Discovering Language through Corpora*:
the Skills Learners Need and the Difficulties they Encounter

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Abstract

Most scholars agree on considering corpora as a valuable source of linguistic information for native and non-native speakers alike. Few researchers, however, have dealt with and systematically analysed the objective difficulties encountered by students while trying to exploit corpus data. The current paper describes a quantitative study of corpus consultation by learners and aims to establish whether different corpus analysis tasks can be considered to have different degrees of intrinsic difficulty. To this end, 26 corpus project work assignments produced by two different groups of students were assessed and tagged according to specific parameters that reflect the skills needed in corpus analysis. The data were analysed applying both parametric (ANOVA) and non parametric tests (Mann-Whitney U-test), which showed that, despite clear individual and teaching/learning environment differences between the two groups of students, the students' results in most of the tasks were due to different levels of intrinsic difficulty. This led to the creation of a General Difficulty List of Corpus Analysis Tasks.

Keywords: corpus analysis, skills, student difficulties, analysis of project works, teaching planning.

1. Introduction and research question

Most scholars agree on considering corpora as a valuable source of linguistic information for native and non-native speakers alike. For this reason, many linguists have been increasingly advocating the use of corpora in language learning/teaching (Aston 2001; Cobb 1997; Flowerdew 1993; Levy 1990, 1997; Owen 1996; Sinclair 2003, 2004; Steven 1991; Tribble & Johns 1997). The possible uses of corpora in language learning and in translation have been widely discussed (Frankenberg-Garcia 2005b; Gavioli 2005; Gavioli & Zanettin 1997; Granger & Tribble 1998; Sharoff 2004; Tognini Bonelli 2001; Tribble & Jones 1990, 1997; Zanettin 2002; Zanettin *et al.* 2003), although some authors have illustrated the need for corpora specifically created for pedagogic purposes (Braun 2005). Furthermore, some researchers have suggested direct student access to corpora (Gavioli & Aston 2001), and others have described the serendipitous discoveries that students have made while directly accessing corpora (Bernardini 2000a, 2004; Bernardini & Zanettin 1997). Few researchers, however, have dealt with and systematically analysed the difficulties encountered by students while trying to exploit corpus data. A brief review of the major papers on this issue is provided below.

One of the first authors to deal with the processes and results of students' corpus exploration is Bernardini (2000b). Her paper focuses on students using the *British National Corpus*. Her observation of how the students approach corpus investigation reveals some problematic tendencies, including the fact that the students often ignore variants, do not look for alternative and more successful approaches and tend to make only summary analyses.

Kennedy and Miceli (2001) provide a fairly detailed qualitative analysis of the way students proceeded in using a corpus as a reference for writing in a foreign language (Italian). They consider four steps in corpus investigation: formulating the question; devising a search strategy; observing the examples and selecting relevant ones; drawing conclusions. Their recordings and interviews show that students have problems with all the steps considered, which led the authors to devise some tips for each step, so as to guide the students towards more precise and fruitful research practices.

Sun (2003) analyses the learning process and the strategies used by three undergraduate English FL learners when accessing corpus data to proofread texts with grammar mistakes. She also examines the factors that impact on the students' behaviour. The students received a relatively quick introduction to concordance analysis, and their problem-solving strategies were collected using a think-aloud protocol. This author classifies four cognitive skills required in the analysis of concordance lines, namely: comparing; grouping; differentiating; and making inferences. From Sun's description, it seems that the three students went constantly through all the phases mentioned, even though the teacher's help was at times needed for the students' correct progress. The author concludes by stating that four factors influenced the learners' investigations and the strategies they used: prior knowledge; cognitive skills; teacher intervention; and skills in using the concordance software.

Another paper mentioning and analysing student difficulties in corpus use is by Yoon and Hirvela (2004). The major focus in their study, however, is on student responses to corpus use so that the analysis of problems/difficulties is carried out with the goal of providing evidence for student likes and dislikes. The types of difficulties they take into consideration revolve around what the students feel as problems in accessing the corpus and include matters such as: data analysis is time consuming; concordance output provided too many or too few sentences; texts or chunks were difficult to read or included unknown vocabulary; Internet connection was too slow or not available. Only one item in their list generally refers to difficulty in 'concordance output analysis'.

