What can language learners tell us about constructions ?

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Abstract

This paper has a double goal; on the one hand, it attempts to contribute to the discussion on the ontological status of constructions by reviewing the evidence provided in the relevant literature for the existence of constructions in L2 learners of English. On the other hand, it also attempts to contribute to such research by presenting a number of studies focused on Spanish learners of English, which yield interesting results for the pedagogical applications of construction research. To this purpose, we have designed three studies which employ some of the methods used in the existing literature to investigate constructions. In order to evaluate the existence of constructions in the learners' linguistic system, we have started by replicating a sorting study by Bencini & Goldberg (2000) using Spanish learners of English as subjects. Secondly, we have investigated the Spanish learners' use of constructions by examining their performance in the International Corpus of Learner English (ICLE). We focus on one specific construction, i.e. the ditransitive construction, and compare the Spanish learners' preferences for either the dative or the prepositional versions of the construction with those of English native speakers and two other L2 speakers, i.e., Polish and German. And thirdly, we have designed an acceptability judgement task which aims at investigating whether learners would accept the versions of the ditransitive construction most frequently found in the ICLE as somehow 'more grammatical' than other forms of the construction which they used less frequently. Subjects were also requested to provide acceptability ratings for examples which replicated the learners' misuse of the construction found in the qualitative analysis of the ICLE sentences. The paper provides further evidence for the existence of constructions in L2 learners, and yields results which are coherent with an exemplar-based view of language acquisition and which suggest that Tomasello's (2003) verb-island hypothesis also applies to foreign language learning. It also shows how constructional knowledge can have an effect on L2 performance, offering thus new insights on the role of constructions in foreign language teaching.

Keywords: constructions; foreign language learning; sorting; acceptability judgement tasks; pedagogical implications; corpus study

1. Introduction

One of the cognitive traits of human beings is our need for patterns. We need to resort to some sort of 'cognitive model' which allows us to impose some order on a complex and ever-changing world. From this perspective, the process of learning a language can also be seen as the process of acquiring the relevant cognitive patterns which codify the conventions of use of that language. In cognitive linguistics, these patterns are called 'constructions,' which are regarded as the basic units of linguistic organization. The notion of construction is defined by Goldberg in the following way:

> A construction is (…) a pairing of form with meaning/use such that some aspect of the form or some aspect of the meaning/use is not strictly predictable from the component parts or from other constructions already established to exist in the language (Goldberg 1996: 68). [1]

According to construction grammarians, our knowledge of a language consists in an inventory of all the constructions in a language (i.e., a 'constructicon'). From morphemes to lexemes, to idiomatic units and schematic abstract combinations, all our linguistic information takes the form of constructions. Most constructional approaches[2] adopt a *usage-based* view of grammar to explain how all this constructional information is acquired. In this view, grammar is regarded as 'the cognitive organization of one's experience with language' (Bybee 2005): through the repeated co-occurrence of different linguistic configurations, constructions emerge from usage-events of language speakers. This stance has important consequences not only for how we should conceptualize the acquisition of constructional information but also for other issues such as their mental representation and their ontological status.

There is now extensive research on constructions and their role in different aspects of language use. There are plenty of studies dealing with numerous constructions from diverse languages (far too many to cite here; see Barcelona and Valenzuela 2005 for a brief overview). The theoretical advantages of construction grammars over other grammatical approaches have been thoroughly discussed in Goldberg (1995) and Hilferty (2003); Construction Grammar has also been studied in relation to language processing (Bencini and Goldberg 2000; Goldberg and Bencini 2005; Ahrens 2003; Kaschak and Glenberg 2000), and language production (Chang, Bock and Goldberg 2003). There are also quite detailed accounts of first language acquisition from a constructional perspective (Abbott-Smith and Behrens 2006; Tomasello 2003).

Most of these studies have focused on demonstrating the role that constructions play for native speakers, both in adult usage and in child language acquisition. Recently, however, evidence has also been gathered about the role that constructions could play in the linguistic systems of foreign language learners (e.g. Liang 2002; Waara 2004; Gries and Wulff 2005). This type of evidence not only provides a more solid foundation for the argument in favour of the psychological reality of constructions, but also opens a rather interesting avenue to the possible pedagogical contributions of the notion of constructions. If constructions can be shown to play a role in (foreign) language learning, this research will have clear implications for second language acquisition and pedagogy. Many aspects of foreign language learning, ranging from the role of input frequency[3] to how to conduct error analysis, can now be reassessed in the light of this new conception of usage and exemplar-based grammatical systems.

The present article attempts to contribute both to the discussion on the ontological status of constructions and to the pedagogical applications of construction research. We review the evidence for the existence of constructions in L2 learners, and at the same time contribute to it by presenting a number of studies focused on Spanish learners of English.

2. A sentence-sorting experiment

2.1. Introduction

Bencini and Goldberg (2000) carried out a sentence-sorting experiment which was used to support the existence of constructions in native speakers of English[4]. This study has been later adapted and replicated with L2 speakers. For example, Liang (2002) analyzed the behaviour of Chinese speakers of English, and Gries and Wulff (2005) studied German language learners of English. The procedure followed in these three studies was basically the same: subjects were given sixteen sentences, which were built by crossing four different verbs (*throw, slice, get* and *take*)[5] with four different types of argument structure constructions: transitive (e.g. *Pat threw the hammer*), ditransitive (e.g. *Chris threw Linda the pencil*), caused motion (e.g. *John threw the key onto the roof*) and resultative (e.g. *Lyn threw the box apart*). The L2 learners were instructed to sort the sixteen sentences into four different piles according to the 'overall meaning of the sentence', so that sentences more similar in meaning would be placed together in the same pile. The goal here was to check which element was the main contributor to sentence meaning, the verb or the construction. The sentences could therefore be sorted by grouping together all the sentences that contained the same verb, or alternatively by using a less obvious strategy, based on the type of construction that the verb appeared in. In Bencini and Goldberg's

(2000) first study, 7 out of 17 participants were found to sort entirely by construction; no participant sorted entirely by verb and the other 10 carried out mixed sorts. The way in which the 'mixed' sortings were measured was by counting how many cards should be changed in a given pile so that the classification would be purely by construction (Cdev, for *Construction Deviation*) or purely by verb (Vdev, for *Verb Deviation*). Thus, a purely verb-based sort would have a score of 0 Vdev (since no card has to be changed from its pile) and a score of 12 Cdev (since three cards have to be changed from each four-card pile); alternatively, a sort done purely by constructions would have a 0 Cdev and a 12 Vdev. In Bencini and Goldberg's first experiment, the average number of changes required for the classification to be made by the verb only was significantly[6] higher (Vdev 9.8) than the average number of changes necessary to arrive at a classification based totally on the type of construction (Cdev 3.2). However, these results might have been affected by the fact that subjects were initially given examples of how sentences with more or less the same words could in fact have different meanings (e.g. *kick the bucket* vs *kick the dog*). To avoid this kind of influence, the authors repeated the experiment without providing any examples. The second time round, however, the differences were minimized, with the contrast between verb-sort and construction-sort classifications being statistically non-significant (Vdev 5.5 and Cdev 5.7).

As mentioned above, Liang (2002) replicated this study with Chinese learners of English. The L2 learners were tested at three different levels of language proficiency: beginners with only two years of instruction in English, intermediate learners who had passed the national entrance examination to university and advanced learners who had passed the Chinese national test for non-English majors. Liang found a significant correlation between the subjects' level of English and their construction-based sorts. For beginners (n = 46) the mean deviation from a sort entirely based on the verb (Vdev) was 5.8 and the mean deviation from a sort entirely based on the construction (Cdev) was 6.2; intermediate learners (n = 31) showed a mean Vdev of 6.2 and a mean Cdev of 5.3 and advanced learners (n = 33) obtained a mean Vdev of 8.2 and a Cdev of 4.9. These results demonstrated that the higher the subjects' level of English, the more construction-based sorts they produced.

Gries and Wulff (2005) provided another study with L2 learners, i.e., German learners of English, replicating Bencini and Goldberg's second experiment (that is, the one that did not provide the subjects with any examples). As mentioned earlier, they used the same set of verbs, though one of them, *slice*, was replaced by *cut,* similar in meaning but less infrequent and, probably, better known by foreign speakers. Surprisingly, their results were closer to Bencini and Goldberg's first study, with foreign language learners focusing predominantly on a construction-based sorting (Vdev 8.50 vs Cdev 3.45). Gries and Wulff took the analysis a step further and determined the preference of each sentence towards a constructional sorting. They used hierarchical cluster analysis to establish how often each sentence was put into a group with each of the other stimuli. Their cluster analysis revealed no significant preference of any of the verbs for grouping together, although *cut* displayed a different behaviour from the other verbs, since its mean co-occurrence frequency was more than 40% higher than that of the other verbs.

