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*How Would You Name This?: An Empirical Study on
English and Spanish N-N Compounds Production*

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ABSTRACT

English and Spanish are languages that differ in terms of grammatical aspects. One of these aspects bears upon the formation of N-N compounds, a grammatical structure very productive in English but not in Spanish. The present dissertation aims to provide an empirical approach to the study of both the production and the interpretation of N-N compounds that will take into account some of the syntactic and semantic features of these structures. In the experiment, L1 Spanish L2 English speakers with a different competence in English have to name various pictures using an N-N compound. The analysis of the syntactic and semantic properties of the target N-N compounds will shed light on how these features determine the production of N-N compounds in English and/or their interpretation in Spanish. Our results show that the difference in English proficiency, as well as some semantic properties, will condition the use of N-N compounds or other structures.

Keywords: comparative grammar, N-N compounds, production, interpretation, English, Spanish.

RESUMEN

El inglés y el español son lenguas con diferentes características gramaticales. Una de ellas es la gran capacidad productiva de la lengua inglesa en cuanto a compuestos nominales, no siendo así en el caso de la española. Este trabajo aborda de forma empírica el estudio de la producción y de la interpretación de compuestos nominales teniendo en cuenta algunos de los aspectos sintácticos y semánticos de estas estructuras. En el experimento, hablantes españoles (L1) con diferente formación en inglés (L2) han de nombrar varias imágenes con un compuesto nominal. El análisis de las propiedades sintácticas y semánticas de los compuestos nominales esperados aclarará cómo estos aspectos condicionan la producción de dicha estructura en inglés y/o su interpretación en español. En los resultados se muestra que tanto la diferencia en el dominio del inglés como algunas propiedades semánticas condicionarán el uso de compuestos nominales u otras estructuras.

Palabras clave: gramática comparada, compuestos nominales, producción, interpretación, inglés, español.

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1. INTRODUCTION

Comparative grammar is a field within linguistics that offers exhaustive analysis on the comparison between two or more languages. Understanding the similarities and differences among languages can shed some light on the way learners approach to a new language or on the influences that one language may have over the others, investigating, among other aspects, why some people may have difficulties when acquiring a language and, consequently, make mistakes. Thus, one of the main aims of comparative grammar is to detect whether a particular language (native language or L1) may determine how one understands and produces utterances in the language which is being learnt (second language or L2), i.e. whether the cross-linguistic influence phenomenon is present or not when facing a new grammar.

The present dissertation covers the comparison of a Germanic and a Romance language, English (L2) and Spanish (L1), respectively, focusing on the production and interpretation of nominal compounds (N-N compounds). The interest of these grammatical items relies on the importance that they have in English, a language in which they are commonly found; however, can this assertion be applied to Spanish? Will the L1 influence on the production and interpretation of these structures in the L2 somehow? These are some of the questions this paper aims to give an answer to by means of an empirical study that challenges the predisposition to produce both English and Spanish N-N compounds.

The organization of this paper is divided into five main parts. Section two is devoted to providing a general overview of the linguistic aspects of N-N compounds in terms of form, semantics, pragmatics and syntax; as this is a contrastive study, the theoretical approach will dive into both English and Spanish grammatical information about this type of compounds, as well as a subsection relating both languages. In the same line, a brief review of some previous studies on N-N compounds by L2 English speakers will provide a general picture of how these speakers produce or interpret these structures. Next, in section four the objectives of the study will be presented, including the research questions on which this dissertation is based, and which will be further answered. The fifth section

will introduce the methodology that has been used to carry out the empirical study on N-N compounds, describing the participants that were selected, the tasks and the process followed. Section six will show the results obtained from the tasks performed by the participants, going through each research question stated in section four. The paper will conclude by presenting some conclusions inferred from the results of this study.

2. N-N COMPOUND FORMATION

Within the field of comparative grammar, this study focuses on the scope of compositionality, more specifically, on those structures consisting of two nominal forms. Thus, in order to comprehend the formation of this sort of grammatical arrangement it is necessary to provide a formal definition of the term “compound” as used in this study. This section will deal with the main concepts that the study of N-N compounds involves –including some classifications that are related to them–, and their counterparts in Spanish since the empirical study that will be developed through the paper involves both English and Spanish.

