

## ON THE EXISTENCE OF CONSTRUCTIONS IN FOREIGN LANGUAGE LEARNERS

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**ABSTRACT.** *Most of the studies on “constructions” (e.g. Goldberg 1995) have focused on demonstrating their role in the language of native speakers, both in adults and in children. Recently, however, evidence has also been gathered about the role that constructions could play in the linguistic systems of foreign language learners. Thus, Liang (2002) and Gries & Wulff (2005) replicated a sorting experiment (done by Bencini & Goldberg (2000) with English native speakers) with Chinese and German learners of English, respectively. Their findings provided a more solid foundation to arguments in favour of the psychological reality of constructions. We have replicated this sorting experiment with Spanish learners of English. Our study not only provides additional evidence to the psychological reality of constructions but also incorporates a language in which three of the four constructions studied are not present, making the possibility of L1 transfer when performing the sorting task less likely.*

**KEYWORDS:** *construction grammar, psycholinguistic reality of constructions, sorting study, foreign language learners*

**RESUMEN.** *La mayoría de los estudios sobre “construcciones” (e.g. Goldberg 1995) se han centrado en el procesamiento lingüístico de hablantes nativos, adultos y niños. Recientemente, sin embargo, se ha estudiado también el papel que las construcciones desempeñan en los sistemas lingüísticos de aprendices de una lengua extranjera. Así, Liang (2002) y Gries & Wulff (2005) replicaron un experimento de ordenación (realizado por Bencini & Goldberg (2000) con hablantes nativos de inglés) con aprendices chinos y alemanes de inglés como lengua extranjera (respectivamente). Sus resultados respaldan los argumentos a favor de la realidad psicológica de las construcciones. En este estudio, hemos replicado este experimento de ordenación con aprendices españoles de inglés. Nuestro estudio proporciona datos adicionales sobre la realidad psicolingüística de las construcciones e incorpora una lengua en la que tres de las cuatro construcciones estudiadas no existen, lo que disminuye la posibilidad de transferencia de la L1 al realizar la tarea.*

**PALABRAS CLAVE:** *gramática de construcciones, realidad psicolingüística de las construcciones, estudio de ordenación, aprendices de lengua extranjera*

### 1. INTRODUCTION

In cognitive linguistics, ‘constructions’ are considered as the basic units of linguistic organization. This is the definition Goldberg provides:

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, 1995: 68).

According to construction grammarians, our knowledge of a language consists in a ‘constructicon’: an inventory of all the constructions in a language. From morphemes to lexemes, to idiomatic units and schematic abstract combinations, all our linguistic information takes the form of constructions.

Most of the studies on constructions have focused on demonstrating their role in the language of native speakers, both in adult usage or in child language acquisition. More or less 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; Gries & 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 venue to the possible pedagogical contributions of the investigation of constructions. If constructions are shown to play a role in (foreign) language learning, this research will have clear implications for second language acquisition and pedagogy.

## 2. A SENTENCE-SORTING EXPERIMENT

### 2.1. *Introduction*

Bencini & Goldberg (2000) carried out a sentence-sorting experiment which was used to support the existence of constructions in native speakers of English<sup>1</sup>. This study has been later adapted and replicated with L2 speakers: Chinese (Liang 2002) and German (Gries & Wulff 2005). The procedure in these three studies was basically the same: subjects were given sixteen sentences; these sentences were obtained taking four verbs (*get*, *take*, *throw* and *slice*) and inserting each of them in 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*). Subjects were instructed to sort out the sixteen sentences into four different piles. They were told that the rationale for the sorting was the ‘overall meaning of the sentence’. The sixteen sentences could therefore be sorted by grouping together all the sentences that contained the same verb (i.e., putting together the four sentences with *throw*, the four sentences with *take* and so on), or alternatively by using a less obvious strategy, based on the type of construction that the verb appeared in (i.e., putting together the four transitive sentences, the four ditransitive ones, etc). In Bencini & 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 the following: they counted how many cards would have to be changed from a given pile so that it would contain only instances of the same construction or, alternatively, only instances the same verb. Thus, a pile of cards containing four instances of the same verb would have a score of 0 Vdev (for *Verb Deviation*), since no card would have to be changed for a pure verb-based sorting, and a score of 3 Cdev (for *Construction Deviation*), since three cards would have to be changed from this pile. Alternatively, a pile containing four instances of the same construction, say, the transitive, would have a 0 Cdev score and a 3 Vdev score. Since there were four piles, the overall score of the sorting provided by a given subject could range between 0 and 12 (3 cards x 4 piles). In Bencini and Goldberg’s first experiment, the average number of changes required for a classification completely made by verbs was significantly higher (Vdev 9.8) than the average number of changes necessary to obtain a pure construction sorting (Cdev 3.2); this means that constructional information was seen by subjects as more important than verb information. However, suspecting that these results could have been affected by the type of example given to subjects in their explanation of their task, the authors repeated the experiment without providing any example. In their second experiment, the differences were minimized and the verb-sort and construction-sort classifications were statistically non-significant (Vdev 5.5 and Cdev 5.7).