We have replicated this sorting experiment using Spanish learners of English as subjects. Our study not only provides additional results to these previous studies but also investigates a language in which three of the four argument structure constructions studied do not exist. Spanish does have a transitive construction, but lacks any ditransitive, resultative or caused motion constructions which the subjects in the previous experiments might have transferred from their L1 when performing the sorting task.

2.2. Method

2.2.1. *Participants*

Fifty second-year undergraduate students of Translation and Interpreting from the University of Murcia in Spain agreed to participate in the experiment (mean age 19.6). All of them were native speakers of Spanish with the exception of one subject who reported herself as Spanish-Arab bilingual, and two subjects who reported themselves as Spanish-German bilinguals. All of

them were fluent in English (mean years of English: 11.02; mean of their last English-language exam score: 8.14 (out of 10)).

2.2.2. *Materials and stimuli*

A set of sixteen cards was prepared for each subject, each one with a different English sentence printed in the center. Each set of cards was accompanied by a questionnaire that students had to fill in with information about their mother tongue, their command of other languages, the number of years of English language instruction and the mark obtained in the last English exam they had taken. Each set of cards was shuffled randomly (using the weave method) and clipped together with its corresponding questionnaire. The different sets were put inside individual envelopes containing three more clips. The sentences were based on those used by Bencini and Goldberg but following Gries and Wulff's change of the verb *slice* for the more frequent *cut*. The total number of sentences, 16, was obtained by crossing the four different verbs (*cut, throw, take* and *get*) with four argument structure constructions (transitive, ditransitive, caused motion and resultative). As in the previous experiments, special care was taken not to repeat any other content word apart from the verb across the set of stimuli.

Transitive	Resultative
1- Barbara cut the bread	9- Nancy cut the watermelon open
2- Pat threw the hammer	10- Lyn threw the box apart
3- Audrey took the watch	11- Rachel took the wall down
4- Michele got the book	12- Dana got the balloon inflated
Ditransitive	**Caused motion**
5- Jennifer cut Terry an apple	13- Meg cut the ham onto the plate
6- Chris threw Linda the pencil	14- John threw the key onto the roof
7- Paula took Sue a message	15- Kim took the rose into the house
8- Beth got Liz an invitation	16- Laura got the ball into the net

Table 1. List of stimuli in the sorting experiment

2.2.3. *Procedure*

The participants were tested as a group. Each subject was given one of the envelopes with a randomly shuffled set of cards and the language questionnaire. They were first asked to fill in the questionnaire and then to sort the sixteen cards into four piles of four cards each, based on the overall meaning of the sentence, so that sentences closer in meaning would go into the same pile. They were asked to clip each pile and put them back inside the envelope. They were also told that there were no right or wrong answers, the aim of the experiment being only to investigate how people sort sentences according to their overall meaning.

2.3. Results

We analyzed the results following the procedure carried out by Bencini and Goldberg (2000), calculating how many changes would be necessary to achieve either a fully construction-based sort or a fully verb-based sort. In our case, the average number of changes required for a verb-based sorting was 8.94 while the average number of changes for a construction-based sorting was 3.52.

These results reveal that Spanish L2 learners also have constructions, since the difference between the two measures was found to be significant when performing a t-test for dependent samples ($t = 4.44$; $df = 49$; $p<0.001$). Such results are especially interesting in the case of Spanish, a language in which the constructions tested either do not exist at all or at least have a different form. This means that it is less likely that our results were influenced by interference from the students' native language. So, arguably, when Spanish learners of English grouped the sentences according to the type of construction, no transfer from L1 took place. On

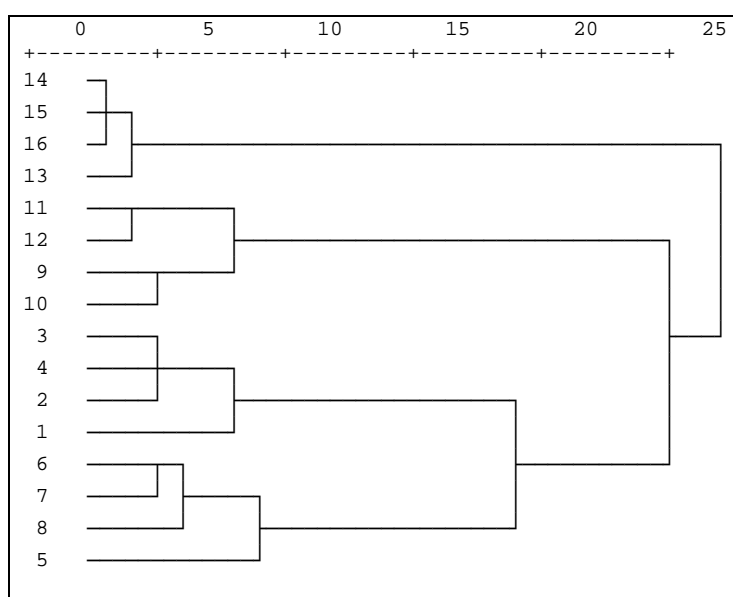the contrary, their sorting can be regarded prima facie as having been exclusively based on their knowledge of L2[7].

In Spanish there is no motion construction similar to *He cut the ham onto the plate* (*Spa. lit.**'Cortó el jamón hacia encima del plato'). Being a verb-framed language, Spanish needs to resort to different means to express the action conveyed in the English preposition *onto*. The most common strategy employs a second verb (e.g. *Cortó el jamón y lo puso en el plato;* Eng. lit. 'He cut the ham and put it on the plate'), although there are also ways to convey the same information which involve other lexical means (e.g. *Cortó un plato de jamón;* Eng.lit.: 'He cut a plate of ham')[8].

Neither has Spanish a resultative construction similar to the one exemplified by the sentence *He cut the watermelon open* (Span. lit.: *'Cortó la sandía abierta'). Again, in order to convey this meaning, Spanish speakers need to resort to an altogether different verb. This is usually a verb which explicitly denotes the result, while the action itself is expressed by means of a manner adverb or a gerund (e.g. *Abrió la sandía de un corte/cortándola;* Eng. lit.: 'He opened the watermelon with one cut/by cutting it'). Another possibility is to use an adverbial which expresses the result by specifying the number of pieces that were cut (e.g. *Cortó la sandía en dos*; Eng. lit.: 'He cut the watermelon in two').

The only two constructions which exist in Spanish are the transitive and the ditransitive. The English and Spanish transitive constructions are similar in structure (e.g. Eng. *He cut the watermelon* / Span. *Cortó la sandía*). But the Spanish ditransitive has a different form, since it requires the use of a dative clitic doubling construction[9] (e.g. Eng. *He showed Mary his flat* vs Span. *Le enseñó el piso a Mary*), in which the goal argument (i.e. *a Mary*) is doubled by the clitic *le*. Moreover, the compulsory use of the preposition *a* in Spanish to express the goal argument makes the construction more similar to the English prepositional dative construction (e.g. *He showed his flat to Mary*) than to the double object one.[10] These grammatical differences between English and Spanish make it less probable that the Spanish learners who sorted the sentences by type of construction did so on the basis of their L1 knowledge.

By analogy with Gries and Wulff's (2005) study, we also performed a hierarchical cluster analysis (using Euclidean distance as a measure) in order to calculate how often each of the experimental sentences was grouped together with each of the other fifteen sentences. The analysis identifies four clear constructional clusters which illustrate the subjects' tendency towards a construction-based sorting. In the dendrogram in Figure 1 below, sentences that were most frequently classified together appear closer to each other; the higher the subjects' agreement, the more to the left they show up in the tree. For example, in the first cluster, we see that subjects tended to group together sentences 14, 15 and 16 quite frequently; sentence 13 also appeared commonly classified within this group, although slightly less frequent than the rest. The fact that the dendrogram does not reveal any significant difference for the only construction which has a direct counterpart in Spanish (i.e., the transitive construction) seems to support our claim that the results from the sorting experiment are unlikely to be due to L1 transfer.