2.1 THE COMPOUND STRUCTURE IN ENGLISH

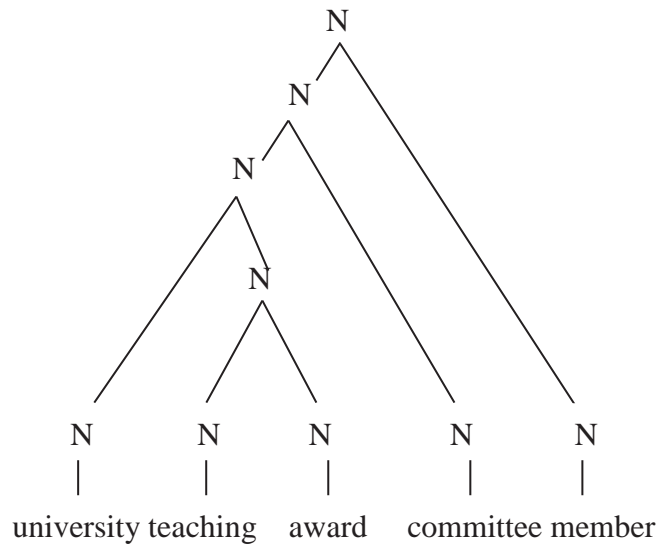
In a broad sense, a compound is a mixture of two different elements which results in a new unit. Nevertheless, this simple definition does not seem to be enough to explain the essence of such structures as there are some aspects in the compound structure that vary depending on the grammarian who defines them. More specifically, some authors differ in the number of units that can be comprised within a single compound; this is the case of Ingo Plag (2003: 133) who asserts that compounds are made of a total of two words in order to be considered as such. Following this definition, terms such as *Two Minutes Hate*¹ could not be included in Plag’s classification of compound words. However, the author is aware that there are instances of compounds which contain more than two words, comprising even five elements as *university teaching award committee member*. Nonetheless, in order to maintain his previous assertion, Plag (2003: 133) states that “it seems possible to analyze polymorphemic words as hierarchical structures involving binary subelements”. In order to illustrate this premise, he provides the bracketing and tree representations of compounds that contain more than two words as in (1):

(1)

- a. [[[university [teaching award]] committee] member]

¹ Example extracted from George Orwell’s novel *Nineteen Eighty-Four* (1949).

b.



Following the two hierarchical representations in (1a) and (1b), the elements of a compound would not be at the same grammatical level, but the first units (i.e. *university teaching award committee* in the first level) would somehow modify the main component (i.e. *member*).

It has to be taken into account that English is a very prolific language in terms of compounding, much more than other languages, such as Spanish –as it will be seen in the next sections–, and it is common to find many instances of compound structures, and also syntactical premodification complexity like that in (1). This can be explained by the phenomenon that Plag (2003: 134) calls *recursivity*, which is the feature that allows English to produce a relatively infinite number of constructions by embedding grammatical structures into others. The fact that English admits this type of recursive premodification eases the creation process of compounds, because they can be formed by adding units according to a hierarchical order, some embedded within the others, as illustrated in (1).

Based on Leonard’s study (1984), Ryder (1994: 4) observes that one of the most prolific means of lexical derivation in English is nominal compounding. In general, prepositions,

nouns, adjectives and verbs are feasible candidates to be the first element of a nominal compound.

This profuse level of productivity in compounds seems to be high in comparison with other languages –mainly Romance ones– as Spanish. For instance, in English we can express the same meaning that appears in one sentence like (2a) or (2c) in a shorter way as in (2b) without altering it.

- (2)
- (a) That chair is *made of wood*
 - (b) That is a *wooden* chair
 - (c) That is a *wood* chair

 - (d) La silla de madera
 - (e) *La silla madera
 - (f) *La madera silla

In examples (2b) and (2c), the possibility of premodification makes the language more flexible: an Adjective (*wooden*) + Noun (*chair*) compound or a Noun (*wood*) + Noun (*chair*) are two of the realizations chosen in English to express that an object is made of a certain material. This double possibility would not be considered in other languages, such as Spanish, being the only option the postmodification of the Noun with a Prepositional Phrase as in (2d) since examples (2e) and (2f) would result in ungrammatical structures.

At this point, and keeping in mind the idea of what a nominal compound is, it is necessary to mention some types of compound forms in English, i.e. to establish which grammatical categories can form a nominal compound, as illustrated in (3) according to the *Collins COBUILD English Grammar* (1990: 25-26):

- (3)
- (a) Adjective + Noun (A+N): *fast-food*
 - (b) Noun + Noun (N+N): *heart attack*

(c) Adverb + Noun (ADV+N): *then president*

(d) Noun + Prepositional phrase (N+PP): *brother-in-law*

This paper is only focused on one of the types of English nominal compounds, the N-N compounds as in (3b). As shown above in (2), the N-N combination is not very frequent in languages such as Spanish, so it would be an interesting area for comparing both English and Spanish grammars and how they differ in this type of structures at different linguistic levels. The English compounds that are produced by a combination of two nouns then will be described according to their semantic and syntactic properties in the next section.

2.1.1 SEMANTIC PROPERTIES OF ENGLISH N-N COMPOUNDS

The semantic properties of N-N compounds have been analysed, among others, by Nakov (2012: 22), who states that “the semantic interpretation of noun compounds is complicated by their heterogeneous nature.” From this semantic perspective, the relation between the two components of the structure depends on their meaning. In the same line, Rosario and Hearst (2001: 4) classify N-N compounds into some main semantic categories (with further subdivisions) dealing with the medical field, such as Characteristic, Procedure, Instrument, Topic, Purpose and Material. It has to be noted that these categories are only applied to the first element of the compound. For instance, the term *headache drugs* is an N-N compound in which the first element is classified as belonging to the Purpose category; so, that kind of drugs is used to alleviate the symptoms of headaches.

