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Why should we care about sound symbolism in EFL learning?: Two pilot studies

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ABSTRACT
Given the importance of the phonological and lexical components of the language in L2 learning, this article discusses an innovative, holistic approach to learning these two components of the language based on the existence of "sound symbolism"—the interrelation between sound and meaning—in English. In particular, it describes how and why the study of sound symbolism can be advantageous to EFL learners. This claim is grounded in empirical data gathered from two pilot studies carried out in two educational settings (a secondary school and the University of Alicante). The results suggest that knowledge of sound symbolic principles underlying the English language can enhance lexical storage and semantic prediction.

KEYWORDS: sound symbolism, sound-meaning interplay, language learning, EFL, classroom experiments.

1. INTRODUCTION

Most studies on *sound symbolism* or *phonaesthesia*—broadly defined as the systematic relationship between meaning and sound as <gl-> signifying 'light' in such words as *glitter, glow*, *glare*, *glint,* or *gleam* (cf. Hinton, Nichols & Ohala, 1994)—in language learning concentrate on the processing of non-arbitrary language by native speakers (Monaghan, Mattock & Walker, 2012; Parault & Schwanenflugel, 2006), thereby neglecting the role that sound symbolism can potentially play in the mental lexicon of non-native speakers. In fact, one of the most extensive accounts of sound symbolism in English (Reid, 1967) described some of the sound-symbolic properties of English vowels and consonants as perceived by native speakers. However, Reid's recurrent reference to quotations to support his claims

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throughout the book confirmed somewhat impressionistic views on the use of sound symbolism in some genres, such as literary texts, to powerfully evoke the general mood or atmosphere of the scene depicted.

This raises the question of whether English as a Foreign Language (EFL) learners[1] could take advantage of what seems to be an underlying sound-symbolic tendency in texts —particularly, in literature—in order to learn semantically and phonologically related networks of words in a more engaging way. This led me to carry out two pilot studies whose findings are herein reported. The aim of this article is, thus, to justify the learning of these non-arbitrary signs by EFL learners. In order to do so, I will report on two classroom experiments and assess the pedagogical implications of the findings. I will likewise suggest possible ways in which sound symbolic elaboration can be strategically used not only by intermediate-level learners but also by more proficient users of EFL.

2. HOW DOES SOUND SYMBOLISM FIT IN L2 LEARNING RESEARCH?

A widely held premise in language learning is that only when the connection between form and meaning is established, knowledge really begins to be generated (Laufer & Girsai, 2008; Schmitt, 2008; Webb, 2007). This type of explicit association is conventionally known as *elaboration* in Second Language Acquisition research. Traditionally, elaborations have been dichotomical, that is, they have either been meaning-based or form-based, but they have not merged both perspectives (cf. Deconinck, Boers & Eyckmans, 2017: 33).

Semantic processing tends to be more easily achieved and fostered through a myriad of strategies such as providing synonyms, referring to mental imagery or pictorial elucidation (e.g. Boers, Piquer, Stengers & Eyckmans, 2009) or to etymological explanations (Boers, Eyckmans & Stengers, 2007). These elaborations assist meaning recall and can contribute to consolidating semantic networks, but they do not entail learners' recollection of the form of new words (cf. Boers, Lindstromberg, Littlemore, Stengers & Eyckmans, 2008: 190). The major drawback of these meaning-based strategies is that the final outcome largely depends on learners' preferred cognitive styles (see Boers & Littlemore, 2000).

Boers, Lindstromberg, Littlemore, Stengers and Eyckmans (2008) appropriated the *verbaliser-imager* continuum from cognitive psychology and applied it to their vocabulary tests. Along this continuum, learners were deemed to have a stronger preference for images (i.e. they were "high imagers") or for words ("low imagers"). These researchers demonstrated that high imagers took full advantage of both "direct" imagery (i.e. pictorials) and "indirect" imagery (i.e. verbal explanations which triggered the visualisation of a mental image), whereas propositional or verbal content seemed to yield better results in the case of low imagers. Overall, this results in an asymmetrical storage of structural and semantic aspects of

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the target words, and it thwarts full knowledge of a word, which encompasses many more aspects than just its meaning (cf. Nation, 1990: 31).

Within this SLA framework, what I call *sound symbolic elaboration* may prove to be more effective in EFL learning than other cognitive linguistics-inspired strategies. A limited number of case studies explored synesthetic associations with English phonemes in an attempt to optimise EFL pronunciation teaching (Mompeán-Guillamón, 2013, 2015; Wrembel, 2010). Mompeán-Guillamón (2013, 2015) concluded that knowledge of the relation between certain sounds and colours did not help Spanish learners to reproduce English sounds. In some cases, this was partially due to the fact that certain "coloured" sounds (e.g. /æ/) were not part of the Spanish vowel repertoire.