Chambers (2005) examines the strategies generally used by her students in accessing corpora, and their efficacy or otherwise. This was part of a study designed to 'examine a number of aspects of course design in corpora and language learning involving direct access by learners' (Chambers 2005: 112) and to 'draw some conclusions concerning the factors that favour the integration of corpora and concordancing into the language-learning environment and the obstacles which remain to be surmounted' (Chambers 2005: 112). Her discussion is based on qualitative analysis of 11 end-of-course essays. Her data highlighted

> a considerable amount of variation in the students' ability to explore the corpus (Chambers 2005: 119), which led her to conclude that "differences in motivation or learning styles may explain the considerable variation in the success of the activity. In addition to the variation in analytical ability, there was also considerable variation in the students' ability to reflect on the nature and limitations of the corpus, an ability which came easily to some students, but was totally lacking in others (Chambers 2005:119).

Finally, Frankenberg-Garcia has dedicated more than one study to this issue. Her 2005 paper focuses on translation students and how they combine the use of corpora, termbanks, the Web and printed references. Her plenary speech in 2006 at the 7th TALC Conference (Paris)[1], provided a detailed description of novice users' problems in accessing corpus data and presented task-based, non-corpus-specific

> conscious-raising exercises aimed at helping [novice users] gauge different corpora and discern which ones are best suited to their purposes, develop basic corpus-searching strategies, and get used to interpreting corpus data (Frankenberg-Garcia 2006: 5).

Her list was inspired by a general review of the literature as well as by personal observation of the way students used the *COMPARA* corpus. Her comments and exercises focused on issues such as problems in choosing a suitable type of corpus or sub-corpus, formulating corpus queries and follow-up queries, and interpreting corpus data.

The above-mentioned studies are substantially different in terms of focus of interest, the way they were conducted, the types of students involved, the teaching objectives of each course/module, and the way corpora were introduced to the students. Furthermore, their results are frequently rather contex-

tualized. However – quoting from Frankenberg-Garcia (2006: 5) – 'they all converge to suggest that corpus skills which come as second nature to experts are not obvious at all to the untrained'. This was previously pointed out by Sinclair (2004: 2) when he stated that corpora are not a simple object and that lack of training and experience in retrieving data may lead students to consider nonsensical conclusions as insightful ones. Thus, the teachers who decide to adopt a corpus approach to language teaching/learning should be aware of the difficulties that this applied discipline involves and pace the training according to the skills one might expect from students. Meaningful corpus analysis requires not only good knowledge of the basic theoretical concepts of the subject, but also practical experience, as well as skill in using concordancers and in observing, identifying, classifying, and generalizing data.

The current paper attempts a systematic analysis of the difficulties encountered by students in approaching language through concordancing. Attention is given to the phases that follow concordance line retrieval and which include tasks such as selecting concordance lines, categorizing collocates, analysing collocation and colligation, and using the data retrieved to make generalizations about language or to find a suitable translation equivalent.

As a general hypothesis we may presume that the performance of a task depends on: 1. the difficulty of the task itself (intrinsic difficulty); 2. individual factors, i.e. individual abilities and background knowledge; and 3. environmental factors, such as course and exam focus. So far, corpus linguists do not seem to have analysed intrinsic difficulties in corpus analysis tasks. Starting from empirical observations, we developed the following working hypothesis: if two different groups of students show similar difficulty in performing specific tasks, the influence of individual and teaching/learning environment factors can be considered less relevant than task-intrinsic difficulty. The following sections describe how this hypothesis was tested using two randomly selected groups of students.

2. Design of the study

Two separate groups of foreign language students specializing in translation studies participated in this study: 40 bachelor students from the University of Lecce, and 10 MA students from the University of Genoa. Both groups were introduced to corpus consultation and analysis and were asked to complete an end-of-course corpus research assignment. The assignment papers were analysed using a specially developed taxonomy of twelve corpus analysis tasks. Analyses were carried out at individual, group, and general levels.