Thus, semantic properties will influence the potential interpretation of these English compounds. Even though Rosario and Hearst (2001: 4) included a wide range of semantic parameters to classify the first element (i.e. the premodifier) of the compound (wrong parse, subtype, activity/physical process, procedure, cause, characteristic, defect, person afflicted, attribute of clinical study, frequency, measure, instrument, object, purpose, topic, location, material and defect in location), for our study only three main categories are of interest:

- Characteristic: the first noun refers to the features of the head of the compound, as in *cell immunity*².
- Purpose: the first noun refers to the intended use of the head of the compound. An example is *headache drugs*.
- Position: the first noun specifies the place in which the head of the compound is located. E.g. *brain artery*.

The distinction between semantic categories seems to be relevant since depending on the classification of the premodifying element of the compound its meaning may vary. An example is given by Meyer (1993: 4) is shown in (4).

(4) *water car*

(a) Material: car made of water

(b) Purpose: car used to carry water

In (4) Meyer proposes a case of an ambiguous N-N compound, whose meaning is different in (4a) and (4b) according to different semantic interpretations of the premodifier. Thus, the semantic classification will be an aspect in the N-N compound study offered in this work.

2.1.2 PRAGMATIC PROPERTIES OF ENGLISH N-N COMPOUNDS

Before going any further, some considerations dealing with the classification of the different pragmatic properties of N-N compounds have to be taken into account. Ryder (1994: 8-11) proposes three different types of nominal compounds: deictic, novel and established compounds.

² Even though in this example the characteristic category mentioned in Rosario and Hearst (2001) may not be clearly seen in the premodifying element (it could be interpreted as a type of immunity with characteristics similar to those of cells), this classification will be described and carefully explained in the Methodology part (see section 4).

- Deictic compounds: as the name indicates, these are dependent on the context in which they appear. They are novel compounds produced in a specific moment during a discourse because it is required by the situation in order to transmit an idea, e.g. *detective duck* (referring to a duck dressed as a detective that is shown in a drawing, for instance).
- Novel compounds: the difference between this class and the previous one relies on the intended durability with which the new term is created. This type of compound aims to be permanent and be a referent unbound to the context where it is used. In short, they are aimed at being established compounds, e.g. the term *bike girl*, which was created to refer to a specific girl who left her bicycle in the vestibule of a high school, and that compound was consistently used since then in order to refer to that girl (Ryder 1994: 9).
- Established compounds: these are the compound words that have been accepted by the speech community, e.g. *raincoat*.

The ones that will be examined throughout this paper are the deictic and established ones, since what is interesting about our study is that it deals with the direct interpretation and its correspondent production of English compounds at a specific moment in which a speaker has to produce novel N-N compounds, and how speakers produce novel compounds to refer to specific elements dependable on a certain context, as well as if they are able to produce established compounds adequately.

2.1.3 SYNTACTIC PROPERTIES OF ENGLISH N-N COMPOUNDS

Regarding the syntactic properties of N-N compounds, Fabb (2001: 66-67) talks about two major classes of noun compounds: endocentric and exocentric. On the one hand, endocentric compounds (e.g. *iron sword*) are thought to have a head, so there is one main element and the other (usually the first one) modifies that noun. On the other hand, exocentric compounds do not have an element that is more important than the other, i.e.

a head, but they are understood as a kind of metaphor (two words are combined in order to refer to a different entity). An example of an exocentric compound is proposed by Bauer (2008: 6): *egghead*, which does not refer to a head with the shape of an egg, for instance, but to someone that is an intellectual.

The present study will deal with endocentric N-N compounds like *paper doll* or *lip piercing*, i.e. the first element is a modifier of the second one, which is the head of the compound, as will be discussed in the following sections.

In connection to this syntactic classification, the issue of directionality is usually related to N-N compounds as discussed by Piera (1995: 1), who considers it as closely related to the productivity of creating compounds in English. He proposes a theoretical approach to analyze directionality in N-N compounds relaying on bracketing, as illustrated in (5):

- (5)
- (a) [dog]
- (b) [police [dog]]

Taking (5) as an example, Piera (1995: 6) states that what constitutes the compound is the projection of the second element, and it defines the nature of the unit, as well. As can be seen from example (5), the order that English admits is the addition of another noun on the left of the second element (head) of the compound. That is the result of the presence of a single bracket on the left side.

The present section has shown exclusively the formation of English compounds, presenting some main semantic, pragmatic and syntactic properties regarding N-N compounds. The requirement of a clear semantic division together with the syntactic pattern in the directionality of the nouns in these compounds favors the correct interpretation of these structures, which will be taken into account in their production.

In order to contrast the structure of N-N compounds in English with that of N-N compounds in Spanish, in the next section, we will go into the Spanish realization of N-N compounds, introducing their semantic properties and syntactic realizations in this language.