Other scholars (Lu-hua, 2004; Xin & Jing, 2008; Yanqun, 2007) have made use of several types of iconicity (structural iconicity, morphological iconicity, phonetic iconicity, and metaphorical iconicity) to teach English in contexts in which the learners' L1 was Chinese. Chinese uses characters instead of an alphabetic system, which is why this language could be considered to be iconic to a certain extent. In this regard, Luk and Bialystok state that Chinese characters "contain pictorial indications of meanings that can be used to help retrieve the referent" (2005: 79).

Nonetheless, sound symbolism in its narrowest sense—i.e. prototypically in form of phonaesthesia—is an unexplored area in EFL teaching/learning. Only Zohrabi, Sabouri and Peimanfar (2014) carried out a study testing 90 intermediate level Turkish learners and their ability to analyse meaning in isolation and in sentences. It was then found that learners could match the Farsi appropriate rendering of unknown sound symbolic words both in context and isolation even though there was no instructional intervention (Zohrabi, Sabouri & Peimanfar, 2014: 48). I would argue that the benefits of phonologically motivated signs seem to outnumber the pitfalls that either the teacher or the learner may encounter, as I attempt to prove in the following sections.

3. PHONOLOGICALLY MOTIVATED SIGNS IN THE EFL CLASSROOM: TWO EXPERIMENTS

The pilot study that I initially conducted took place in a secondary school in Alicante (henceforth, PS1). As I will explain, this preliminary experiment enabled me to contrast the results of two context-based tasks and to refine the methodological procedure which was subsequently employed in a second minor-scale study at the University of Alicante (henceforth, PS2). Unlike PS1, PS2 exclusively concentrated on lexical storage of sound symbolic words, which is why its findings will be discussed in greater depth. It is also worth noting that this shift

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in setting and participants was due to intended procedural variations, which I will comment upon in due time.

In PS1 my main concern was to explore whether there were significant differences in terms of vocabulary learning outcomes when learners encountered two completely dissimilar (adapted) texts and sets of target words. For the time being, it will just suffice to state that the target words met one of those criteria:

1. they were either exclusively semantically related (in Text 1), that is, they all belonged to the semantic field of the environment;
2. or the target words exhibited a meaning-sound pairing (in Text 2), as they all contained the phonaestheme (Firth, 1930) or sound symbolic consonant cluster <gr>. I drew on the already strengthening sound /r/, which, when backed by /g/, results in an appropriate beginning for words expressing contempt, discomfort, or resentment (e.g. *grim*, *gross*, *grumpy*, *grubby*, etc.).

I decided to concentrate exclusively on the <gr> phonaestheme for this short-scale pilot study because it was the only one that naturally occurred in such texts as *Beowulf*. Had I chosen more phonaesthemes and inserted them into the texts, I would have completely compromised the stories' natural textuality.

The hypotheses that I put forth accounted for these lexical differences. Nonetheless, my questions mainly focused on the sound-symbolic set of words, which were mostly unfamiliar to learners as it was shown in the participants' inability to use them in context when they were required to do so. In this two-phase experiment, my aim was to address the following research questions (RQs):

1. whether sound symbolic elaboration could aid in lexical recall and in establishing correct meaning-form connections based on a meaningful framework (i.e. texts). In the tradition of SLA research, I propose the term *sound symbolic elaboration* as a follow-up for meaning-based and form-based elaborations (see, e.g., Barcroft, 2002 and 2004 on semantic and structural elaboration).
2. whether there would be differences between learners being instructed on the semantics of the phonaestheme in question and being given no explicit sound symbolic information at all. This different procedure would result in two cognitive stages: the "recognition" and the "guess" phase (as attested by Parault [2002: 36–37] in a similarly devised study, although Parault's was not aimed at FL learning). As I will explain, I only provided meaning-form elaboration in PS1 and Group 1 of PS2, but I included none in the handouts distributed among Group 2 participants in PS2. In that way, I attempted to promote autonomous learning to a larger extent.
3. whether learners would be able to infer the meaning of unknown words that were not present in the text. In PS1 I adopted a contrastive stance towards the analysis of

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two tasks (one contained sound symbolic words and the other did not), whereas in PS2 I narrowed down the scope, tackling just sound symbolic words' storage.

3.1. Participants

The participants involved in PS1 were twenty secondary school students who were in their first year of post-compulsory secondary education (i.e. 1st year of "bachillerato", roughly equivalent to A-levels). Their overall competence in English was at a B1 level—following the ECFR—, and they were either Spanish or Catalan native speakers. None of them reported a different L1, and English was the first additional language of their choice, French being the second option available to them in their secondary school.

In PS2, the participants were two groups of students taking the subject "English Lexicology" and who were expected to be at a C1 level. Even though the groups were officially larger, only 35 students from Group 1 and 22 students from Group 2 were present at the moment in which the study was conducted. "English Lexicology" is a compulsory, third-year subject that makes up the syllabus of the Degree in English Studies at the University of Alicante, and it is also popular among exchange or international students. I could gather this information from the questionnaire supplied in which they were asked to indicate their first language. I hypothesised that their L1 could give me insights into the effect that linguistic proximity between the L1 and L2 could have on the outcome of this study.