Interestingly enough, our dendrogram also shows results similar to those of Gries and Wulff (2005), namely, that those sentences with the verb *cut* (i.e., sentences 1, 5, 9 and 13) revealed a lower tendency towards a constructional sorting than the rest of the sentences of the same construction type. What is more, just as in their study, the only instance of *cut* to show a greater tendency towards a constructional sorting than a verb-based sorting was the resultative *cut* (sentence 9). As Gries and Wulff (2005: 194) observe, more empirical evidence would be needed to determine whether or not these differences are interesting from a theoretical point of view. It is worth mentioning, however, that Bencini and Goldberg (2000) report a similar case in their study, in which the verb which is more biased to a verb-based sort is *slice*[11].

```
         0         5         10        15        20        25
         +---------+---------+---------+---------+---------+
    14 ┐
    15 ┤
    16 ┤
    13 ┘
    11 ┐
    12 ┤
     9 ┤
    10 ┘
     3 ┐
     4 ┤
     2 ┤
     1 ┤
     6 ┐
     7 ┤
     8 ┤
     5 ┘
```

1-*cut* transitive	9-*cut* resultative
2-*throw* transitive	10-*throw* resultative
3-*take* transitive	11-*take* resultative
4-*get* transitive	12-*get* resultative
5-*cut* ditransitive	13-*cut* caused-motion
6-*throw* ditransitive	14-*throw* caused-motion
7-*take* ditransitive	15-*take* caused-motion
8-*get* ditransitive	16-*get* caused-motion

Figure 1. Dendrogram of the sorting experiment

2.4. Summary of sorting study

The results of this experiment clearly show how Spanish learners of English, when looking for semantic similarity among sentences, tend to rely on the information supplied by the constructional configuration rather than on the meaning of the verb. The strong bias towards a constructional sorting was found to be statistically significant both when comparing the verb-based vs construction-based reclassification measures and carrying out a hierarchical cluster analysis. As for the latter, the resulting dendrogram splits into four clusters that unmistakably correspond to the four argument structure constructions. Somewhat surprisingly, this was the case for all four constructions, even though Spanish does not have a direct counterpart for three of them (resultative, caused-motion and ditransitive). Our results thus seem to support Gries andWulff's (2005) conclusion that constructions do have a psychological status even in the mind of foreign language learners.

3. Analysis of the *International Corpus of Learner English*

3.1. Research on native-speaker corpora

In our second study, we wanted to focus on one specific English construction, namely, the ditransitive construction[12]. As has been mentioned in the previous section, this is an interesting construction to look at partly because the nearest counterpart in Spanish (the Indirect Object clitic doubling construction) has a different form, making L1 interference effects less likely. There exists a wealth of research on the use of this construction in several languages (e.g., Anagnostopoulou 2002; Bleam 2003; Chung and Gordon, 1998; Croft 2003; Demonte 1995;

Goldberg 1995; Gropen et al. 1989; Haspelmath 2005; Jackendoff 1990; Levin 1993; Pinker 1989; Thompson 1995; *inter alia*).

Some authors have focused on the construction preferences of individual verbs, investigating the interactions between verbs and the grammatical constructions associated with them, i.e., verb categorization patterns (e.g. Levin 1993; Gropen et al 1989; Goldberg 1995). A particularly fruitful method for research on verb-specific construction preferences is the corpus-based collostructional analysis (CA) developed by Stefanowitsch and Gries (2003). Traditional corpus linguistic approaches perform a collocational analysis based on raw frequency counts, that is, they simply count how many times a word occurs in a linguistic structure disregarding the overall frequency of the word in the corpus. By contrast, CA measures the association strength of a given verb with a given construction, making it a far more powerful tool. More specifically, to determine collostructional strength, the following four frequencies will have to be calculated: 1) the frequency of the lexeme in a particular construction, 2) the frequency of the lexeme in all other constructions, 3) the frequency of the construction with other lexemes, and 4) the frequencies of all other constructions with other lexemes.

Gries and Stefanowitsch (2004) included a study on native speakers' use of the ditransitive construction using information extracted from the British component of the International Corpus of English (ICE-GB). They provided a ranking of the association between the ditransitive construction and a number of specific verbs (see Table 2 below), which supports Goldberg's (1995: 38) analysis of the basic sense and extensions of the ditransitive. This ranking helps to explain why some verbs are regarded as inherently more ditransitive than others.

Collexeme Collostruction strength	
give (461) 0	allow (18) 1.12E-10
allocate (4) 2.91E-06	charge (4) 3.02E-04
tell (128) 1.6E-127	lend (7) 2.85E-09
wish (9) 3.11E-06	cause (8) 5.56E-04
send (64) 7.26E-68	deny (8) 4.5E-09
accord (3) 8.15E-06	ask (12) 6.28E-04
offer (43) 3.31E-49	owe (6) 2.67E-08
pay (13) 2.34E-05	afford (4) 1.08E-03
show (49) 2.23E-33	promise (7) 3.23E-08
hand (5) 3.01E-05	cook (3) 3.34E-03
cost (20) 1.12E-22	earn (7) 2.13E-07
guarantee (4) 4.72E-05	spare (2) 3.5E-03
teach (15) 4.32E-16	grant (5) 1.33E-0.6
buy (9) 6.35E-05	drop (3) 2.16E-02
award (7) 1.36E-11	
assign (3) 2.61E-04	

Table 2. Collexemes most strongly attracted to the ditransitive construction[13]

Out of the thirty verbs listed in Table 2, the first twenty would most probably be felt to be ditransitive by native speakers, whereas intuitions are likely to differ for the last ten verbs. Gries and Stefanowitsch's (2004)'s collostructional analysis reveals that *give* is in fact the verb most strongly associated with the form and meaning of the ditransitive construction. This result is completely compatible with the claim that *give* is most similar in meaning to the basic 'transfer' sense of the ditransitive, according to which 'an agent causes a recipient to receive a theme'. Another interesting finding of their analysis is that this basic 'transfer' sense is less dominant for the next strongest collocates after *give.* Instead, these other verbs seem to instantiate different extended senses. For example, *tell* instantiates the meaning of communication as transfer, whereas *offer* involves the agent's willingness to create the conditions for the recipient to receive a theme and *show* instantiates the meaning of perceiving as receiving.

3.2. Applications of corpus research to foreign language learning

One of the applications of this kind of corpus-based research is to use the data obtained from native corpora as a point of reference against which to compare native speakers' performance on different production tasks with that of foreign language learners. One example of this would be Gries and Wulff (2005: 187-191), who use the analysis by Gries and Stefanowitch (2004) to explain differences of verb priming effects[14] in a sentence-completion task carried out with German learners of English. They found that those verbs which are more strongly associated with the ditransitive construction were more sensitive to priming to the ditransitive, whereas those verbs which were more clearly associated with the prepositional dative were more sensitive to priming to the prepositional construction. Gries and Wulff (2005: 188) reported a strong positive significant correlation between the verb-specific constructional frequencies in the corpus and the verb's likelihood to be primed to a certain construction. Gries and Wulff (2005: 190) extended the collostructional method even further by applying it to the German equivalents of the verbs used in their priming study. With such analyses they attempted to demonstrate that the verb priming effects were in fact due to the verb's preferences in L2 (English) and not to the verb's translation equivalents in the subjects' L1 (German). Their results revealed a small correlation between the priming effects and the corpus-based indices for German ($r^2 = 0.05$; df =6; p = 0.577). In fact, this correlation was eight times as small as the one between the verb priming effects and the corpus-preferences in English.

A different method to apply corpus-based research to foreign language learning consists in comparing data from native speaker corpora to those from a foreign language learner corpus. Unfortunately, since not many of these are available in the market, most researchers are forced to compile their own corpora to meet their own specific needs. One of the few exceptions is the *International Corpus of Learner English* (ICLE), which we propose to use in the present study. This corpus has already been used in several studies[15]. For example, Callies and Szczesniak (2006) focused on fifteen highly frequent dative alternation verbs identified in the literature and compared how they were used in both alternating constructions (i.e., ditransitive vs prepositional) by native speakers (as evidenced in the British National Corpus) and German and Polish learners (as evidenced in the ICLE). Moreover, they also analyzed whether the learners' constructions were governed by similar restrictions to those which govern the native speakers' use of the ditransitive and the prepositional dative construction respectively.

3.3. Aim of our corpus study

We have taken the work by Callies and Szczesniak (2006) as a starting point for our corpus research. Our study aims to compare native speakers' preferences for using either the ditransitive or the prepositional dative construction with certain verbs and the preferences of advanced Spanish learners of English. We concentrate on the 12 most frequent dative alternating verbs identified in Callies and Szczesniak (2006) and compare their results for the use of each verb by native speakers (in the BNC) and by German and Polish learners (in the ICLE) with the use by Spanish learners in the ICLE. We also carry out a qualitative analysis of the learners' mistakes to identify the types of problems that they have when using the ditransitive or the prepositional dative construction.