2.2 THE COMPOUND STRUCTURE IN SPANISH

As stated above (see section 2.1), Spanish is a more analytic language where the order of the elements is relatively strict (Rodríguez 1993: 22) and so this type of N-N compounding may be less frequently found. Val (1999: 4757) asserts that composition is less productive in Romance languages, i.e. Spanish, than in Germanic ones, i.e. English. However, the realization of a compound in Spanish does not follow just one pattern. Compounding may involve the mixture between two words (e.g. *sacapuntas*) –sometimes with modifications (e.g. *pelirrojo*), the combination of some words (e.g. *fin de semana*), etc. This characteristic opposes the easiness of English in terms of creating new or novel terms, as it is the case of N-N compounds. In English, virtually every noun can be altered by adding another lexical category before it –including nouns.

The following sections will describe some of the main properties that can be found in Spanish N-N compounds, as this study also focuses on Spanish production, taking into account semantic and syntactic variables.

2.2.1 SEMANTIC PROPERTIES OF N-N COMPOUNDS IN SPANISH

According to Madrid Fernández (2000: 134), a semantic distinction, similar to the one previously explained in section 2.1.1, devoted to the semantic properties of English N-N compounds seems to be applicable to Spanish. However, some semantic categories established by Madrid Fernández are included below:

- Purpose: it denotes what the head of the compound is used for (e.g. *coche cama*).
- Material: it makes reference to the substance the first element is made of (e.g. *gota de lluvia* –a preposition has to be included since there is no other way to express it in Spanish).
- Similarity: close relationship between two elements (e.g. *pájaro-mosca*).
- Intensifiers: repeating the same word to reinforce one idea (e.g. *café-café*)

The need of creating such semantic classification seems to insinuate that differentiating the nature of the postmodifying element of the compound seems to be a factor when interpreting the whole structure, as it is with English.

2.2.2 SYNTACTIC PROPERTIES OF N-N COMPOUNDS IN SPANISH

As stated in section 1.1.2 Piera gives some light in the aspect of directionality in English, and he also does in Spanish. Piera (1995: 6) argues that, in Spanish, a noun cannot modify another noun by preceding it due to the existence of the [+/- word marker] feature (WM) and what he calls the Double Bracket Restriction. To exemplify his proposal, he proposes the term *perro policía*; if no directionality issues played a role in Romance languages –taking into account that modifiers tend to be at the right–, could the term *policía perro* be grammatical? The bracketing analysis that Piera uses to give an answer to this question is illustrated in (6):

(6)

(a) *~ [[perr]WM]

policía perro

(b) [[perr]WM] ~

perro policía

The reason why (6a) is not possible in Spanish is due to the brackets that are added to the original analysis derived from the Word Marker feature, that is the gender marker [o]. Whilst in English the word *dog* has simple bracketing, i.e. [dog], in Spanish double brackets are found, [[perr]o] in (6a), as the biological gender marker is present in this Romance language, because [[perr]a] (feminine) is also possible. These double brackets are at the beginning of the word, and that does not allow another word to be placed on its left side, so the new element has to be placed on the other side.

Fracassi (2013: 4), following Val Alvaro's model (1999), classifies the Spanish compound realization into two main types:

- Lexical or perfect compounds: those consisting of a single word and merging both nouns into one, as in *telaraña*. In some cases there is external inflexion, and the plural mark is added at the end of the word (*girasoles*).
- Syntagmatic or imperfect: this kind of compounds are formed by a complex noun phrase (e.g. *fin de semana*); postmodification is one of the frequent procedures to express semantic properties. For example, a table in the shape of a flower could be named in English as *flower table*, but in Spanish, the grammatical construction *mesa flor* would not be as effective as *mesa con forma de flor*. In addition, there is inner inflexion, as Fracassi (2013: 4) illustrates with the term *cartas bomba*. From this example one can expect these features to be included at the end of the head, which tends to be the first noun due to the Spanish directionality issue.

The present section has shown the most important semantic and syntactic properties of N-N compounds in Spanish, i.e. the semantic classification of the postmodifier of the compound and the directionality that is followed in order to create them. Nevertheless, the possibility of using an N-N compound to name an item in one language, e.g. English, does not mean that it will be produced as an N-N compound in another, e.g. Spanish. In the following section we will deal with the potential equivalents of English N-N compounds in Spanish, which are not always lexical but syntagmatic compounds.

2.3 SPANISH EQUIVALENTS OF ENGLISH N-N COMPOUNDS

Taking into account different possibilities of expressing an idea that can be simply formulated as an N-N compound in English, it can be concluded that an English N-N compound (e.g. *police car*) could follow four different realizations in Spanish:

- N-N compound: the compound structure could be maintained as a calque in Spanish (e.g. *police car* as *coche policía*).

- Postmodification with a Prepositional Phrase (PP): more productive than N-N compounds, according to Fracassi (2013: 37) (e.g. *coche de policía*).
- Adjectival postmodification: a postmodification of a noun with an Adjective Phrase (AP) instead of a PP (e.g. *coche policial*)³.
- Clause: a subordinate clause (usually a relative clause) is used to specify the content of the first noun of the English term. *Coche que usa la policía* could be a valid option to reproduce an N-N compound in English.