No other personal data was requested on their part since I did not intend to test other variables such as gender or age for this study (on the possible correlation between sound symbolic associations and age and gender in native speakers, see Krause, 2015). However, as can be inferred by the groups and educational contexts targeted, the average age of PS1 participants was 16–17, and 20–21 in the case of PS2, so there was not a very wide age gap between the participants involved in PS1 and those in PS2. Besides, to preserve their anonymity, each student was assigned an arbitrary number which I would use for data collection and analysis purposes. This had to be remembered by both PS1 and PS2 participants, as they had to write their answers on sheets which were different from those containing the texts.

I decided to choose these groups because I wanted to test whether the teaching of phonaesthemes could work well across a range of learners. Even though the target phonaestheme was the same, the choice of exercises and texts was adapted to better match the different profiles and levels of the target participants. Nonetheless, these adaptations, which were carried out by the teacher, are not as substantial as to require copious amounts of time and effort, something which is valuable in real-life, hands-on teaching.

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3.2. Materials and procedure

3.2.1. Target words

Even though the choice of target words was motivated by either exclusively semantic criteria (Text 1 in PS1) or by meaning-form connections (Text 2 in PS1, and Texts 1 and 2 in PS2), I attempted to select content words from three main word classes, namely, nouns, adjectives, and verbs. As for PS1, six target words were present in each text:

Text 1: *claim* (v), *harm* (v), *supply* (v), *smog* (n), *threat* (n), *pollution* (n).
Text 2: *greenfly* (n), *ogre* (n), *greedy* (adj), *gruff* (adj), *grumpy* (adj), *grunt* (v).

The questionnaire, however, contained eight words that were not present in the text: four followed the underlying iconic principle (they started with <gr>) and were largely unknown to the participants (they were low-frequency words and were not part of the curricular vocabulary taught during their formal education, as I had previously corroborated): *gross* (adj), *grisly* (adj), *gruesome* (adj), and *grim* (adj). In contrast, the other four non-symbolic words occurred in the book from which the environment vocabulary was drawn, *Bridges for 1º de bachillerato* (Williams & Baines, 2013): *issue* (n), *dump* (n), *layer* (n), and *claim* (n). These were relatively high-frequency words compared to the target sound symbolic lexical units.

Concerning PS2 target words, the number of target words was larger (i.e. nine words) and was at a more advanced level. This was my intended objective, which was also fulfilled thanks to the textual material itself. The reading was partially different, as I will detail in section 3.2.2. The target words were *gruff* (adj), *greenfly* (n), *grumpy* (adj), *grunt* (v), *greedy* (adj), *gross* (adj), *grievance* (n), *grim* (adj), and *grudge* (n). In PS2 questionnaire there were three new "added" words: *grisly* (adj), *gruesome* (adj), and *groan* (v).

3.2.2. Sequencing and objectives of PS1 and PS2

The first preliminary experiment in the secondary school (PS1) attempted to analyse whether there were significant differences between two context-based vocabulary learning strategies: in the control condition the target words belonged to the same semantic field (i.e. the environment) although the formal aspects of these words differed greatly. In the experimental condition, the target lexis contained meaning-form connections, that is, they were phonologically motivated.

In both PS1 and PS2, I presented two texts that the participants had to read carefully. The instructions—in written form—were as follows: "Read the text below paying special attention to the underlined words". In PS1 these two texts belonged to different genres: one of them was a partial rewriting of the short story *The Selfish Giant* by Oscar Wilde, and the other one was an informative text based on *The Guardian* article "Humans: the real threat to

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life on Earth",[2] with a focus on the environment. The environmental topic was in close connection with the fourth unit of the aforementioned book.

For time constraints, the texts were shortened, and the target vocabulary was condensed in a way that this lexical density did not pose a threat to the textual integrity of the material. They were stand-alone texts, as they did have a prototypical structure (i.e. they contained a beginning, a middle, and an end). It is likewise worth noting that I did not provide any participants with the correct definitions for any target word at any stage. In PS1 the participants were only given information about the sound symbolic properties of <gr> orally, whereas in PS2 only one group (Group 1) had that information available.

Regarding the texts employed in PS2, there were two literary texts: the adapted version of *The Selfish Giant* and three short passages from Heaney's (2000) verse translation of *Beowulf*. This text—originally in OE—perfectly fulfilled the purpose of this research study as it naturally contained a large number of sound symbolic words sharing the phonaestheme <gr> (e.g. *grievance*, *grim*, *greedy*, or even the antagonist's name in the story, *Grendel*). Equally, it suited the needs of English language and literature students, who were the participants of PS2.

The selected passages for this experiment were loosely connected, as they made allusion to the havoc created by the grim creature Grendel or described this devilish figure. Likewise, by choosing real texts, I was able to make the task more authentic without threatening learners' understanding of the text. In fact, in the questionnaire the C1-level participants proved to have been able to cope with the excerpts from *Beowulf*.