3.4. General description of the ICLE and its Spanish subcorpus

The ICLE corpus is the result of a project launched by Sylviane Granger at the University of Louvain in October 1990. It contains 2.5 million words of English written by language learners from 11 different mother tongue backgrounds: Bulgarian, Czech, Dutch, Finnish, French, German, Italian, Polish, Russian, Spanish and Swedish. All the learners are university undergraduates and, thus, are usually young adults in their late teens or early twenties. They all

have learned English in a non-English-speaking country, so they are actually learners of English as a Foreign Language rather than learners of English as a Second Language.

The corpus includes 3,640 essays with a total number of 2,500,353 words. All the texts are academic essays, mainly of the argumentative type, and have an average length of 705 words. As indicated in the description of the ICLE provided by Granger et al. (2002), this is an important variable to take into account, since this text type has no exact equivalent in professional writing. The ICLE is made up of eleven national subcorpora, each containing an average of 200,000 words. In the general description of the corpus, potential users are warned that the subcorpora are not very big in size, which makes the ICLE only appropriate for researching high-frequency linguistic phenomena.

The Spanish subcorpus comprises 251 essays with a total number of 200,376 words. The university centres involved in the Spanish subcorpus are the *Universidad Complutense de Madrid,* the *Centro de Estudios Superiores de Madrid,* the *Universidad de Alcalá* and the *Escuela Oficial de Idiomas de Madrid.*

3.5. Procedure

All the Spanish essays were put together in a subcorpus of 200,376 words. To start with, we focused on the 74 verbs (see Table 3 below) that are most frequently found in the literature on the ditransitive construction (e.g. Gropen et al 1989; Goldberg 1995; Levin 1993). We included both the verbs typically regarded as ditransitive and those that Levin defines as 'benefactive', i.e., verbs which take the preposition *for* in the prepositional dative construction (e.g. *I baked Mary a cake* vs *I baked a cake for Mary*):

advance, allocate, allot, allow, ask, assign, award, bake, bequeath, blast, bring, build, cite, cook, cost, deny, earn, e-mail, fax, feed, fling, flip, forward, get, give, grab, grant, guarantee, hand, kick, knit, leave, lend, loan, lob, mail, make, netmail, offer, owe, pass, pay, permit, poke, pose, promise, quote, radio, read, refer, refuse, rent, reserve, sell, send, serve, set back, sew, ship, shoot, show, slap, spin, take, teach, telegraph, telephone, tell, throw, toss, trade, win, wire, write.

Table 3. List of the ditransitive verbs most frequently found in the literature

We used the Monoconc program to check for the different tense forms of each of these verbs in the corpus: simple present, third person present singular, simple past, past participle and the –*ing* form. From the outset, all those verbs which appeared with a frequency lower than 10 were disregarded from the analysis. After discarding the least frequent verbs (most of them with 0 frequency), we were left with 15 verbs. Out of these 15 verbs, we finally focused on the 12 most frequent ones, which coincided with the ones analyzed by Callies and Szczesniak (2006): *bring, give, offer, pay, read, sell, send, show, take, teach, tell* and *write.*[16] Seven of these verbs also overlap with those listed by Gries and Stefanowitsch (2004) as some of the collexemes most strongly attracted to the ditransitive construction (i.e. *give, offer, pay, send, show, teach, tell*); the other five (i.e. *bring, read, sell, take, write*) were not in Gries and Stefanowitsch's table, but are frequently found in most lists of ditransitive verbs reported in the existing literature.

Every instance in which any of the verb forms selected showed up was then copied into either the ditransitive or prepositional dative construction or both. Every example of either the ditransitive or prepositional dative construction was written down irrespective of whether or not it contained any grammatical mistakes. Later, the ungrammatical sentences were individually analyzed to determine the type of mistake and establish what the errors might reveal about the learners' acquisition of constructions.

3.6. Results

Our results for the 15 ditransitive verbs most frequently found in the ICLE are listed in Table 4 below. This table shows both the total number of times each verb appeared in the corpus and the number of times it was used in a ditransitive double object construction:

	Total frequency	Double object frequency
Bring	66	6
Get	443	0
Give	322	96
Leave	86	0
Make	556	5
Offer	71	25
Pay	139	21
Read	54	0
Sell	16	2
Send	19	0
Show	228	34
Take	303	0
Teach	43	14
Tell	108	16
Write	94	1

Table 4. Total frequency vs. frequency of ditransitive double object use
for each ICLE verb

Next, we compared these results to the native speakers' use of the verbs that are more strongly associated with the ditransitive construction as reported by Gries and Stefanowitsch (2004) in Table 2 above. We can report the following interesting findings. There are obvious divergences in choice of the ditransitive verbs found in ICE-GB (the corpus used by Gries and Stefanowitsch) and in ICLE, as well as in the frequencies with which these verbs occur. On the one hand, the fact that the sets of verbs to appear in ditransitive constructions differ from each other could be due to the fact that ICLE is a more limited corpus, with fewer words than ICE-GB. So, we have some verbs that are used by native speakers in BNC but not by language learners in the ICLE. On the other hand, the restrictions regarding the subject matter of the ICLE essays could explain the fact that some of the verbs used in ICE-GB do feature in ICLE, but sometimes in different uses from those requiring a ditransitive construction. Despite these differences, some similarities could be found in the relative frequencies of many of the verbs, with items like *give, tell, offer, show* or *teach* being among the most frequent verbs found in ditransitive constructions in both corpora. Such similarities indicate that there are some central uses of the ditransitive construction which are shared by both L1 and L2 speakers.

In order to determine whether Spanish learners associate some verbs more frequently than others with either a ditransitive or a prepositional dative construction, we started by noting down the number of times each verb was used in ICLE with each of the two constructions (see column L1 Spanish in Table 5 below). To be able to compare our results with Callies and Szczesniak's (2006) data, we eliminated from our list of 15 verbs in Table 4 the three forms *get, make* and *leave*. We were then left with the 12 verbs listed in Table 5 below. Finally, we compared our results for these 12 verbs with the data Callies and Szczesniak (2006) reported for native speakers in BNC (see column L1 English) and for German and Polish learners of English in ICLE (see columns L1 Polish and L1 German):

	L1 English		L1 Spanish		L1 Polish		L1 German	
	Ditr	*Prep*	*Ditr*	*Prep*	*Ditr*	*Prep*	*Ditr*	*Prep*
Bring	3	31	4	2	9	19	4	2
Give	152	73	47	49	132	68	115	39
Offer	9	7	18	7	10	11	17	4
Pay	7	6	4	17	5	19	2	12
Read	0	0	0	0	0	0	0	0
Sell	0	6	1	1	0	3	1	3
Send	1	14	0	0	0	9	0	21
Show	13	13	28	6	23	5	43	9
Take	0	5	0	0	0	9	0	6
Teach	32	2	11	3	48	2	11	3
Tell	55	0	13	3	49	1	145	1
Write	0	2	0	1	0	0	0	7

*Table 5. BNC and ICLE frequencies of ditransitive and
prepositional constructions*

When comparing the Spanish learners' data with those of English native speakers and Polish and German learners, some intriguing patterns in the use of the different verbs were discovered:

- Two verbs (i.e. *teach* and *tell*) behaved similarly regardless of the learner's mother tongue, showing a higher number of ditransitive uses than of prepositional dative ones.
- Two other verbs (i.e. *pay* and *show*) were used differently by native speakers and language learners. While English L1 speakers showed a similar proportion of ditransitive and prepositional dative uses of both verbs, all learners of English, irrespective of their L1, used *pay* more frequently in prepositional constructions and *show* in ditransitive ones.
- In two other cases (i.e. *bring* and *offer*), Spanish learners behaved like German learners but differently from Polish and native speakers of English. The figures for *bring* in prepositional and ditransitive constructions were similar for both L1 Spanish and L1 German speakers (*prep.* 2 vs *ditr.* 4), the frequency in the ditransitive construction being slightly higher than in the prepositional one. By contrast, L1 Polish learners and native speakers of English used *bring* more frequently in the prepositional dative construction (L1 Polish *prep.* 19 vs *ditr.* 9 and L1 English *prep.* 31 vs *ditr.* 3). The use of the verb *offer* was also similar for Spanish and German learners, who, nevertheless, differed from Polish and English speakers. Thus, whereas Spanish and German learners tended to use *offer* more frequently in ditransitive constructions, Polish learners and English speakers showed similar proportions of the verb for each of the two constructions (L1 Polish *prep.* 11 vs *ditr.* 10 and L1 English *prep.* 7 vs *ditr.* 9).
- Finally, Spanish learners differed from all the other learners and native speakers in their use of the verb *give*. While Polish, German and English speakers used *give* more frequently in ditransitive constructions, Spanish learners produced about the same number of instances for each construction, with the prepositional one being slightly more frequent (*prep.* 49 vs *ditr.* 47).