Rodríguez (1993: 21) states that English is a highly productive language when dealing with compound structures, unlike Spanish, in which the production of these forms is clearly lower if compared with other word formation methods. This fact introduces another consideration to bear in mind when facing compounds in these two languages: there are many established compounds in English whose equivalents are not compound forms in Spanish, but simple words (*raincoat = chubasquero*), or phrases (*hourglass = reloj de arena*), and vice versa; for example, the equivalent of the N-N compound *paraguas* is a simple word, *umbrella*.

Section 2.3 has illustrated the idea that both English and Spanish allow the same type of structures in order to name different items; nevertheless, the Germanic language seems to be more productive than the Romance one in terms of N-N compound creation, being this the main focus of this paper: the preference of native Spanish speakers to use this or other grammatical constructions in English and Spanish.

As it has been seen from the previous sections, many researchers have dealt with the topic of N-N compounds and their semantic and syntactic properties both in English and in Spanish. Their works will serve as our starting point to show the comparison of the production and interpretation of N-N compound structures in English and Spanish, taking into account the findings of these works as a prediction pattern for the preferable constructions that will be produced and understood by L1 Spanish L2 English speakers.

³ Although not frequently found as a compound in Spanish (it is more common *patrulla policial*), there is one case reported as the title of a movie from 2015.

In the next section, some works dealing with the topic on which this paper is based will be discussed.

3. SOME PREVIOUS STUDIES ON N-N PRODUCTION AND INTERPRETATION IN L2 ENGLISH ACQUISITION

As can be expected, many researchers have dealt with the production and interpretation of N-N compounds before, in English and in Spanish, and using a variety of participants. This section aims to look for both similitudes and differences reflected on some previous investigations that can be compared to the present study.

First, Licerias et al. (2002) proposes a study on the Spanish N-N compound production by L2 Spanish speakers. In their experiment, they used 68 learners of Spanish from Indo-European and Non-Indo-European background to carry out two main tasks based on pictures that induced the participants to produce N-N compounds. All in all, all the participants produced a high number of N-N compounds, which may be explained by their low exposure to the Romance language, in which the N-N compound structure is not as productive as in other languages (see section 2.2. in the present work).

Altelaarrea's (2013) study was aimed at analyzing the behavior of Spanish native speakers to the N-N compound structure in English, and it involved 30 adult participants divided into two main groups (English native speakers and Spanish native speakers learning English as their L2). The participants were tested by means of four tasks in English (naming, two multiple choice tasks, and translation) from which one of the main conclusions extracted was that both the Spanish and the English native participants preferred the N-N compound structure over the rest of possible grammatical constructions (followed by periphrastic structures, such as prepositional phrases), which might be explained by their high proficiency as L2 English learners. The explanation for the errors committed is the cross-linguistic influence from their L1 Spanish to their L2 English.

A similar study is carried out by Toquero (2016), whose dissertation focuses on the production, judgement and interpretation of English N-N compounds by Spanish learners of English (B2 and C2 levels). The participants carried out three tasks (production, force choice, and interpretation), and the research concluded that there was not a significant difference between the cited groups in terms of directionality, and that, as predicted, the

B2 level participants are more likely to select (force choice) than produce an N-N compound, but in terms of forms both groups performed similarly, producing a similar number of N-N compounds. In addition, as well as Altelaarrea (2013), the second most used structure was the prepositional phrase. Toquero concludes that, in this case, there is no cross-linguistic influence to be considered when dealing with productivity or directionality. This author also included the semantic aspect in his work using a different classification than the one adapted for this study, Krott et al. (2009); nevertheless, the semantic differentiation did not seem to be a factor when facing N-N compounds, since the participants did not follow different patterns.

So, what can be extracted from these works is the general ease to produce Spanish N-N compounds and, consequently the absence of significant cross-linguistic influence from the L1 Spanish to the L2 English.

After having dealt with a theoretical background of the most important aspects of this study and some external investigations that can be bared in mind, a more detailed description of the main objectives of our study will be presented in the following section.

4. OBJECTIVES OF THE STUDY

The major aim of this empirical study is to observe if there is cross-linguistic influence from the L1 of the participants, i.e. Spanish, to their L2, English, when they are understanding N-N compounds or have to produce them. This influence, which is expected to take place, would be observed in the formation of the English structures, e.g. if they prefer postmodification by means of a prepositional phrase instead of creating an N-N compound. The production of this structure in Spanish will also be taken into consideration to examine the productivity and understanding of the same N-N compounds in the participants' L1, comparing them with those in their L2. Thus, two main purposes can be differentiated, and, consequently be subject to formulate some research questions:

As for those research questions **regarding production in English of N-N compounds**, we have formulated the following:

1. If an L1 Spanish L2 English speaker is induced to produce an N-N compound, will they use premodification with APs, or postmodification with PPs or clauses instead of an N-N compound because the former are more frequent structures in Spanish (see section 2.2.)?
2. Will the higher competence in English mean the higher production of N-N compounds?
3. Will directionality be a cross-linguistic factor when producing an N-N compound in English?
4. Will the pragmatic classification of N-N compounds (i.e. deictic *versus* established; and the meaning of the premodifiers, see section 2.1.2) be a factor affecting the production of appropriate N-N compounds in English?
5. Will the semantic nature of premodifiers in N-N compounds (i.e. the semantic classification of the head in the N-N compound discussed in section 2.2.1) be a relevant factor when producing the English N-N compound?