In the same handout containing the texts, the participants were asked to (1) self-assess their previous knowledge of the target words—the categories presented were based on Dale and O'Rourke (1986)—and (2) elicit possible connections between those words. The exercises were the following:

1. Out of these four categories, select the one that best describes your level of knowledge for each word. Write the word next to the category.
    1) I have never seen this word before.
    2) I've heard of it, but I don't know what it means.
    3) I recognise it, but I don't use it.
    4) I know it.
2. Can you find anything in common between the words underlined? If so, what?

After having completed this first part of the task, ending with the open-ended question above, the participants were asked to complete the questionnaires. These were made up of two parts: the nature of the first part was common to both PS1 and PS2. This was a multiple-choice section in which the participants were required to choose the correct meaning from a total of three. All the definitions provided were retrieved from the *OALD* (*Oxford Advanced*

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Learners' Dictionary; Turnbull, 2010), so that the wording was not difficult according to their level. For both sets of target words (sound symbolic and non-sound symbolic words), at least one of the distractors was chosen on the grounds of phonological-graphemic similarities on varying degrees.

In some cases there was an extra initial phoneme (vowel or consonant) in one of the distractors (e.g. *claim* [target word] / *acclaim* [distractor], or *tissue* [target word] / *issue* [distractor]), whereas in others there were greater differences (e.g. *greenfly* [target word] / *butterfly* [distractor]). A word's beginning is one of the most cognitively salient positions (cf. Aitchison, 1993: 121), which is why some of these alterations could potentially pose problems and unveil learning difficulties.

In PS1 there was a set of ten multiple-choice questions, whereas in PS2 there were twelve of them. This responded to the changes made affecting target words and texts, although there were no significant procedural modifications besides the increment in number. At this stage it is important to note that the questionnaire was presented in two different modalities in PS1 and PS2. In PS1 a paper-based questionnaire was distributed, as there was not an overhead projector in the classroom. All the participants had thus a hard copy and answered the questions with a pen/pencil. They were given a total of 30 minutes to answer all of the questions so that the timing in PS1 and PS2 was essentially the same. Answers were then processed and transferred to the computerised database.

In PS2 the questions were in a timed PowerPoint presentation which was projected on a screen. Each question—giving three possible options per item—was programmed to be displayed for just sixty seconds, and the participants had the chance to see and check all the questions again for a few seconds at the end of the session. I did not specifically explore this variable (i.e. computer/paper-based questionnaire) in relation to the participants' performance, although it could indeed be investigated in subsequent research replicating this study.

Rather than the medium of testing *per se*, I was interested in examining whether the type of question selected could have an impact on the completion of questionnaire, particularly, on the second part. This section required the participants to recognise meaningful sentences as appropriate textual environments (or co-texts) in which the target lexemes could occur. Thus, the participants had to pay attention to word classes and lexical nuances. In PS1 the participants had to handwrite the answer which should be chosen from an array of options. The instructions explicitly said they should "use the correct verb tense and noun form (singular/plural noun/s)". However, I found serious misspelling problems, and third person *–s* and past tense morphemes (i.e. *-ed*) missing.

This does not favour correct lexical storage, especially taking into account the cognitively prominent position that this exercise occupied (as it was at the end of the test). Therefore, I altered the format and instead of asking students to write the answers, I provided them with options. Still, I decided that at least one distractor should belong to a word class

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different from the expected answer—as in the sample question below—in order to check if the incorrect identification of sound-symbolic word classes could be intrinsically problematic and thus pervade the participants' answers, regardless of the particular group tested. Indeed, the altered format still allowed me to trace word-class confusions in the results reported in PS2 as well, which seems to indicate that the word-class identification problem extended beyond the logistics of PS1 and the participants involved in it.

A sample question in PS2:

(18) She held a _____ against her former boss.
a) grudge b) grunt c) gruff

Besides, as the PS2 questionnaire had to be answered on exam sheets processed by optical mark reading, this standardised version made the analysis of the results much more automatised, thereby completely avoiding human mistakes. Tables 1 and 2 summarise the materials and procedure used in both classroom experiments:

PS1
Reading of two texts: a reduced version of *The Selfish Giant* and a text about the environment. Elicitation of previous word knowledge and the connection among the target words. Completion of a) twenty multiple-choice questions (ten questions based on each text) and b) twelve gap-filling exercises (six questions based on each text).

Table 1. Materials and procedure used in Pilot Study 1 (PS1).

PS2
Reading of the adapted story of *The Selfish Giant* and three short fragments from *Beowulf*. Elicitation of previous word knowledge and the connection among the target words (only in Group 1). Completion of a) twelve multiple-choice questions (definitions) and b) six multiple-choice questions (gap-filling exercises).

Table 2. Materials and procedure used in Pilot Study 2 (PS2).

3.3. Results

The overall performance of the participants involved in both studies suggests the potential benefit of learning sound symbolic words. I will first discuss those of PS1 with a special emphasis on sound symbolic lexical units, as this will allow comparisons between PS1 and PS2. PS1 participants obtained an average of 75% correct answers when enquired about the meaning of sound symbolic words in the multiple-choice test as opposed to 68% in the case of words belonging to the semantic field of the environment.