2.1 Participants

Two groups of Italian students participated in this study: 40 undergraduate students enrolled at the Faculty of Foreign Languages of the University of Lecce, and 10 MA students enrolled at the Faculty of Foreign Languages of the University of Genoa. The two groups attended separate courses on how to use corpora for analysing language and finding translation equivalents: the courses were held by the authors of this paper (hereafter, researachers or we), one in Lecce and one in Genoa. None of the students had ever heard of corpora or corpus analysis before,

except Student 102 who had very basic knowledge in the field. The students differed in terms of foreign language background, general academic background, and familiarity with assignment writing. Moreover, they were exposed to different teaching methods. However, both groups of students were introduced to corpus analysis tools and methods and were asked to submit a similar corpus research assignment at the end of the course, which represents the rationale for the comparison and contrast of their results. A schematic summary of the similarities and differences between the two groups is provided in Table 1.

Feature	**Lecce**	**Genoa**
Native tongue	Italian	Italian
Course level	Bachelor	MA
Year	2nd	1st and 2nd
Number of students	40	10 (5+5)
Number of hours of lessons (including practice)	60 hours	20 hours
Language in which the course was taught	English	Italian
Language in which the project work was carried out	English	Foreign language of student's choice
Languages of the comparable corpus used	English - Italian	Language of student's choice - Italian
Level of proficiency in the FL of the project work	B1/B2	B2/C1
Assignment	Pair work	Individual work

Table 1: The two groups participating in the study

As table 1 shows, the students were all Italian native speakers. Lecce students were all specializing in English, their course was taught in English and the assignment papers all analysed an English-Italian comparable corpus. On the other hand, the Genoa group included students specializing in a range of different European languages; for this reason the course was taught in Italian and the students analysed comparable corpora in Italian and a foreign language (FL) of their choice. The two groups also differed in terms of proficiency level in the foreign language: B1/B2 in the European Framework of Reference for Lecce students, and the higher B2/C1 for the students in Genoa.

The following section provides a brief description of the contents and teaching methods of the two courses. The description attempts to highlight similarities and differences between the two courses with respect to the tasks considered in the current study. Contents unrelated to the tasks considered have been omitted for the sake of clarity and focus.

Both courses illustrated the following basic corpus linguistic concepts: corpora; word lists; running and sorting concordances; collocation; colligation; phraseology; and semantic prosody. However, each of the researachers adopted an individual approach, partly due to the different number of hours and students characterising each course.

In Lecce, the course included two parallel modules: a 40-hour theoretical classroom module, and a 20-hour practical lab module. Following the British tradition of Firth (1957), Halliday (1985), Sinclair (1996), Stubbs (1996), and Tognini-Bonelli (2001), the theoretical module introduced the students to the basic corpus linguistics concepts mentioned above, plus the other relevant concepts of context, meaning in context, and semantic preference. Furthermore, it explained how to find translation equivalents using comparable corpora (Tognini Bonelli & Manca 2002). The practical module, which took place in a computer lab, taught the students how to assemble their own corpora, use *Wordsmith Tools* (a corpus concordancer), and retrieve and analyze data. When the students seemed to be ready to work on their own, they were put in pairs, so that they could help each other out, and tutored in performing a given series of tasks required for autonomous use of corpora for linguistic analysis and translation. In this phase of the course, the students were asked to run the wordlists of the two comparable corpora they had created, search for the most frequent words in each wordlist, compare the two wordlists, and look for mismatch in frequency between items in the two wordlists. They were then encouraged to choose one or two English content words, run their concordances, sort the concordance lines, and find immediate collocates and colligates. As a further step, they were asked to enlarge the linguistic co-text in order to find collocates in N-2/3/4 and N+2/3/4. Once they had identified the most frequent collocates occurring with the node word, the students were asked to group the collocates into semantic fields, and identify the recurrent phraseology of the node word and its patterns of use. As a last step, they were invited to find Italian translation equivalents for each of the senses identified for the node word.

At the end of the course, the students were asked to hand in a paper with the following assignment (pair work): *Choose 1 or 2 words among the most frequent in your English corpus. For each word identify collocation, colligation, semantic preference, and semantic prosody. Identify the phraseology around the node word. Identify possible translation equivalents of the node word in your Italian comparable corpus using the methodology seen in class.*