Certainly, these patterns point to interesting differences and similarities in the constructional systems of second language learners with different L1s. However, due to the small size of the corpus used (less than 200.000 words), they should be regarded as thought-provoking hints in need of further verification. In order to investigate these data in further detail and determine some of the factors which may govern the learners' use of the ditransitive and the prepositional constructions, we carried out a qualitative analysis of the contexts where each verb appeared in ICLE. The most striking feature of Spanish learners' ditransitive constructions was the fact that the great majority of these structures used a pronoun as recipient. This could explain, for instance, the difference found in the Spanish learners' use of the verb *offer*. Out of the 18 cases in which *offer* appeared in a ditransitive construction, 16 had a pronoun and 2 a proper noun as recipient. The fact that the ditransitive construction is favoured with pronouns

supports Callies and Szczesniak's (2006) hypothesis of the role syntactic weight plays in constructions with dative alternation verbs (see also Wasow 2002). What is more, such a finding is also interesting from the point of view of second language acquisition. The data seem to suggest that Tomasello's (2003) notion of 'constructional islands'[17] may be even more specific: learners do not only acquire a construction associated with a specific verb, but rather a specific form of this construction; that is, the data suggest an exemplar-based view of acquisition centred on specific items. Thus, although further research would be needed, it may be possible to hypothesize that language learners master first a specific form of the construction with pronouns, which later on gets extended to proper nouns and other types of phrases.

A close examination of the mistakes made in the ICLE utterances also supports the idea that Spanish learners favour the use of the ditransitive construction when there is a pronominal recipient. We found several cases of ungrammatical ditransitive constructions in which learners introduced the recipient using the preposition *to* (e.g. *These careers offer to the students the opportunity of practicing them*). However, in all these cases the recipient that appeared with the preposition was a nominal phrase (e.g. *...offered to the young soldiers a hard life*), with the exception of one sentence in which the preposition introduced two coordinated proper nouns (e.g. *She wants to show to Leontes and Perdita a statue*). The fact that no mistakes were made where pronouns were involved seems to support the hypothesis that Spanish learners master the ditransitive construction with pronominal recipients earlier than those with other types of recipients.

Finally, the qualitative analysis of the ICLE sentences also served to account for some of the differences reported between native speakers and our foreign language learners. As mentioned above, English speakers used the verb *pay*, for example, in comparable proportions in ditransitive and prepositional constructions whereas Spanish learners favoured the use of *pay* in prepositional dative constructions. The reason for this tendency among the Spanish learners of English became apparent when we analyzed the particular contexts in which the verb *pay* appeared in the ICLE corpus. Out of the 17 cases in which *pay* was used in a prepositional construction, 15 were examples of the construction *pay attention to*.

3.7. Summary of ICLE analysis

Clearly, the results reported above have to be taken with some caution due to the limited size and specific nature of the Spanish ICLE subcorpus that we examined. Still, we can safely conclude that Spanish learners of English employ the ditransitive construction in free production tasks such as essay writing. We found interesting similarities in the kinds of verbs that appeared to be more frequently associated with this construction and those showing up in Gries and Stefanowitsch's (2004) analysis of the International Corpus of English, a native speaker corpus. It seems that some of the central uses of the ditransitive construction (those associated with verbs such as *give, tell, offer, show* or *teach*) are shared by both L1 and L2 speakers. More interesting and detailed results were found when comparing the proportion of using the ditransitive vs the prepositional version of these verbs in our ICLE subcorpus with, first, the preferences of other L2 speakers, namely German and Polish, and secondly, those of the native speakers as reported by Callies and Szczesniak (2006). Here, we found that some verbs like *teach* or *tell* occur, in about the same proportion, with the ditransitive and prepositional uses among both Spanish L2 learners and native speakers. However, this does not hold true for most of the other verbs involved. Such results cannot be easily accommodated by a words-and-rules approach to language acquisition (Pinker 1999), and seem to point instead to an item-based process similar to Tomasello's theory of constructional islands. What is more, we found that even within the ditransitive uses of some verbs, there were particular constructional configurations that appeared as considerably more entrenched than others. Thus, the ditransitive option was quite often chosen when the construction involved a personal pronoun (16 out of 18 cases in the ditransitive use of *offer*); personal pronouns also appeared less frequently in incorrect uses of the construction. This again seems to be an indication that acquisition in foreign language learning also proceeds in an exemplar-based fashion, and that specific

configurations of linguistic material are entrenched to different degrees even within the same verb.

4. Evidence from an acceptability rating task

4.1. Introduction

Finally, an acceptability rating task was designed in order to test whether some of the trends found in the ICLE subcorpus would be confirmed in a task which focused on different linguistic skills. The analysis of the ICLE data had revealed that the ditransitive construction is not a 'ready-made' category. The variations found in the use of the construction across different verbs support the argument for the usage-based nature of constructions and for the existence of constructional islands. Moreover, we even found data showing that within one specific verb, the ditransitive construction may appear more frequently with some configurations than with others. As previously mentioned, we observed that, in the case of verbs that allow for the dative-ditransitive alternation, the ditransitive version was favoured with some special configurations, for example, with pronouns. The ICLE Spanish L2 speakers used 'GIVE PRON THEME' far more often than any other ditransitive possibility, e.g., 'GIVE PROPER NOUN THEME' or 'GIVE FULL NOUN THEME', this last configuration being markedly underrepresented. Therefore, in our last study, we wanted to examine whether this differential use of the construction in L2 learners' production would also correspond to a difference in their acceptability judgements of different ditransitive configurations involving the presence of a pronoun, a full noun or a proper noun.

4.2. Method

4.2.1. *Participants*

Sixty-eight students of English Philology at the University of Murcia agreed to participate in the experiment. All of them were native speakers of Spanish; they were all in the final years of their degree: 17 in the third year, 19 in the fourth year and 32 in the fifth year. Their level of proficiency in English ranged from intermediate to advanced.

4.2.2. *Stimuli*

A list with 36 sentences was compiled using four different verbs, i.e., *give, offer, show* and *tell*, all allowing the ditransitive alternation. We also tested the alternation involving different NPs for the recipient: a noun-phrase corresponding to a person (e.g., *mother, employee, friend,* and *son*), a proper noun (e.g., *Peter, Paul, David,* and *George*) or a personal pronoun (*him* and *her*).

Prepositional version	Ditransitive version
[Verb – NP – PP(*to* – Full Noun)]	[Verb – Full Noun – NP]
[Verb – NP – PP(*to* – Proper Noun)]	[Verb – Proper Noun – NP]
[Verb – NP – PP(*to* –Pronoun)]	[Verb – Pronoun – NP]

Table 6. Different NP combinations for the prepositional
and ditransitive alternations

Additionally, the subjects' acceptability judgements were also tested for three different types of ungrammatical sentences. All of them were anomalous because the Prepositional Phrase corresponding to the Recipient was placed immediately after the verb. They followed the order typical of the ditransitive construction [i.e. Verb-Recipient-Theme/Argument] but a preposition was added to introduce the recipient, flouting, thus, the grammatical rule which requires the

preposition to be used only in the prepositional dative construction after the theme. These sentences were based on the ungrammatical utterances that subjects had been found to produce in ICLE. Just like the grammatical sentences, the ungrammatical ones were built crossing the four verbs with the three different types of recipient: a noun phrase, a proper noun and a pronoun.

Construction	Example
[Verb – PP(*to – Full Noun*) – NP]	*Peter gave to his father a present*
[Verb – PP(*to – Proper Noun*) – NP]	*Peter gave to David a present*
[Verb – PP(*to –* Pronoun) – NP]	*Peter gave to him a present*

Table 7. Ungrammatical sentences included in the grammatical rating task

In total, there were 9 types of sentences per verb; since there were four verbs, the total number of critical stimuli was 36.

4.2.3. *Procedure*

The participants were tested as a group. Each participant was given a questionnaire with the following instructions:

Rate the following list of sentences in terms of acceptability

1. Horrible; completely impossible
2. Bad, but not completely unacceptable
3. Doubtful, but perhaps acceptable
4. Acceptable, although a bit unnatural
5. Completely acceptable and natural

No time limit was imposed.