As previously mentioned, Liang (2002) replicated this study using L2 learners, namely, Chinese learners of English. Subjects 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 used (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 & Wulff (2005) replicated the experiment with German learners of English. Surprisingly, their results were closer to Bencini & Goldberg's first study, with foreign language learners focusing more predominantly on a construction-based sorting (Vdev 8.5 vs. Cdev 3.45). Gries & Wulff took the analysis a step further and determined the preference that each of the sentences showed towards a constructional sorting. They used a hierarchical cluster analysis to establish how often each sentence was classified with the other sentences in the stimuli. Their cluster analysis revealed no significant preference of any of the verbs for appearing together, with the exception of *cut*<sup>2</sup> which exhibited a higher tendency to be grouped together, that is, showed a greater resistance to constructional sortings as compared to the other verbs.

We have replicated this sorting experiment using Spanish learners of English as subjects. Our study not only provides additional evidence but also incorporates a language in which three of the four constructions studied are not present. Spanish does have a transitive construction, but lacks any ditransitive, resultative or caused motion constructions which subjects could easily transfer from their L1 when performing the sorting task.

## 2.2. Method

### 2.2.1. Participants

Fifty undergraduate students of Translation and Interpreting from the University of Murcia (Spain) volunteered to participate in the experiment. All of them were native speakers of Spanish with the exception of one subject who reported herself as native speaker of Arab, and two subjects who reported themselves as Spanish-German bilinguals. All of them were fluent in English.

### 2.2.2. Stimuli

A set of sixteen cards was prepared for each subject, each one with a different English sentence printed in the center. The total number of sentences, 16, was obtained in the following way: we took four different verbs (*cut*, *get*, *take* and *throw*) and used each of them in four different argument structure constructions (transitive, ditransitive, caused motion and resultative)(4 x 4 = 16; see Table 1 below). Each set of cards was accompanied by a questionnaire students had to fill in with information about their mother tongue, their command of other languages, the number of years of English teaching and the mark obtained in the last English exam they had taken. Each set of cards was shuffled randomly and clipped together with its corresponding questionnaire. The different sets were put inside individual envelopes containing three more clips. 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 told to fill in the questionnaire and then they were asked to sort the sixteen cards into four piles of four cards each, according to the overall meaning of the sentence. They were asked to clip each pile and put them back inside the envelope. They were also told that there was no right or wrong answer, the aim of the experiment being only to investigate how people sort sentences according to their overall meaning.