In Genoa, all lessons were carried out in a computer lab provided with two concordancing programs: *Wordsmith Tools* and *ConcApp*. Each lesson included both theory and practice, for a total amount of 20 hours. The course focused on the same basic concepts as the Lecce course, except semantic preference. The students were also shown some 'automatic' retrieval features in *Wordsmith Tools* not presented to the Lecce students: keyword lists; the Cluster feature (which retrieves n-grams); and the Collocate feature. The topics and order in which concepts were presented was loosely inspired by Sinclair (1991), Partington (1996), and Bowker and Pearson (2002). Theoretical concepts were explained to the stu-

dents using a seminar-like approach and every topic was immediately followed by hands-on exercises. Examples and concordances to work on were given in Italian. When necessary, comparable corpora in other languages (either freely available on the Internet or provided during the course) were used to look for translation equivalents. When the students were considered sufficiently acquainted with basic corpus analysis, concepts and techniques, attention shifted to translation problems and solutions. After a brief review of the issues of polysemy/homonymy, suggestions were given about how to use comparable corpora to find translation equivalents, based on Tognini Bonelli (2001) and a simplified version of Sharoff (2004).

Finally, the students spent some hours on guided review exercises aimed at raising autonomy in the use of corpus tools. This work was carried out individually.

At the end of the course, the students were asked to carry out individual project work and hand in a paper. The following instructions were given: *Choose 3 or 4 words in one of the languages you study. For example, choose words that gave you problems in your last translation, synonyms provided by a dictionary, near synonyms whose subtle semantic differences seem difficult to distinguish, or simply 3 terms that tend to show up in the same semantic context. Analyse each word, along with their translation equivalents. Compare the information provided by your corpus/corpora with that provided by dictionaries*.

2.3. Materials and Methods

The Genoa course produced 10 assignment papers, each one written by a different student. The Lecce course, on the other hand, produced 21 assignment papers, as most of the students worked in pairs. However, in the current study only 16 assignments from the Lecce group were considered, since at the time when the study was being carried out 5 papers were no longer available.

The student's assignments were manually marked up using a tagging scheme that was specifically and jointly developed by the two researachers. The tagging scheme focused on 12 tasks that the researachers considered of primary importance in the given assignments; theoretical and practical explanations about how to perform each of these tasks were given during the two courses. Table 2 provides a list of the tasks considered, along with the corresponding tags.

Task	Tag
Identifying collocations and collocates	<COLLOC>
Identifying colligations	<COLLIG>
Identifying the meaning of a word	<MEANING>
Disambiguating word meanings	<DIS>
Identifying semantic prosody	<PROS>
Selecting concordance lines for analysis	<LINES>
Grouping and classifying collocates or concordance lines according to semantic fields	<SEMFIELD>
Identifying phraseology	<PHRAS>
Searching for translation equivalents	<TRANSL>
Questioning the information provided by dictionaries	<DICS>
Making generalizations on the language system and using the results for stylistic or cross-cultural considerations	<GEN>
Creating or choosing a suitable corpus. (This tag was applied only in assessing the Genoa group.)	<CORPUS>

Table 2. Assessment scheme

Furthermore, the performance of each task was rated according to a scale ranging from 1 to 4 (Table 3), where: 1 indicates that the phenomenon was wrongly described or identified; 2 that the phenomenon was poorly described; 3 that the description provided was acceptable; and 4 that the description was excellent. The researchers' judgments took into consideration the focus of the assignment and how the project work was carried out as a whole.

Skill rating scale	Meaning
1	Wrong
2	Poor
3	Acceptable
4	Excellent

Table 3. Skill rating scale

The students' assignments were analysed and tagged by both researachers. This was done in order to avoid subjective marking and bias due to the fact that some students were well known to one of the two researchers. Furthermore, given that the two project work assignments were slightly different and required the students to focus on different linguistic aspects, the two researchers also considered project work specificity. Selection or creation of a suitable corpus was assessed only in the assignments of the Genoa group, since Lecce students had all worked on the same comparable corpora.

Figure 1 illustrates an example of tagging, taken from the assignment of a Genoa student: the tags <COLLIG 3> and <COLLOC3> indicate that colligation and collocation were acceptably described; tag <PHRAS4> indicates that phraseology was identified in a very clear and correct way.

At the end of the tagging process the two researchers went through all the assignments together and discussed the tasks that they had tagged differently. There were very few differences, and agreement was soon reached[2]. Furthermore, where differences existed, they were related to the rating scale rather than to the tags. This is further proof that while checking the assignments the same criteria and assessment scheme were adopted by the two researchers.