As for the research questions in terms of their **interpretation of English N-N compounds**, the main research interest has to do with the behavior of the participants

when interpreting the meaning of N-N compounds through the production of their equivalents in their L1, so we are interested in finding an answer to the following questions:

6. Will the frequency of production of N-N compounds (higher in English than in Spanish) affect the interpretation of N-N compounds in Spanish? That is, the higher the competence in English, the higher the production of their N-N compound Spanish equivalents?
7. Will also the semantic classification used in this study be relevant for the interpretation of the N-N compounds produced in Spanish?

Thus, how these structures are interpreted and produced is the main concern of our work to shed light on the English compound structure interpretation by L2 speakers, trying to clarify if the knowledge on Spanish grammar as an L1 is really an influence when understanding and producing grammatical constructions as common and important as N-N compounds in English.

5. METHODOLOGY

Considering the research questions stated in section 4, a group of participants performed the specific tasks that were designed to elicit data and fulfill the aims of this empirical study in terms of production and interpretation of N-N compounds by L1 Spanish L2 English speakers.

5.1. PARTICIPANTS

L1 Spanish speakers –from 20 to 25 years old– were chosen as participants, being English their L2. This narrow range of age is due to academic reasons; an average student stops learning English when they finish high-school, i.e. 18 years old. However, some of them are still in contact with this foreign language if they want to improve it, travelling to English-speaking countries or, making English the center of their studies. So, in this study the proficiency level will be understood as higher in those participants who still receive input because of their still-going academic formation (group A), whilst those participants who are not receiving any kind of English input will have a poorer competence in English, being their L2 proficiency low. In this way, the language background and the participant's proficiency in English will be one of our variables of analysis, as table 1 shows.

These two groups, A and B, comprise a total of 30 subjects (15 people each) and were divided according to their current or past contact with the English language, respectively:

Table 1: Information about the participants of the experiment.

GROUP	Number of participants	Academic formation	Input in English
A	15	University	6 hours/day
B	15	High-School	None
Control	2	University	Daily
Total	32		

On the one hand, group A is formed by a total of 15 participants which currently receive a formation in English. They are students of English Studies at the University of Valladolid. On the other hand, another 15 participants constitute group B (5 non-students and 10 students); however, none of them receive English input.

A small control group made of 2 native Irish speakers was used so as to compare their N-N compound production with that of the L2 speakers. They are 21 and 25 years old and are studying at the Institute of Technology of Tallaght (ITT), Ireland, which was established in 1992, and which currently offers different formation courses going from humanities to science; nevertheless, the formation of these two participants is not related to the linguistic field. Their role was also to help improve the understanding of the drawings.

5.2.TASKS AND PROCEDURE

The 30 participants carried out a series of tasks to check their production of N-N compounds in English (L2) and the interpretation of the same compounds in Spanish (L1). In the production task, a picture of an entity (an object thought to be named with an N-N compound, e.g. a house with the shape of a mushroom –*mushroom house*) was presented to them so that they could name it. In the interpretation task (carried out some days later), the same pictures inducing the N-N compounds production in the first task were presented to the participants so that they provided the Spanish equivalent.

In order to conduct the study, empirical data was chosen as the best option, so the exercises were designed according to the need of participants to produce N-N compound structures and to provide Spanish equivalents of the same N-N structures. As to avoid any interference from the lack of vocabulary on the part of the participants, the vocabulary used in the different exercises was adapted to the proficiency of the participants who do not receive English input. In this way, all the groups of participants focused on the task instead of having to think about the meaning of each word they had to use.

Although both of the tasks were controlled (the participants had a visual referent, i.e. a picture, to produce or interpret a grammatical utterance), they had some freedom to produce the structure they wanted or interpret it using the realizations they wanted.

Both tasks comprise oral exercises which took place on different days (i.e. each participant was cited 5 or 6 days after they carried out the first task to do the second one), so that their choices in the first task would not influence their performance in the second one. The participants' answers were recorded, since aspects such as orthography were not interesting for the purposes of this dissertation, and their answers were instantly produced. These tasks test the participants' capacity of production of English N-N compounds and their interpretation through the formal realization in Spanish.