A student's understanding of the word's meaning tended to coincide with—or even surpass—the same student's ability to use it in context. 86% was the average of correct answers (even though these may have been misspelled or contained some grammatical

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mistakes) for those questions targeting sound symbolic words, and 60% as for the thematically related words are concerned. This discrepancy between both results may imply that PS1 participants may not have accurately chosen the categories describing their word knowledge accurately. For instance, two participants indicated that they "had never seen" any of the sound symbolic words before, even though *ogre* is a cognate present in Spanish (i.e. *ogro*).

In contrast to the knowledge of sound symbolic words claimed by PS2 participants, the category "I have never seen this word before" was the most widely used one with a total of 53 words included within it. The least known words were *greedy* (15 participants [75%] stating their lack of familiarisation with the word), *grumpy* (10 participants [50%]), and *gruff* (9 participants [45%]) (see Table 3 below). A roughly similar number of participants indicated that they had "heard those words but did not know what they meant". The only exception was *gruff*: only two participants described their exposure to that word by referring to category III.

All three—*greedy*, *grumpy*, and *gruff*—were in the text and, therefore, could potentially have been learnt by reading the passages. The results corroborated this claim: 19 participants out of 20 (95%) chose the correct answer when selecting the definition of *gruff*, 17 students (85%) in the case of *grumpy*, and the correct definition of *greedy* was selected by 13 students (65%). As for the multiple-choice test, 19 participants (95%) inserted *gruff* into the correct blank, 14 participants (70%) did the same in the case of *grumpy*, and as far as *greedy* is concerned, the number amounted to 15 participants (75%).

CATEGORY	***ogre***	***grumpy***	***greedy***	***grunt***	***gruff***	***greenfly***
"I know this word"	13	1	1	0	3	2
"I recognise it, but I don't use it"	1	4	0	5	7	5
"I've heard it but I don't know what it means"	3	8	4	7	2	7
"I have never seen this word before"	3	10	15	8	9	8

Table 3. Number of PS1 participants who chose each of the categories given to describe their previous knowledge of the sound symbolic words present in the text.

PS1 participants had more difficulties coping with sound symbolic words which were not contextualised in the text. The results of the multiple-choice questionnaire (the first section) revealed that only 7 participants chose the correct definition of *grim* (35%), 8 of *gross* and *grisly* (40%), and 9 of *gruesome* (45%). This may be reasonable if one takes into account that these participants (young secondary school students) may have received limited training in guessing word meanings of words which they had not encountered in any texts. However, this is just a hypothesis. It is also worth remembering that the correct definitions were not given at any stage in an attempt to promote autonomous cognitive strategies.

Most PS1 students (17 out of 20 [85%]) were aware of similarities between sound symbolic words. Nonetheless, 15 of them (70%) indicated that "all the words contained gr" or

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similar paraphrases, thereby focusing on the graphemic level rather than on the meaning-form interplay. Only one of them ventured to say that the underlined words had "a bad meaning", and another participant claimed that they had "fantastic elements" in common. As for the rest, two students stated that <gr> occurred at the beginning of words, and other two indicated that "the form was a common element".

On the other hand, the results of PS2 were particularly enlightening: 42 participants (73.68%) scored between 90% and 100%; 7 participants (12.28%) were in the range of 80–90% and 70–80% (amounting to 14 participants), and just one participant obtained a result in the 60–70% band score. No participants scored less than 60% unlike in PS1, in which there was greater variation in terms of results.

In PS2, out of the target twelve lexical items, the most unknown words were *gruff* and *greenfly*, with 28 participants (49.12%) and 19 participants (33.33%) pointing out that they had never seen them. Only 5 participants (8.78%) knew the word *grim*. On the contrary, as anticipated, *ogre* and *grumpy* were extensively familiar to the participants: 40 and 37 of them (70.18% and 64.91%) chose the category "I know this word" for each word, respectively. *Ogre* was underlined in both texts although it only acted as a target word in PS1. I had assumed that *ogre* would be known by 100% of the C1-level participants, but this figure was probably lower due to a percentage of PS2 participants who stated that they spoke non-European languages (e.g. Korean) in which this word may not have a morphological analogous item.

In relation to the rest of the vocabulary, the participants recognised the form of a number of target words, as they had encountered them at some point throughout their learning process as English learners. However, they had not created a meaning-form association, that is, "they did not know what the word meant", despite previous oral or written encounters with the word. That applied to *grudge*—as indicated by 17 participants (29.82%)—, *grunt*—10 participants (17.53%)—, and *greedy*—6 participants (10.52%).

Even though participants had pointed out that they had never read/heard such words as *greenfly, grudge, gruff,* or *greedy*, 92.98% (53 participants) and 100% of PS2 participants correctly inferred the meaning of *greenfly* and *grudge.* The results of gap-filling exercises were equally positive. All the participants used *greenflies* in the right context, and 47 participants (82.46%) chose *gruff* as the appropriate answer.