<COLLIG3><COLLOC3><PRAS4>

	por el			
	al	Impuesto		
	el			
	en el		sobre la renta	(de)
reforma				
imponible	del			
contribuyente				
	de los	Impuestos		
	la	Imposición		

tarifa		
cuenta	del	
ley		impuesto sobre la renta
reforma		
crea	el	

(en) la declaración de la renta (de)

Figure 1. Extract from an assignment, after tagging.

Individual results were tabulated and statistical analyses were carried out on both group and collective values, using SPSS. Analyses, which are presented and discussed in Section 3, included distribution, calculation of mean and median values, ANOVA and Mann-Whitney U test[3].

3. Results and discussion

The students' results are reported in the Appendix (Table A). Genoa students are numbered 101-110, while Lecce students are numbered 201-216. For each student, and for each task the following data are shown: mean value (Mean); number of observations (N); standard deviation (Std. Dev.). Furthermore, the last column shows each student's overall mean result, considering all the tasks in the assignment. Finally, the last three rows in the table refer to the whole group of students participating in the study. Table A in the Appendix shows great individual variation, both 'among students' and 'within students'. Overall individual results range from as low as 1.90 (Student 206) to as high as 3.40 (Student 101). Within-student variability is usually very high, with just one student (Student 107) showing a consistent mean in all tasks.

Group results in the different tasks are summarised in Table 4; tasks are listed in decreasing order.

Genoa			**Lecce**	
Line selection	3.5		Colligation	3.1
Meaning	3.3		Translation equivalent	2.8
Question dictionaries	3.0	Higher results	Collocation	2.7
Corpus	2.9	↓	Meaning disambiguation	2.7
Meaning disambiguation	2.8		Meaning	2.5
Translation equivalent	2.8		Question dictionaries	2.5
Collocation	2.6		Semantic prosody	2.3
Phraseology	2.5	Lower results	Semantic field	2.2
Generalization	2.4		Phraseology	2.2
Colligation	2.2		Generalization	2.2
Semantic prosody	2.0		Line selection	1.9
Semantic field	2.0			

Table 4: Group results

Before attempting to comment on the differences between the results of the two groups, we decided to carry out a statistical comparison, to see whether differences between the two groups could be considered significant. To this end, after assessing the distribution of both group and whole-group results[4], we decided to apply both a parametric test (ANOVA) and a non parametric one (Mann-Whitney U test), for greater certainty.

Measure	Colloc	collig.	mean.	meaning disamb.	pros.	l. sel.	sem. field	phras.	transl. equiv.	quest. dics	gen.
Mann- Whitney U	1129	410.5	79	44	24	80.5	419	915	918	47	438
P	0.64	0.000	0.06	0.90	0.65	0.000	0.45	0.07	0.84	0.29	0.44
ANOVA F	0.16	29.53	3.95	0.06	0.44	40.78	0.42	3.77	0.00	1.75	0.58
P	0.68	0.00	0.05	0.79	0.51	0.00	0.51	0.05	0.92	0.19	0.44

Table 5: Results to the second decimal place of Mann-Whitney U and ANOVA tests

As Table 5 shows, the two tests gave the same type of results: in the vast majority of cases (eight tasks out of eleven: Collocation, Meaning Disambiguation, Semantic Prosody, Semantic Field, Phraseology, Translation equivalent, Question Dictionaries and Corpus) the difference between the two groups was not significant; this is tantamount to saying that, as far as these tasks are concerned, the two groups can be thought of as belonging to one and the same population. Thus, the results of the two groups in these tasks could probably be considered primarily due to intrinsic difficulty rather than individual and environmental factors (see Section 2.1 for a description of individual and environmental differences between the two groups). The remaining three tasks (Line Selection, Meaning, and Colligation), on the other hand, showed significant differences between the two groups ($P<0.05$), which suggests that the difference in results is hardly due to chance. This, however, does not rule out the existence of intrinsic difficulty in these three tasks, but simply suggests that intrinsic difficulty did not emerge at group level in the current experiment.

Let us now consider whole-group mean results. Following the hypothesis that different tasks are characterized by different intrinsic difficulty levels, we can assume correspondence between lower mean results and greater difficulty of the task. The ranking in Table 6 was obtained by listing whole-group mean results in decreasing order.