### 2.3. Results

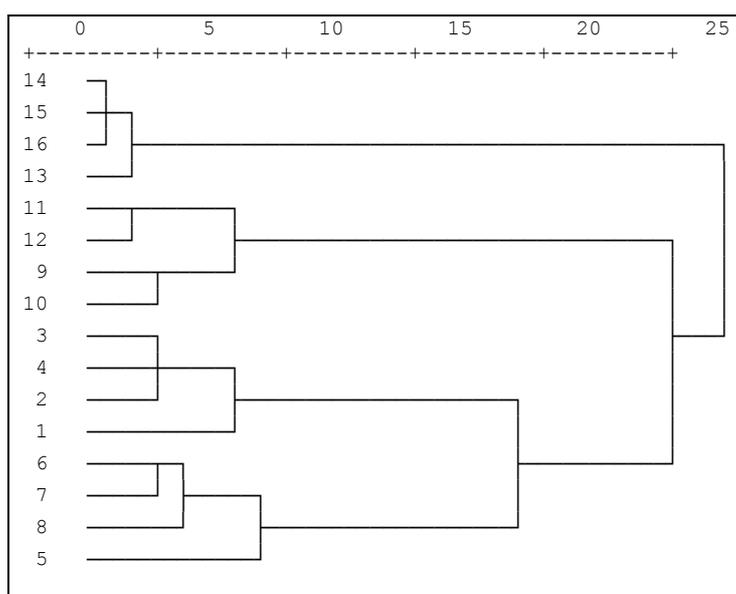
We analyzed results following the procedure carried out by Bencini & Goldberg (2000) and calculated how many changes would be necessary to achieve either a construction based-sort or a verb-based sort. In our case, the average number of changes required for a verb-based sorting was 8.94 while the average 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 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 decreased the possibility of our results being caused by interference from the students' native language. When Spanish learners of English grouped the sentences according to the type of construction, they were not very likely to be transferring knowledge from their L1. On the contrary, their sorting can be described *prima facie* as based on their knowledge of the L2.

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'); neither does Spanish have either a resultative construction similar to the one exemplified by the sentence *He cut the watermelon open* (*Spa. lit.*: \*'Cortó la sandía abierta'). The only two constructions which do exist in Spanish are the transitive and the ditransitive. But the Spanish ditransitive has a different form, since it requires the use of a dative clitic doubling construction (e.g. *Eng. He showed Mary his flat* vs. *Spa. 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 somehow more similar to the English prepositional dative construction (e.g. *He showed his flat to Mary*) than to the double object one. All these differences make it less probable that those Spanish learners who performed a sorting based on constructions did so on the basis of their L1 knowledge.

Following Gries & Wulff's (2005) study, we also used a hierarchical cluster analysis (using Euclidean distance as a measure) which allowed us to calculate how often each of the experimental sentences was grouped together with each of the other fifteen sentences. The resulting dendrogram (see Figure 1 below) shows four clear constructional clusters which illustrate the subjects' tendency towards a construction-based sorting. The fact that the dendrogram does not reveal any significant difference for the only construction which has a similar counterpart in Spanish (i.e. the transitive construction) seems to support our argument that the data obtained from the sorting experiment cannot be due to transference from the students' L1.

Interestingly enough, our dendrogram also shows very similar results to the analysis carried out by Gries & Wulff (2005) in that those sentences which contained the verb *cut* (i.e. sentences 1, 5, 9 and 13) revealed a lower tendency towards a constructional sorting than the rest of sentences in the same construction. What is more, our results coincided with those reported by Gries & Wulff even in the fact that the only instance of *cut* which showed a greater tendency towards a constructional sorting than towards a verb-based sort was the resultative *cut* (sentence 9). As Gries & Wulff (2005: 194) outline, more empirical evidence would be needed to determine whether these differences are interesting or not from a theoretical point of view. It is worth mentioning that Bencini & Goldberg report a similar case in their study (in which the verb which is more biased to a verb-based sort is *slice*).



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

Figure 1. Dendrogram of the sorting experiment

### 3. CONCLUSION

The results of this experiment show very clearly how, when looking for semantic similarity among sentences, Spanish learners of English tended 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 statistically significant when comparing the verb-based vs. construction-based reclassification measures and also in the dendogram, in which four clusters emerged which corresponded quite clearly to the four constructions. This occurred for all four constructions, even though Spanish does not have a clear counterpart for three of them (resultative, caused-motion and ditransitive). These results seem thus to support Gries & Wulff (2005), pointing to the conclusion that constructions do have a psychological status even in the mind of foreign language speakers.

### NOTES

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1. Readers interested in the psychological validity of this sorting paradigm can consult Bencini & Goldberg (2000: 644).

2. Gries and Wulff decided to change one of the verbs used in the original Bencini and Goldberg experiment: the verb *slice* was substituted by the more frequent *cut*.

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