4.3. Results

The results were analyzed in two ways, first by collapsing all data for the four different verbs and secondly by looking at each verb separately. In Table 8, information from the general categories can be seen; in Table 9, the same information but separated by each different verb is listed. The numbers correspond to the mean ratings of all students.[18]

Prepositional		Ditransitive	
Full noun	4.13	Full noun	4.04
Proper N	3.91	Proper N	4.22
Pronoun	3.68	Pronoun	4.43
*Full noun	2.72		
*Proper N	2.31		
*Pronoun	2.52		

Table 8. Acceptability rating results for prepositional and
ditransitive alternations (collapsing all verbs)

To start with, the preference for the ditransitive construction over the prepositional one was found to be much greater in sentences containing a personal pronoun. Ditransitive sentences with a pronoun have a mean of 4.43 compared to a mean of 3.68 for their prepositional counterpart (for both constructions N = 263). A Wilcoxon paired signed rank test (p<0.001) revealed that such difference in rating was statistically significant. The same

preference of a ditransitive construction over a prepositional one can be observed for each of the verbs individually; the preferential difference between the ditransitive and the prepositional option is significant in all of them; this is the case even for the two verbs where the difference is smaller (*offer*, p = 0.001 and *show*, p= 0.002). However, this tendency does not hold true for sentences containing an NP with a full noun (which seem to be biased towards the prepositional option) and as for sentences involving a Proper Noun, the difference is not so large as in the case of the ditransitives with a pronoun (Ditransitive = 4.22, prepositional = 3.91; again a significant difference, p<0.001). Besides, the preference for the ditransitive version using Proper Nouns only holds for two of the verbs, i.e. *offer* and *tell* (p = 0.008 and p = 0.003, respectively).

In the second place, when comparing the ratings of the three types of ditransitives (with full noun, with proper noun and with pronoun), again the Pronoun ditransitive receives higher ratings than the other two versions (and these differences with the other two choices, Full Noun-ditransitive and Proper Noun-ditransitive, are significant, with p<0.001 and p = 0.007, respectively). Small differences were, nevertheless, found for the different verbs. Whereas the ditransitive with a pronoun was the highest rated option for *give,* the Pronoun ditransitive for *tell* and *show* was rated higher than the Full Noun-ditransitive but there was no significant difference with the Proper Noun-ditransitive. In sentences with *offer,* no significant differences were found between the three different types. This could be taken as another indication that Tomasello's (2003) constructional islands are also found in L2 acquisition; different verbs have different degrees of entrenchment with a given construction, suggesting that acquisition proceeds in a usage- and item-based incremental fashion.

Thirdly, regarding ungrammatical sentences with a prepositional recipient right after the verb, the version which was considered most acceptable was that involving a full noun NP (e.g. **He gave to his mother a present*); the difference with the ratings of ungrammatical sentences with pronouns was significant: p = 0.015. The fact that subjects seem to accept more easily the wrong version of the 'prepositional phrase' is not that strange, since the prepositional phrase versions also received higher ratings when presented in a grammatical sentence. The wrong versions with pronouns were accepted more readily than those with proper nouns, again something that is coherent with the fact that pronoun ditransitives were the most generally accepted ones in the grammatically correct sentences.

Finally, as we have just pointed out, the ungrammatical sentences which receive the highest acceptability ratings are those with a full noun n object. The only exception to this is the group of sentences with the verb *tell*, in which the version that is best accepted is the one with the pronoun. This could be due to the fact that the ditransitive construction with a pronoun is still the most entrenched pattern for the verb *tell,* so that subjects are ready to accept it better even when the grammatical make-up of the construction is anomalous.

4.4. Summary of acceptability rating task

The results of this study confirm the findings of the analysis of ICLE (see Section 3). The version of the ditransitive construction which appears to be preferentially entrenched in the minds of Spanish learners of English is that containing a personal pronoun. This version was significantly perceived as being more 'grammatical' than its prepositional counterpart, and also, ditransitive sentences with a pronoun were regarded as more acceptable than other ditransitive configurations, i.e. those including proper nouns or full nouns. These results are again compatible with approaches to acquisition which adopt an exemplar-based view of grammatical organization, and more difficult to explain from other rule-based approaches. The exemplar-based view may also explain the ratings obtained for the ungrammatical sentences, i.e., those containing a prepositional phrase with *to* immediately after the verb, instead of its more natural position after the *theme* argument. The versions that were rated as more acceptable included a full noun in the ungrammatical prepositional phrase, which correlated with the higher ratings also received by full nouns in the (grammatical) prepositional versions. Such was the case for three of the verbs tested, but not for the fourth one, *tell*, which exhibited a different behaviour. This could once more be taken as a sign of the intricacies of constructional acquisition, in which

verb-based island-constraints and exemplar-based specific configurations interact and criss-cross in complex ways.

5. Conclusion

Constructions are more than just a purely grammatical notion. They reflect a basic cognitive trait of human beings: our tendency to establish patterns which help us impose some order on an apparently chaotic and unpredictable reality. In the case of language, the cognitive structures that arise from our linguistic experience are what we have called here 'constructions'. Accordingly, constructions should be viewed and analyzed as any other mental structure: conforming to the known principles of general cognitive organization. As Bybee suggests:

> A theory based on usage (…) which takes grammar to be the cognitive organization of language experience can reference general cognitive abilities: the importance of repetition in the entrenchment of neuro-motor patterns, the use of similarity in categorization and the construction of generalizations across similar patterns. (Bybee 2005).

Given such a view of grammar, constructions emerge from the repeated co-occurrence of linguistic configurations during usage-events of language speakers, both in native speakers (e.g. Bybee 2005) and in the linguistic systems of foreign language learners (e.g. Ellis 2003). This confers on constructions a great potential to account for linguistic phenomena in a cognitively natural way.

As previously mentioned, most studies on constructions have focused on their role in native speakers of English. By contrast, the present paper joins works such as Liang (2002) or Gries and Wulff (2005) by providing further evidence for their role in the grammatical systems of L2 learners. For a start, the data from our sorting task have clearly revealed that Spanish learners of English rely on constructional information when they have to decide on the overall similarity of a group of different sentences. Secondly, it was found that constructions also play a role in explaining both the frequency of use and idiosyncratic composition of some syntactic configurations present in the ICLE. For example, unlike native speakers of English, Spanish learners used double object constructions much more frequently with a pronoun as recipient than with any other possibility, i.e., with a proper noun or a full noun. Finally, exemplar-specific constructional information has also been shown to influence learners when performing an acceptability rating task: again, the pronoun versions of the ditransitive construction consistently received higher ratings than those including a proper noun or a full noun.

Our three empirical studies yield results which can be useful at two levels. At a theoretical level, they can be seen as a contribution to the debate on the psychological reality of constructions; the data obtained in our three studies provide systematic evidence in favour of the psychological reality not only of constructions but of the notion of 'constructional islands' postulated by Tomasello (2003) for L1 acquisition. Our studies reveal that the process of learning a foreign language also takes place by acquiring specific constructions which get extrapolated into more general structures later on. In the particular case of ditransitive constructions, the topic of our second investigation, our data indicate that L2 learners seem to have mastered this construction to a greater degree with some verbs than with others. A very specific form of the construction, namely, that involving a pronoun as recipient, also seems to have a special status. Perhaps this construction serves as a 'landmark' which could in subsequent stages of linguistic development be extended to other forms of the construction, with different non-pronominal types of recipients. If so, this would be coherent with exemplar-based approaches to grammar.

At a more practical level, we can see these experiments as a new set of powerful tools that allow us to analyze the emerging linguistic system of foreign language learners and, accordingly, suggest useful connections between cognitive linguistics and the practice of foreign language teaching, joining other works like Boers and Lindstromberg (2006). Investigating empirically the L2 learners' use of a given construction provides real data which can help L2 researchers and teachers to determine the stage of the students' learning process,

locate their main problems and establish their needs. If constructional patterns actually play a significant role in the language learning process, then such a role should be acknowledged and reflected not only when setting the relevant objectives of foreign language teaching but also creating useful and effective exercises. Therefore, the results from the present research paper should not be overlooked by second language acquisition experts, foreign language professionals and materials writers, among others. The fact that learners organize their syntactic knowledge around constructions connected to specific verbs is a finding that they should be interested in.