	Mean		
Question dictionaries	3.0		Less difficult
Colligation	2.9		
Line selection	2.9		
Corpus	2.9		
Meaning disambiguation	2.8		
Translation equivalent	2.8		
Meaning	2.7		
Collocation	2.6		
Semantic prosody	2.3		
Phraseology	2.3		
Semantic field	2.2		
Generalization	2.2		More difficult

Table 6. General Difficulty List for Corpus Analysis Task

This list can tentatively be considered a General Difficulty List for Corpus Analysis Tasks. However, it should only be taken as a preliminary hypothesis of ranking of the tasks considered, as we believe ranking should be verified in further studies on a wider population and a higher number of observations.

4. Conclusions

The current study sprang from the general observation that the results of a student in performing a corpus investigation task depend partly on the difficulty of the task itself (intrinsic difficulty) and partly on external factors, such as the student's cognitive skills, and environmental factors, including course and exam focus. The working hypothesis we formulated was that if two different groups of students showed similar difficulty in performing some analytical tasks using corpora, then, when it comes to those particular tasks, intrinsic difficulty could be considered more relevant than the influence of external and environmental factors.

Statistical analyses, which included calculation of mean results, normality test, ANOVA, and Mann-Whitney, were performed on data from 26 participants belonging to two different groups. Analyses showed that, despite the known differences between the two groups of students (environmental factors) and the existence of individual differences among the participants, Genoa and Lecce students could be considered as a single population with normal distribution, in almost all tasks. The statistical analyses also suggested that, in most of the tasks, the students' higher or lower results were probably not to be considered dependent on environmental factors, but rather on the different intrinsic difficulty of each task.

Consequently a General Difficulty List for Corpus Analysis Tasks was created using whole-group mean results. This list takes into account the difficulties encountered by the students of both groups, who were exposed roughly to the same course content, but differed in terms of level of studies, previously acquired analytical and research skills, course attended, teaching methods they were exposed to, and assignment given. Although the General Difficulty List that emerged in this study needs further verification on a wider population and a higher number of observations, we believe that such a list could be of great significance when designing courses that include the use of corpus analysis tools.

As a final rejoinder, this study leads us to suggest an analytical, rather than a holistic approach to project work assessment. In fact, while tagging our students' assignments, we noticed that our previous holistic assessments had, at times, been influenced by factors such as each student's fluency in expressing concepts, the general level of presentation of project work, and the order in which assignments were assessed. Finally, an analytical approach when assessing students' work may help avoid possible bias towards individual students based on their previous results.

Appendix

Table A: Individual mean results

student	measure	colloc.	collig.	mean.	meaning disamb.	pros.	line sel.	sem. field	phras.	transl. equiv.	quest. dics	gen.	corpus	mean per student
101	Mean	2.8	4.0	3.7	3.8		4.0		2.4	3.0	3.4	3.7	3	3.40
	N	4	1	3	5		8		5	3	10	3	1	
	Std. dev.	0.5	.	0.6	0.4		0.0		0.5	1.0	0.7	0.6	.	
102	Mean	3.0	2.0	4.0		3.0	3.5	2.0	2.8	3.4	3.0		4	3.14
	N	3	1	2		1	2	1	4	5	1		1	
	Std. dev.	0.0	.	0.0		.	0.7	.	0.5	0.9	.		.	
103	Mean	3.0	2.0	3.0	3.0		3.5	2.0	3.0	3.1	3.7	2.0	4	2.97
	N	4	3	1	3		2	2	3	7	3	1	1	
	Std. dev.	0.0	0.0	.	0.0		0.7	0.0	0.0	0.7	0.6	.	.	
104	Mean	2.9	2.0		2.0		2.7		2.7	2.8		2.0	3	2.61
	N	7.0	3.0		1.0		3.0		6.0	5.0		2.0	1	
	Std. dev.	0.4	0.0		.		1.2		0.8	0.4		0.0	.	
105	Mean	1.7	2.3	2.0	2.0	1.0	4.0		2.4	2.8	1.5	1.0	3	2.45
	N	3.0	7.0	1.0	1.0	1.0	5.0		5.0	4.0	2.0	1.0	1	
	Std. dev.	0.6	1.0	.	.	.	0.0		0.5	0.5	0.7	.	.	
106	Mean	2.3	2.0	3.0	1.0		4.0	2.0	2.3	3.0	2.0	2.0	1	2.58
	N	3.0	1.0	1.0	1.0		4.0	3.0	3.0	6.0	1.0	2.0	1	
	Std. dev.	0.6	.	.	.		0.0	1.0	0.6	0.0	.	1.4	.	
107	Mean	3.0	3.0				3.0		3.0	3.0	3.0	3.0	3	3.00
	N	1.0	1.0				1.0		1.0	1.0	2.0	2.0	1	
	Std. dev.	.	.				.		.	.	0.0	0.0	.	

