'il fallait comprendre chaque mot ? oui non NA

22. avez visé en priorité une compréhension générale ? oui non NA

23. vous êtes senti un(e) lecteur/lectrice efficace ? oui non NA

A. Comment vous sentiez-vous lors de votre lecture ?

plutôt un peu plutôt bien stressé(e) stressé(e) normal(e) détendu(e) détendu(e)

B. Si vous aviez vu ce texte dans un journal, une revue ou un magazine, l'auriez-vous lu :

en français ? oui sans doute peut-être non

en anglais ? oui sans doute peut-être non

C. Est-ce qu'il vous a intéressé ?

pas du tout un peu beaucoup passionnément à la folie

Quand vous étiez bloqué(e), est-ce que vous :

1. avez essayé de deviner le sens du mot/de l'expression ? oui non NA

2. avez sauté la difficulté en question :

ayant décidé qu'elle n'avait pas beaucoup d'importance ? oui non NA

parce qu'elle vous a paru insoluble ? oui non NA

3. avez comparé un mot/une expression avec

quelque chose de semblable en français (ou en anglais) ? oui non NA

4. avez cherché dans le contexte ? oui non NA

5. avez analysé un mot en soi (préfixe, radical, terminaison) ?

oui non NA

6. avez fait une analyse grammaticale de la difficulté dans la phrase ?

oui non NA

7. avez traduit quelque chose ? oui non NA

8. auriez cherché dans un dictionnaire ? oui non NA

dictionnaire bilingue dictionnaire unilingue

9. avez prononcé le mot/l'expression ? oui non NA

Pour finir :

A. Indiquez-moi le plan du texte.

B. Omissions du rappel étudiant par rapport au mien :

C. Erreurs étudiant par rapport à mon rappel :

D. Ajouts étudiant par rapport à mon rappel :

Avez-vous trouvé un de ces textes plus difficiles que l'autre ?

NOTES

1. Limited space prevents furnishing more complete results, as well as the lengthy set of test models; these can be obtained from the author.
 2. This type of reading comprehension test does not, in our opinion, fully meet the many requirements of satisfactory reading comprehension assessment.
 3. Only a few students' answers to a few questions proved difficult to interpret, due to a lack of complementary information: Questions 12, 14 and B. Doubtful cases were eliminated from statistical analyses.
 4. 80,70 in L1 compared to 49,09 in L2... The student in question describes herself as being "gifted with a photographic memory".
 5. Significant at 0,31 for 37 df, two-tailed.
 6. The "last" two subjects of Group 1 located towards the bottom of the scale are there because of their rather "low" recall scores; both were cases of very "compact" recalls. The added value of qualitative analysis of recalls here become apparent (reported elsewhere), as aside from the number of details recalled, the protocols of these students leave nothing to be desired.
 7. One cannot, however, speak of causality in either direction.
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