Conceiving the processes of foreign language acquisition from a usage- and item-based perspective can be reasonably expected to provide a solid theoretical foundation to current teaching approaches that complement the explicit teaching of grammatical rules with more contextualized practice. These kinds of exercises help students acquire the relevant patterns and thus master the conventions of use of a particular language (cf. Broccias, *this volume*). Furthermore, it is hoped that this focus on patterns and constructions opens up a new avenue of applications of cognitive linguistics and establishes another bridge to its further pedagogical exploitation.

Notes

1. Recently, however, Goldberg (see e.g. Goldberg 2006) has opted for a more comprehensive definition of construction: constructions should be posited in grammar even if they are fully predictable.
2. Within the cognitive linguistics tradition there are slightly different versions of construction grammar, e.g. Fillmore and Kay (cf. Fillmore et al., in progress), Lakoff (1987), Langacker (1987, 1991), Croft (2001) or Goldberg (1995, 2006), *inter alia*. For interested readers, the differences among them are discussed in Broccias (this volume), Croft and Cruse (2004), Evans and Green (2006), Goldberg and Bencini (2005) or Schönefeld (2006).
3. Issue 24 of the journal *Studies in Second Language Acquisition* is a monograph on the role of frequency in second language learning in which psycholinguist Nick Ellis writes a deep and insightful review of frequency effects in second language acquisition and responds to some of the arguments other authors make for and against such effects (Ellis 2002).
4. For the psychological validity of this sorting paradigm, see Bencini and Goldberg (2000: 644).
5. Gries and Wulff (2005) used a slightly different set of verbs, replacing *slice* for *cut*; see below.
6. Throughout the rest of the chapter, we will use the term 'significant' in its statistical sense, that is, referring to p-values lower than 0.05.
7. Admittedly, the transfer from L1 to L2 is far from easy to determine; Cabrera and Zubizarreta (2005) discuss the role of both lexical and constructional transfers in early and advanced L2 learners; for a slightly different view, see Perpiñan and Montrul (2006).
8. Note that neither of these translation alternatives, however, conveys exactly the same meaning as example 13 above.
9. Also called the Indirect Object Clitic Doubling Construction (Bleam, 2003)
10. For more detailed information on the properties of Spanish double object constructions and their similarities with English ones, see Bleam (2003).
11. 'Among the participants who performed mixed sorts, there was only one instance of grouping all of the four sentences which contained the same verb. The verb was 'slice'' (Bencini and Goldberg, 2000: 648).
12. It is worth mentioning at this point that there is some disagreement concerning the terminology used Some authors use the term 'ditransitive' in a wider sense, encompassing both double object and prepositional object alternations, whereas others use the term in a more restrictive way as a synonym of the double-object case (e.g., Levin 1993 or Goldberg 1995). Thus, in the literature the sentence *I sent a package to my parents* can be found labelled as a Dative Construction (Perpiñan and Montrul, 2006), a Prepositional Dative Construction (Bleam 2003), a Prepositional Object Construction, (Gries and Stefanowitsch 2004) or an Indirect Object Construction (Haspelmath 2005). On the other hand, the sentence *I sent my parents a package* is found as a Ditransitive Construction (Goldberg 1995; Gries and Stefanowitsch 2004; Levin 1993).
13. The numbers in brackets correspond to the frequency of the verb in the corpus, and the next figure is the "collostructional strength", that is, the measure of specific association between a given verb and

the construction studied (specified by means of the Fisher-Yates Exact test); for a more detailed explanation of Gries and Stefanowitsch's Collostructional Method, see Gries and Stefanowitsch (2004).

14. In psychology, when the presence of a given stimulus facilitates the recognition or production of a subsequent one, the first one is said to 'prime' the second.

15. For a review of ICLE-based research, see Granger (2003, 2004).

16. Callies and Szczesniak (2006) included three other verbs in their study: *carry, hand* and *pass*. However, no examples of these verbs were found in our analysis of the Spanish ICLE subcorpus.

17. Tomasello's verb-island hypothesis (e.g. Tomasello 2003) postulates that children's grammars initially consist of inventories of verb-specific predicate structures. In this view, children's linguistic systems are at first built around verbs which are used with arguments specific to those verbs and not around any other more syntactically-abstract or schematic unit. Therefore, in their speech some constructions may appear used with some particular verbs but not with others.

18. These mean ratings cannot be used in statistical computations and should be regarded as purely indicative since we are dealing with an ordinal scale; hence the use of the Wilcoxon paired signed rank test below.

References

Abbot-Smith, Kirsten F. & Behrens, Heike
    2006   How known constructions influence the acquisition of other constructions: the German passive and future constructions. *Cognitive Science*, 30 (6), 995-1026
Ahrens, Kathleen
    2003   Verbal integration: The interaction of participant roles and sentential argument structure. *Journal of Psycholinguistic Research*, 22: 497-516.
Anagnostopoulou, Elena
    2002   *The Syntax of Ditransitives: Evidence from Clitics*. Berlin: Mouton de Gruyter.
Barcelona, Antonio, and Javier Valenzuela
    2005   An overview of cognitive linguistics. In Brady, Imelda Katherine, Marta Navarro Coy and José Carlos Periñán Pascual (eds.) *Nuevas Tendencias en Lingüística Aplicada*, 197-230. Murcia: Quaderna Editorial.
Bencini, Giulia and Adele Goldberg
    2000   The contribution of argument structure constructions to sentence meaning. *Journal of Memory and Language* 43: 640-651.
Bleam, Tonia
    2003   Properties of the double object construction in Spanish. In Núñez-Cedeño, Rafael, Luis Lopez, and Richard Cameron (eds.), *A Romance Perspective on Language Knowledge and Use*, 233-252. Amsterdam: Benjamins.
Boers Frank, and Seth Lindstromberg
    2006   Cognitive linguistic approaches to second or foreign language instruction: rationale, proposals and evaluation. In Kristiansen, Gitte, Michel Achard, René Dirven, and Francisco J. Ruiz de Mendoza Ibanez (eds.), *Cognitive Linguistics: Current Applications and Future Perspectives,* 305-358. Berlin, Mouton de Gruyter.
Broccias, Cristiano
    This volume Cognitive linguistic theories of grammar and grammar teaching.
Bybee, Joan
    2005   From usage to grammar: The mind's response to repetition. LSA Presidential Address, January 8, 2005. Available at http://www.unm.edu/~jbybee/Bybee%20plenary.pdf .
Cabrera, Mónica, and Maria Luisa Zubizarreta
    2005   Overgeneralization of Causatives and Transfer in L2 Spanish and L2 English. In Eddington, David (ed.), *Selected Proceedings of the 6th Conference on the Acquisition of Spanish and Portuguese as First and Second Languages*, 15-30.
Callies, Marcus, and Konrad Szczesniak
    2006   Argument realization, information status and syntactic weight - A learner-corpus study of the dative alternation. In Grommes, Patrick, and Maik Walter (eds.), *Fortgeschrittene Lernervarietäten*. Tübingen: Niemeyer.
Chang, Franklin, Kathryn Bock, and Adele E. Goldberg

2003   Do thematic roles leave traces in their places? *Cognition* 90(1): 29–49.

Chung, Ting Ting Rachel, and Peter Gordon
1998   The acquisition of Chinese dative constructions. *BUCLD,* 22: 109-120.

Croft, William
2001   *Radical Construction Grammar: Syntactic Theory in Typological Perspective*. Oxford: Oxford University Press.

Croft, William
2003   Lexical rules vs. constructions: A false dichotomy. In Cuyckens, Hubert, Thomas Berg, René Dirven, and Klaus-Uwe Panther (eds.), *Motivation in Language: Studies in Honor of Günter Radden*, 49-68. Amsterdam: Benjamins.

Croft, William, and David A. Cruse
2004   *Cognitive linguistics.* Cambridge: Cambridge University Press.

Demonte, Violeta
1995   Dative alternation in Spanish. *Probus* 7: 5-30.

Ellis, Nick C.
2002   Frequency effects in language processing: A review with implications for theories of implicit and explicit language acquisition. *Studies in Second Language Acquisition*, 24(2): 143–188.

Ellis, Nick C.
2003   Constructions, chunking, and connectionism: The emergence of second language structure. In Doughty, Catherine J., and Michael H. Long (eds.), *The Handbook of Second Language Acquisition*, 63-103. Malden, MA: Blackwell.

Evans, Vyvyan, and Melanie Green
2006   *Cognitive Linguistics: An Introduction*. Edinburgh: University of Edinburgh Press.