Table 4 makes a distinction between the participants who stated that they knew the word beforehand and those who did not, by concentrating on the categories "I have never seen this word before" and "I've heard of it, but I don't know what it means", and subsequently contrasting the figures for each word with the number of participants scoring right answers. Out of those participants, 100% chose the correct meaning of *grumpy* (11/11 participants), *greedy* (6/6), *gruff* (36/36), *grim* (7/7), and *grudge* (36/36); and so did 90.90% of all of the participants in reference to *grunt* (17/18 participants), *greenfly* (34/35), and *gross*

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(10/11). Further, 66.66% participants (6/9) were able to discern the correct meaning of *grievance*.

WORD	"I have never seen this word before"	"I've heard of it, but I don't know what it means"	Number of participants who did not know the target word	Number of participants choosing the correct answer
grunt	11	7	18	17
grumpy	2	9	11	11
greedy	5	1	6	6
greenfly	28	7	35	34
gruff	27	9	36	36
grim	1	6	7	7
gross	6	5	11	10
grievance	5	4	9	6
grudge	20	16	36	36

Table 4. Previous knowledge of sound symbolic words both present and non-present in the text (PS2).

Taking into account the relatively low number of participants in PS1 who were able to infer the meaning of words which were not contained in the text, I was particularly interested in assessing the results in PS2. Those words were *groan*, *gruesome*, and *grisly*, but the vast majority of participants did choose the correct meaning in the multiple-choice questionnaire. This represented 100% of participants in the case of *groan*, 94.74% as for *gruesome*, and 91.23% as far as *grisly* is concerned. As can been deduced, the other options selected were not significant.

Some confusion arose when learners were asked to choose which word would fit in a given context (i.e. gap-filling exercises 13–18). Except for question number 13, which targeted *greenflies*, the rest of gap-filling exercises were not unanimously answered, even though the majority of participants were overall right in their attempts. For instance, in question number 18—*grudge* (n) being the expected answer—, 11 participants (19.30%) chose *grunt* (v) (option "b") and 2 of them (3.51%) opted for *gruff* (adj) (option "c"). This evidenced some word-class identification problems which will be further explained in the discussion section.

Finally, in relation to my initial research question as to whether the participants would be able to identify meaning-form pairings in the words underlined, that is, in those containing the phonaestheme <gr>, the results of Group 2 (as the other group already had that sound symbolic information available) displayed that 12 participants (54.55%) expressed their views on formal similarities (i.e. the acknowledgement of the presence of a cluster among words, namely <gr>); 4 participants (18.18%) pointed out that those words contained negative connotations; 3 participants (13.64%) pinpointed the connection between meaning and form; and 2 of them (9.09%) suggested that all of them expressed "qualities". Some of the *verbatim* comments included "They are similar because of their connotations. They all

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make reference to a negative sense, meaning things related with [sic] anger or greed", "Yes, they all have the letters 'g' and 'r' in them, and also if we look at meaning all of them have a negative connotation", "These words are adjectives related to bad attributes. In addition, they can be synonyms", or "They all begin with gr- (except 'ogre', but it also contains -gr-). They all have negative connotations".

3.4. Discussion

It was expected that one of the greatest effects of the use of sound symbolism on vocabulary learning could be found in the "recognition phase" (Parault, 2002: 37) of PS1 and PS2—only in Group 1. The participants were guided as to how to interpret the target phonaestheme <gr> either through an oral explanation (in PS1) or through a brief written text (Group 1 of PS2). This could assist them in generating a larger number of correct word definitions than by simply presenting the word in isolation (cf. Parault & Schwanenflugel, 2006: 346).

Nonetheless, there were no significant differences in terms of the participants' performances between those two groups—i.e. PS1 participants and Group 1 of PS2 participants treated conjointly—and Group 2 of PS2 participants. A "guess phase" (Parault, 2002: 36) can be claimed to have taken place at some point between/while their reading of the texts and the completion of the questionnaire in Group 2 of PS2. The participants could then have deduced the form-meaning connection existing in them without having more clues than the typographical distinction common to all the target words, as they were underlined. Nonetheless, the overall levels of correct guessing were high in both groups partaking in PS2. This result is promising as to how such a simple strategy as underlining the target words could in fact help learners to infer a word's meaning.

Surprisingly, PS1 gap-filling exercises yielded better results (the average score being 86%) than multiple-choice questions based on definitions (75%). The lower results of PS2 participants are more in line with traditional beliefs concerning word learning: speakers first identify and attempt to internalise the meaning of a word, which eventually leads them to be able to use the target word as active vocabulary and recognise several contextual uses associated with a given lexical item.

The wrong answers recorded in the gap-filling exercise partially evince an inaccurate identification of word classes, which may be attributed to the syllabic structure of those words. One example will suffice to illustrate my point: in terms of syllabic structure, there is a close resemblance between *grudge*, *gruff*, and *grunt.* They all are monosyllable words composed of an onset (<gr>), a nucleus (<u>), and a coda (<nt>, <ff>, and <dge>). The coda was thus the only distinctive element.