Table A: Individual mean results (continued)

student	measure	colloc.	collig.	mean.	meaning disamb.	pros.	line sel.	sem. field	phras.	transl. equiv.	quest. dics	gen.	corpus	mean per student
108	Mean	2.0	2.0		2.0		2.0		2.0	2.0	3.0		4	2.21
	N	4.0	4.0		2.0		1.0		3.0	2.0	2.0		1	
	Std. dev.	0.0	0.0		0.0		.		0.0	0.0	0.0		.	
109	Mean	2.8	2.0	3.0			3.0	2.0	2.4	2.0	2.9	1.0	3	2.55
	N	9.0	5.0	1.0			3.0	2.0	7.0	4.0	11.0	1.0	1	
	Std. dev.	0.4	0.0	.			1.0	0.0	0.8	1.2	0.5	.	.	
110	Mean	2.3	2.7				2.0		3.0	2.3	3.0		2	2.43
	N	3.0	3.0				1.0		1.0	3.0	1.0		2	
	Std. dev.	0.6	0.6				.		.	0.6	.		0	
201	Mean		2.5	2.5		2.0	1.3	1.9				2.0		2.00
	N		4.0	2.0		1.0	3.0	7.0				1.0		
	Std. dev.		1.0	2.1		.	0.6	0.9				.		
202	Mean	3.0	2.0			2.5		1.0	3.0	2.3	1.0	2.0		2.25
	N	2.0	2.0			2.0		1.0	2.0	4.0	1.0	2.0		
	Std. dev.	1.4	0.0			0.7		.	0.0	1.0	.	0.0		
203	Mean	3.6	3.3		4.0		4.0	2.9	3.0	2.9		3.0		3.19
	N	5.0	4.0		1.0		3.0	7.0	2.0	7.0		3.0		
	Std. dev.	0.9	1.0		.		0.0	0.7	1.4	0.7		1.0		
204	Mean	3.0	3.0	1.0		2.3		1.5		3.0		1.5		1.95
	N	1.0	3.0	3.0		3.0		8.0		2.0		2.0		
	Std. dev.	.	0.0	0.0		0.6		0.5		0.0		0.7		

Table A: Individual mean results (continued)

student	measure	colloc.	collig.	mean.	meaning disamb.	pros.	line sel.	sem. field	phras.	transl. equiv.	quest. dics	gen.	corpus	mean per student
205	Mean	1.8	2.9	2.0		2.7	1.2	1.8	1.3	3.3		1.5		1.98
	N	6.0	7.0	9.0		3.0	5.0	6.0	3.0	3.0		11.0		
	Std. dev.	1.0	0.4	1.0		0.6	0.4	1.0	0.6	1.2		0.7		
206	Mean	2.5	2.8	2.0	2.3	1.7	1.8	1.6	1.3	2.0		1.4		1.90
	N	13.0	13.0	4.0	3.0	7.0	5.0	13.0	12.0	1.0		18.0		
	Std. dev.	0.7	1.0	0.8	1.2	0.5	0.8	0.7	0.5	.		0.6		
207	Mean	2.6	3.3	3.3		3.0		2.8	2.4			3.2		2.80
	N	7.0	10.0	4.0		2.0		17.0	16.0			5.0		
	Std. dev.	1.1	0.8	1.0		0.0		0.7	0.9			0.4		
208	Mean		3.7	4.0			2.0	2.3	3.3	3.0		3.0		2.97
	N		3.0	3.0			1.0	9.0	3.0	3.0		9.0		
	Std. dev.		0.6	0.0			.	1.0	0.6	1.0		0.9		
209	Mean		3.0				1.0	3.0	2.0	2.3				2.47
	N		3.0				1.0	3.0	2.0	6.0				
	Std. dev.		0.0				.	0.0	0.0	0.5				
210	Mean	2.4	3.0	4.0	4.0		1.0	2.2	2.5	2.7		2.0		2.36
	N	5.0	5.0	1.0	1.0		1.0	11.0	8.0	6.0		18.0		
	Std. dev.	1.1	0.0	.	.		.	1.0	0.8	0.5		0.9		
211	Mean	3.2	4.0			2.0		1.7	3.0	4.0	3.0	3.8		2.96
	N	5.0	2.0			1.0		6.0	4.0	2.0	1.0	4.0		
	Std. dev.	0.4	0.0			.		0.8	0.0	0.0	.	0.5		