5.2.1. TASK 1

In the first task the participants were asked to look at series of 60 drawings and provide a name for each. Those 60 items⁴ contained 50 N-N compounds and 10 fillers (e.g. *knife* –see figure 1) in order to divert the attention of the participants from the real aim of the task, i.e. to produce N-N compounds. Regarding the compounds included, 25 were deictic (e.g. *pen cleaner* –see figure 2) and 25 were established (e.g. *arm tattoo* – see figure 3) to make sure that if they know how to produce an established compound (e.g. *toothbrush*), they should know how to produce a deictic one.



Figure 1



Figure 2



Figure 3

⁴ For the rest of images, see Appendix 1.

Within those groups of 25 drawings, 5 belonged to each of the semantic classifications applied to the premodifying elements of the N-N compounds. They correspond to the three categories established in section 2.1.1. and one extracted from section 2.2.1., which were used to create the different pictures for this task. After thinking about the different types of N-N compounds that could be found in English and Spanish, a category based on shape seemed to be missing in the semantic categorization of the premodifiers (see section 2.1.1). Thus, this study was based on a total of 5 semantic categories:

- Characteristic: *spider fox* (see figure 4), where the picture shows a fox with characteristics of a spider such as eight legs.
- Purpose: *hunting dog* (see figure 5), where the picture shows a dog pointing at an uncertain prey, and so, having the purpose of hunting.
- Position: *lip piercing* (see figure 6), where the picture shows a piercing penetrating a lip.
- Material: the first element of the compound is the substance that constitutes the object, as a *paper plane* (figure 7) to refer to a plane made of paper.
- Shape: the noun refers to the shape that the second element adopts. For instance, *butterfly book*, as seen in figure 8, where a book looks like a blue butterfly, not following the standard square shape of a book itself. In opposition to figure 4, the spider legs are understood as a characteristic and not as modifying the shape of the fox.



Figure 4



Figure 5

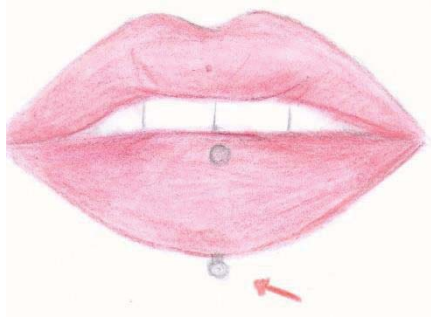


Figure 6

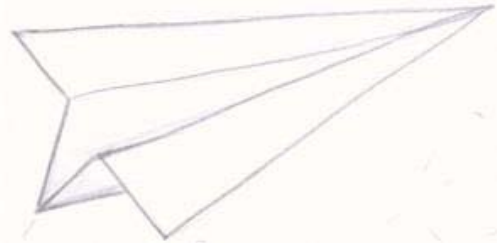


Figure 7



Figure 8

The different pictures in cards were facing down on a table, and, to successfully complete the task, the participants turned them one by one naming the item in English they saw by following the formula: *This is a...*

The aim of this task was to observe if the participants named the pictures by using an N-N compound or, by contrast, if they used a different type of lexical realization for the picture (i.e. PPs, APs, clauses) (as presented in research question 1 in section 4), and, at the same time, to determine if the level of linguistic competence in English affected their choice of using or not N-N compounds (research question 2). Finally, the importance of the role played by directionality (research question 3), as well as pragmatics (research question 4) and semantics (research question 5) to produce N-N compounds will be also determined at this stage.

5.2.2. TASK 2

For the second task, the same materials were used. The participants faced again the same 60 drawings; however, this time they were given instructions to name them in

Spanish. Again, the main purpose of the task was to determine the frequency of usage of N-N compounds in Spanish (research question 6), which was expected to be lower than in English, being other realizations (e.g. PPs, ANs or relative clauses) the ones preferred by the participants –as Altelarrea (2013) and Toquero (2016) had already stated (see section 3). As well as in task 1, the participants’ utterances will be analyzed from a semantic perspective to conclude if the semantic nature of the postmodifying element is relevant or not when deciding to use an N-N compound or other structures (research question 7).

Thus, the results of both tasks could be analyzed and compared later on in order to give final answers to the research questions on which this study is based.

6. ANALYSIS AND RESULTS

Once the English and Spanish production of the 30 participants was recorded and transcribed, the following variables were analyzed:

- the form of the production in English and Spanish (i.e. N-N compounds, AN, PP, clause, etc.);
- whether that form was the expected, or, on the contrary, if it was not (i.e. expected *versus* non-expected);
- the pragmatic aspect (established *versus* deictic);
- the directionality (appropriate *versus* non-appropriate);
- the correspondence between the forms in both languages (N-N compound in English *versus* N-N compounds in Spanish; N-N compounds in English *versus* ANs in Spanish; etc.);
- and the classification of the premodifier (in English)/postmodifier (in Spanish) according to the semantic category it belongs to (i.e. purpose, shape, etc.).

Thus, the study was conducted taking into account these variables of analysis that can be found in our database (our complete database is included in the CD attached to this dissertation).