Fillmore, Charles J., Paul Kay, Laura Michaelis, and Ivan Sag
in prep. *Construction Grammar*. Stanford: CSLI

Goldberg, Adele E.
1995   *Constructions: A Construction-Grammar Approach to Argument Structure*. Chicago; London: University of Chicago Press.
1996   Construction grammar. In Brown, Keith, and Jim Miller (eds.), *Concise Encyclopedia of Syntactic Theories,* 68–71. Oxford: Pergamon.
2006   *Constructions at Work: The Nature of Generalization in Language*. Oxford/New York: Oxford University Press.

Goldberg, Adele E., and Giulia Bencini
2005   Support from Language Processing for a Constructional Approach to Grammar. In Tyler, Andrea, Mari Takada, Yiyoung Kim, and Diana Marinova (eds), *Language in Use: Cognitive and Discourse Perspectives on Language And Language Learning,* 3-18. Georgetown University Round Table on Languages and Linguistics.

Granger, Sylviane
2003   The International Corpus of Learner English: A new resource for foreign language learning and teaching and second language acquisition research. *TESOL Quarterly* 37(3): 538-546.
2004   Computer learner corpus research: Current status and future prospects. In Connor, Ulla, and Thomas Upton (eds.), *Applied Corpus Linguistics: A Multidimensional Perspective*, 123-145.Amsterdam; Atlanta: Rodopi.

Granger, Sylviane, Estelle Dagneaux, and Fanny Meunier
2002   *The International Corpus of Learner English (ICLE). Handbook and CD-ROM*. Louvain-la-Neuve: Presses Universitaires de Louvain.

Gries, Stefan, and Anatol Stefanowitsch
2004   Extending collostructional analysis: a corpus-based perspective on 'alternations'. *International Journal of Corpus Linguistics* 9(1): 97-129.

Gries, Stefan, and Stefanie Wulff
2005   Do foreign language learners also have constructions? Evidence from priming, sorting and corpora. *Annual Review of Cognitive Linguistics* 3: 182–200.

Gropen, Jess, Steven Pinker, Michelle Hollander, Robert Goldberg, and Ronald Wilson
1989   The learnability and acquisition of the dative alternation in English. *Language* 65: 203-257.

Haspelmath, Martin
2005   Ditransitive constructions: The verb 'give'. In Haspelmath, Martin, Matthew S. Dryer, David Gil, and Bernard Comrie (eds.), *The World Atlas of Language Structures*. Oxford: Oxford University Press.

Hilferty, Joseph

2003   *In defense of grammatical constructions.* Barcelona: University of Barcelona. Doctoral Dissertation.

Jackendoff, Ray S.
    1990   *Semantic Structures.* Cambridge: MIT Press.

Kaschak, Michael P., and Arthur M. Glenberg
    2000   Constructing meaning: The role of affordances and grammatical constructions in sentence comprehension. *Journal of Memory and Language*, 43: 508-529.

Lakoff, George
    1987   *Women, Fire and Dangerous Things.* Chicago: University of Chicago Press.

Langacker, Ronald
    1987/1991 *Foundations of Cognitive Grammar*, Volume 1 and 2. Stanford, C.A.: Stanford University Press.

Levin, Beth
    1993   *English Verb Classes and Alternations.* Chicago; London: University of Chicago Press.

Liang, J.
    2002   *How do Chinese EFL learners construction sentence meaning: Verb-centered or construction-based?* M.A. thesis, Guangdong University of Foreign Studies.

Perpiñán, Silvia, and Silvina Montrul
    2006   On binding asymmetries in dative alternation constructions in L2 Spanish. *Selected papers from the 7th Hispanic Linguistics Symposium,* 135-148. Sommerville: Cascadilla Press.

Pinker, Steven
    1989   *Learnability and Cognition.* Cambridge, MA: MIT Press.
    1999   *Words and Rules: The Ingredients of Language.* London: Weidenfeld and Nicolson.

Schönefeld, Doris (ed.)
    2006   Constructions all over: Case studies and theoretical implications. Special Volume 1 – *Constructions* SV1-1/2006.

Stefanowitsch, Anatol, and Stefan Gries
    2003   Collostructions: Investigating the interaction of words and constructions. *International Journal of Corpus Linguistics* 8 (2): 209-243.

Thompson, Sandra A.
    1995   The iconicity of 'dative shift' in English. In Landsberg, Marge E. (ed.), *Syntactic Iconicity and Linguistic Freezes*, 155-175. Berlin: Mouton de Gruyter.

Tomasello, Michael
    2003   *Constructing a Language: A Usage-based Theory of Language Acquisition.* Harvard: Harvard University Press.

Waara, Rene
    2004   Construal, convention, and constructions in L2 speech. In Achard, Michel, and Susanne Niemeier (eds.) *Cognitive Linguistics, Second Language Acquisition and Foreign Language Teaching*, 51-75. Berlin; New York: Mouton de Gruyter.

Wasow, Thomas
    2002   *Post-verbal Behaviour.* Stanford: CSLI Publications.

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[1] .

[2] Within the cognitive linguistics tradition there are slightly different versions of construction grammar, e.g. Fillmore and Kay (cf. Fillmore et al., in progress), Lakoff (1987), Langacker (1987, 1991), Croft (2001) or Goldberg (1995, 2006), *inter alia*. For interested readers, the differences among them are discussed in Broccias (this volume), Croft and Cruse (2004), Evans and Green (2006), Goldberg and Bencini (2005) or Schönefeld (2006).

[3] Issue 24 of the journal *Studies in Second Language Acquisition* is a monograph on the role of frequency in second language learning in which psycholinguist Nick Ellis writes a deep and insightful review of frequency effects in second language acquisition and responds to some of the arguments other authors make for and against such effects (Ellis 2002).

[4] For the psychological validity of this sorting paradigm, see Bencini and Goldberg (2000: 644).

[5] Gries and Wulff (2005) used a slightly different set of verbs, replacing *slice* for *cut*; see below.

[6] Throughout the rest of the chapter, we will use the term 'significant' in its statistical sense, that is, referring to p-values lower than 0.05.

[7] Admittedly, the transfer from L1 to L2 is far from easy to determine; Cabrera and Zubizarreta (2005) discuss the role of both lexical and constructional transfers in early and advanced L2 learners; for a slightly different view, see Perpiñan and Montrul (2006).

[8] Note that neither of these translation alternatives, however, conveys exactly the same meaning as example 13 above.

[9] Also called the Indirect Object Clitic Doubling Construction (Bleam, 2003)

[10] For more detailed information on the properties of Spanish double object constructions and their similarities with English ones, see Bleam (2003).

[11] 'Among the participants who performed mixed sorts, there was only one instance of grouping all of the four sentences which contained the same verb. The verb was 'slice'' (Bencini and Goldberg, 2000: 648).

[12] It is worth mentioning at this point that there is some disagreement concerning the terminology used. Some authors use the term 'ditransitive' in a wider sense, encompassing both double object and prepositional object alternations, whereas others use the term in a more restrictive way as a synonym of the double-object case (e.g., Levin 1993 or Goldberg 1995). Thus, in the literature the sentence *I sent a package to my parents* can be found labelled as a Dative Construction (Perpiñan and Montrul, 2006), a Prepositional Dative Construction (Bleam 2003), a Prepositional Object Construction, (Gries and Stefanowitsch 2004) or an Indirect Object Construction (Haspelmath 2005). On the other hand, the sentence *I sent my parents a package* is found as a Ditransitive Construction (Goldberg 1995; Gries and Stefanowitsch 2004; Levin 1993).

[13] The numbers in brackets correspond to the frequency of the verb in the corpus, and the next figure is the "collostructional strength", that is, the measure of specific association between a given verb and the construction studied (specified by means of the Fisher-Yates Exact test); for a more detailed explanation of Gries and Stefanowitsch's Collostructional Method, see Gries and Stefanowitsch (2004)

[14] In psychology, when the presence of a given stimulus facilitates the recognition or production of a subsequent one, the first one is said to 'prime' the second.

[15] For a review of ICLE-based research, see Granger (2003, 2004).

[16] Callies and Szczesniak (2006) included three other verbs in their study: *carry, hand* and *pass.* However, no examples of these verbs were found in our analysis of the Spanish ICLE subcorpus.

[17] Tomasello's verb-island hypothesis (e.g. Tomasello 2003) postulates that children's grammars initially consist of inventories of verb-specific predicate structures. In this view, children's linguistic systems are at first built around verbs which are used with arguments specific to those verbs and not around any other more syntactically-abstract or schematic unit. Therefore, in their speech some constructions may appear used with some particular verbs but not with others.

[18] These mean ratings cannot be used in statistical computations and should be regarded as purely indicative since we are dealing with an ordinal scale; hence the use of the Wilcoxon paired signed rank test below.