As it is generally assumed, beginnings of words are more prominent in storage than ends (cf. Aitchison, 1993: 121), so my findings just corroborate the so-called "bathtub

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effect". This phenomenon was first formulated by Brown and McNeill (1966) and is described by Aitchison (1993: 119) as follows:

> People remember the beginnings and ends of words better than the middles, as if the word were a person lying in a bathtub, with their head out of the water one end and their feet out the other. And, just as in a bathtub the head is further out of the water and more prominent than the feet, so the beginnings of words are on average better remembered than the ends.

Most phonaesthemes—sound symbolic clusters, consonants, or vowels—are cognitively salient, since they prototypically tend to occur either at the beginning or the end of the word (e.g. <sh> 'continuous movement' in *splash*, *mash*, *crash*, or *dash* or <bl> denoting a 'bursting out' or 'the resultant expansion' in such words as *bloom*, *blow*, *blossom*, *blurt*, or *blush*). Therefore, the position of phonaesthemes may also have an effect on the processing and storage of these words.

Besides, the word class *per se* is a major factor. Words from the same word class are typically clumped together (e.g. adjectives such as *red*, *green*, and *blue*) in our mental lexicon, whereas evidence suggests that words belonging to different words classes are more loosely tied (cf. Aitchison, 1993: 100).

The results of my two empirical studies, however, revealed that learners systematically failed to pay attention to the word class of the target lexemes as well as to the parts of speech surrounding the target words. Generally, they were able to identify the correct meaning for the sound symbolic words which were both present and absent in texts, but they were unable to use the words embedded in those texts in subsequent gap-filling exercises, which were productive—in the case of PS1—to a certain degree. This is a limitation of the study that should be tackled in forthcoming research.

As for the participants' inferential abilities, results of PS1 display that context plays an essential role in sound symbolic processing. This is in line with the findings discussed by Zohrabi, Sabouri and Peimanfar (2014), who asked intermediate level Turkish learners to infer the meaning of a selection of sound symbolic words. They determined that the highest scores corresponded to those participants who had been presented with the sound-symbolic word embedded in a co-text (cf. Zohrabi, Sabouri & Peimanfar, 2014: 51).

PS1 participants had problems when selecting the correct definition for *grim*, *gross*, *gruesome,* and *grisly*, which were not in the text, whereas the rest of vocabulary did not pose any particular difficulties. This is in sharp contrast to the results reported on PS2, in which correct definitions for those words spanned 91.23%–100% of correct answers. Inference is indeed a strategy which can be developed, and it is closely related to learners' cognitive maturity. In the case of PS1 participants, the age variable, which was not originally taken into account, could have played a part.

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It is also worth drawing parallels between PS1 and PS2 participants' awareness of sound symbolic properties. In PS1 70% of the participants noticed that all the target words contained <gr>, but only less than 1% noted the semantic connection ("that words had a bad meaning"). However, in PS2 there was a wider range of answers: the majority of PS2 participants (54.55%) underlined the formal connection (i.e. the cluster <gr>) existing among the target words, but 18.18% indicated that they all had "negative connotations"; even more revealing for the purpose of this study is the fact that 13.64% pinned down the connection between meaning and form. PS2 participants had more exposure to the English language and some training in phonology and lexicology, which may be why these results vary considerably from one experiment to another.

Therefore, awareness of sound symbolic networks among target words could optimise inferential abilities. In both studies, I aimed to elicit form-meaning pairings by including a section in the questionnaire in which the participants had to state if there were any similarities among the target words underlined in the text and if so which those were. This had a very positive effect on the subsequent tasks, as also corroborated by scholars testing native speakers on sound symbolic grounds (see Parault & Parkinson, 2008; Parault & Schwanenflugel, 2006).

In PS2 one of the participants went as far as to claim that all sound symbolic words were "synonyms" after stating that they were "related to bad attributes" (participant number 49). As already mentioned in the previous section, synonymy is one of the most frequent pathways linking words in the mental lexicon, which may be a reason why this participant endeavoured to conceptualise his/her mental association at a lexical level with this somewhat unsuccessful label. Even though sound symbolic words are not synonyms, they do share a common meaning which brings them closer to this type of word link. I would suggest that the connection among sound symbolic words is so strong that it could be better compared to the one arisen out of co-ordination.

Sound symbolic words tend to be clustered together and, generally, occur within the same word class as in the case of the phonaestheme in question, <gl> (*gleam*, *glare*, *glitter*, *glow*, or *glint*) or others such as <cl> (in, e.g., *clamp*, *clasp*, *clinch*, *clog*, or *cling*), <m> (e.g. *maunder*, *mumble*, *murmur*, *mutter*, or *mewl*), or <pr> (e.g. *prank* or *prate*). This is a plausible explanation which might have led learners to wrongly store these words as if they belonged to the same class. Hence, unconsciously, sound symbolic words may be treated at the same level as co-ordinates, although they bear resemblance to synonyms in so far as they are semantically close one to another. An epitome of this is the <gl>-based sound symbolic words.