Table A: Individual mean results (continued)

student	measure	colloc.	collig.	mean.	meaning disamb.	pros.	line sel.	sem. field	phras.	transl. equiv.	quest. dics	gen.	corpus	mean per student
212	Mean	2.5	3.0		1.0	3.0	2.0		1.8	2.3				2.28
	N	4.0	3.0		1.0	1.0	1.0		4.0	4.0				
	Std. dev.	0.6	1.0		.	.	.		0.5	1.3				
213	Mean	3.0	4.0			3.0		2.7	1.0	3.0		3.0		2.89
	N	5.0	4.0			4.0		19.0	1.0	2.0		1.0		
	Std. dev.	0.0	0.0			0.0		0.7	.	1.4		.		
214	Mean	2.5	3.2	2.0		3.0		1.8				1.5		2.23
	N	2.0	5.0	1.0		1.0		11.0				2.0		
	Std. dev.	0.7	0.4	.		.		1.0				0.7		
215	Mean	3.5	3.7	4.0	3.0			3.0	3.0	3.6	3.0	3.3		3.36
	N	2.0	3.0	1.0	1.0			1.0	3.0	5.0	2.0	4.0		
	Std. dev.	0.7	0.6	.	.			.	0.0	0.5	0.0	0.5		
216	Mean	2.0	3.0	3.0		2.0		2.3		2.5		2.3		2.29
	N	1.0	1.0	1.0		4.0		4.0		2.0		4.0		
	Std. dev.	.	.	.		0.8		1.0		0.7		0.5		
Total	Mean	2.6	2.9	2.7	2.8	2.3	2.9	2.2	2.3	2.8	3.0	2.2	2.9	2.55
	N	99.0	101.0	38.0	20.0	31.0	50.0	131.0	98.0	87.0	37.0	96.0	11	
	Std. dev.	0.8	0.8	1.2	1.1	0.7	1.2	0.9	0.8	0.8	0.8	1.0	0.94388	

Table B: Test of normality: whole-group results to the second decimal place

group	measure	colloc.	collig.	mean.	meaning disamb.	pros.	line sel.	sem. field	phras.	transl. equiv.	quest. dics	gen.	Corpus
Whole group	Asymmetry	-0.29	-0.28	-0.20	-0.45	-0.55	-0.40	-0.002	-0.22	-0.21	-0.74	0.33	-0.66
	Std. asymmetry error	0.24	0.24	0.38	0.51	0.42	0.33	0.211	0.24	0.25	0.38	0.24	0.66

NOTES

* This study, in the form of preliminary analyses, was presented at the 7th Conference on Teaching and Learning with Corpora, TALC 2006, 1-4 July 2006, Paris.

1 The PowerPoint presentation Frankenberg-Garcia gave at the 2007 TALC Conference is available on her website, at the following address: http://www.linguateca.pt/documentos/Frankenberg-GarciaTaLC7PowerPoint.pdf.

2 Although there are statistical ways of measuring inter-rater agreement, we do not consider it necessary to apply them here, given the very low number of cases of initial inter-rater disagreement.

3 We thank Prof. Carla Ge (University of Pavia) for her help in performing the statistical analyses and in interpreting results.

4 Distribution was checked by means of a test of normality. Distribution asymmetry and asymmetry standard error were calculated; when the rate between these two values is 1, distribution is normal; a rate higher than 2 (in absolute value) compels us to reject the normal distribution hypothesis. Although at group level (Lecce vs. Genoa) distribution of results within individual tasks was normal for some, but not all tasks, due to the low number of observations and students (10 vs. 16), when the whole group of 26 students was considered, distribution was within the normal range for almost all tasks, except Semantic Field and Question Dictionaries. It must be said, however, that the rate between asymmetry and standard asymmetry error of Question Dictionaries is very close to the normal range limits. The results of the normality test on the whole group of students (N = 26) are reported in Table B in the Appendix.

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