Overall, these findings imply that sound symbolism, as another lexical property from which learners can derive information, can enhance vocabulary-learning outcomes. This is particularly so if the results based on sound symbolic elaboration are contrasted to the outcome of using more traditional word learning processes based exclusively on meaning as

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in PS1. Similar studies should then be replicated in order to be able to generalise the results herein presented.

4. PEDAGOGICAL IMPLICATIONS AND CONCLUDING REMARKS

It has been deplored that vocabulary instruction does not encourage attention to the structural aspects of words even though *real* L2 word learning entails the recollection of forms as well as meanings (cf. Barcroft, 2002, 2004; Schmitt, 2010). These two pilot studies attempted to fill this gap by drawing on the three main principles of the Cognitive Vocabulary Approach (*CVA*) (cf. Harmon, Buckelew-Martin & Wood, 2010: 101): (1) recognition of unfamiliar words, (2) examination of word meanings, and (3) establishment of connections amongst word meanings. Particular emphasis is on form-meaning pairing, which builds the foundation for real word knowledge (see Laufer & Girsai, 2008; Schmitt, 2008; Webb, 2007). This is indeed the central aspect underlying the design of the short-scale investigation reported.

A frequent issue raised in the discussion of sound symbolism is the idea that phonaesthemes do not carry meaning within themselves but rather that these prompt word associations from the initial/final word sounds. In these two experiments, the first languages of the participants involved were mainly Spanish or Catalan, languages which do not have the same lexical networks revolving around a given phonaestheme as other Germanic languages.

However, because of the Indo-European common ancestry of some words containing the phonaestheme <gr>, Spanish/Catalan speakers can incorporate new sound symbolic information into their previous knowledge of words such as *gruñir*/*grunyir* and derived words, *grotesco/grotesc, grosero/grosser* (or *groller*), *grima, ogro/ogre*, and, more remotely, *gripe/grip* or *grima* in Spanish. These anecdotal examples might be deemed to be vestiges of "semantic primitives" (Schank, 1972) of echoic origin, but they do not seem to constitute such a robust semantic network as the one found in English.

Further studies focused on other phonaesthemes completely extraneous to learners should be carried out to either rule out or confirm this possibility. Still, this does not prevent learners from taking advantage of previous exposures to sound symbolic principles in English. Neither does it run contrary to the creation of cross-linguistic sound symbolic networks. Learners may be able to establish a connection between the target words and equivalent words in languages with which they are already familiar or aim to learn. Therefore, linguistic distance and semantic transparency of target phonaesthemes should be other factors to be considered in the design of these types of experiments.

Intermediate learners should be first introduced to phonaesthemes that are semantically transparent, based on the linguistic proximity of the target phonaestheme to the learners' first language(s). If those first languages belong to the same language family, the teacher's task

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will be comparatively easier. Learners will be able to draw on a common—albeit unconscious—lexical-phonetic repertoire. For instance, Germanic languages (in particular, German, English, Swedish, and Icelandic) share a number of phonaesthemes, such as <gl>, <fl>, and <bl>, all of which are connected to "light" (cf. Carling & Johansson, 2014: 209).

Advanced learners could likewise increase their mental lexicon. More proficient learners are in a closer situation to native speakers, as they have been exposed to the language for a longer period. For this reason, I believe that they would particularly take advantage of sound symbolic associations based on "neighbourhood effects" (Andrews, 1997), since the visual recognition of words is under the influence of the type and number of orthographic and phonological neighbours the target word has.

In addition, more attention should be devoted to the phonological dimension of phonaesthemes and lexemes in general. By paying close attention to the target words in written texts, most PS1 and PS2 participants concentrated on graphemes rather than phonemes. This is a natural result of the dissimilar orthographic depth between a Romance language like Spanish and English: whereas in Spanish there is one-to-one grapheme-phoneme pairing, in English a lack of correspondence between these two linguistic levels is often the norm. Technically speaking, English has a "deep orthography", and Spanish has a "shallow orthography".

Orthographic depth has a strong connection with sub-vocalised reading, which was also performed in the experiment. Whereas Spanish learners may have problems linking spelling-pronunciation, sets of phonaesthemic words have the peculiarity of sharing the same onset or rime, which are pronounced and written alike. This eases the learning "burden" and facilitates the lexical storage of whole sound symbolic words containing the same phonaestheme.

Taking into account all of these factors, learners should be encouraged to construct word knowledge by attending not only to the meaning but also to the form of the word. In this way, they would sharpen their meta-cognitive skills and avoid root memorisation, for instance, in form of lists of words only semantically connected. The role of phonologically motivated words in English—which has often been neglected—should be further researched and exploited for didactic purposes.

NOTES

1 The label EFL is used since the experiments carried out for this study were in this context. However, the findings could be extended to ESL contexts.

2 www.theguardian.com/environment/2013/jun/30/stephen-emmott-ten-billion.

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