6.1. RESEARCH QUESTIONS 1 AND 2

In the first research question, we focused our attention on the main concern of the study, i.e. the production of N-N⁵ compounds in English, asking ourselves if this construction would be preferred to name the items that were presented to the participants, or if other forms, such as ANs, PPs, clauses (CL) or other type of structures –i.e. Verb + N (VN), as in *jump boots*– would be used instead of compounding.

⁵ Grammatical constructions such as “heart-shaped lollipop” or “superhero phone case” were simply treated as N-N compounds.

For that purpose, table 2 shows all the forms produced by the 30 participants, being in general terms N-N compounds, nouns followed by PPs and ANs, the most used constructions.

Table 2: Participants' production according to the form (task 1).

GROUP	N-N	N + PP	AN	N + CL	VN	N	NA
A (750)	635 (84'66%)	52 (6'93%)	53 (7'06%)	6 (0'8%)	2 (0'26%)	0 (0%)	2 (0'26%)
B (750)	358 (47'73%)	361 (48'13%)	15 (2%)	9 (1'2%)	4 (0'53%)	3 (0'4%)	0 (0%)
TOTAL (1500)	993 (66'2%)	413 (27'53%)	68 (4'53%)	15 (1%)	6 (0'4%)	3 (0'2%)	2 (0'26%)

Paying attention to the production of N-N compounds, a higher use can be seen in group A –those who receive English input on a daily basis–, producing almost the total of the expected form. The second construction most used by group A is that of ANs, in a similar proportion to that of N+PPs; the rest of the forms (N+CL; VN; N; NA) just represent a 1'32% of the total English production of this group.

In contrast, group B has not even produced half of the N-N compounds that could have been created (47'73%), using N+PP in the same proportion (48'13%) in order to name the drawings that were shown to those 15 participants. The rest of the structures are used in a much lower proportion following a similar pattern to that of group A.

This means that being presented the same image, group A produce more N-N compounds than group B, which used in a similar proportion the N+PP structure, as presented in (7).

(7)

(a) Group A: cloud treasure (NN)

(b) Group B: treasure in a cloud (N+PP)

(c) Group A: butterfly book (NN)

(d) Group B: notebook with form of butterfly (N+PP)⁶

⁶ For the purpose of this dissertation, grammatical correctness was not taken into account as far as the structure was identified.

So, focusing on the total of the forms produced during task 1, we can say that N-N compounds were the most used construction among the rest (research question 1); however, a distinction should be made between group A and group B, since nominal compounding was preferred by the first one, but it was not for the latter (research question 2), being post modification with PPs the formula used in a similar proportion. Therefore, the competence level in the L2 is key factor when producing a higher or lower quantity of N-N compounds in English.

6.2. RESEARCH QUESTION 3

The third research question deals with the directionality issues that may arise from the production of N-N compounds. In table 3 the N-N compounds that were appropriately produced in English are shown (e.g. figure 12 interpreted as *bridge swing* and not *swing bridge*), so it can be stated that directionality is not a generalized problem for neither group A nor group B.

Table 3: Expected and non-expected N-N compounds in terms of directionality (task 1).

GROUP	EXPECTED	NON-EXPECTED
A	593 (93'3%)	42 (6'6%)
B	285 (79'6%)	73 (20'3%)

Looking at these numbers, we can see that group A is more likely to produce an appropriate N-N compound in their L2, so the level of competence leads to a difference in this variable as well. Nonetheless, the analysis of directionality cannot be complete unless we compare the English output with the production of the participants in their L1, i.e. Spanish. Table 4 shows the directionality pattern applied to the N-N compounds created by both groups in both languages (e.g. a comparison of the results from tasks 1 and 2 in terms of directionality) in order to find if there is a correspondence between an N-N compound production in English and an N-N compound production in Spanish.

Table 4: Correspondence regarding the directionality of English and Spanish N-N compounds (tasks 1 and 2).

GROUP	ENGLISH/SPANISH CORRESPONDENCE	ENGLISH/SPANISH NON-CORRESPONDENCE
A 131	108 (82'44%)	23 (17'55%)
B 93	65 (69'89%)	28 (30'10%)

Focusing on the results shown in table 4, the percentage of non-correspondence between English and Spanish N-N compounds is not high in neither of the groups of participants. 17'55% of N-N compounds produced by group A, although not high, may be non-expected due to interpreting factors rather than directionality factors; a similar reasoning could be applied to the percentage in the case of the group B (higher, 30'10%), because it looks like they have more problems with the interpretation (and maybe not the directionality) of some compounds. What we mean by problems with interpretation is illustrated in (8):

- (8)
- (a) mushroom house
 - (b) seta casa

 - (c) mushroom house
 - (d) casa champiñón

 - (e) house mushroom
 - (f) seta casa

Example (8) shows three different pairs of N-N compounds produced to name figure 1 (see appendix). In this way, there is a non-correspondence directionality between English and Spanish, i.e. (8a) and (8b), since the interpretation may not be the same in either language. That is, while *house* is the head of the English compound, *seta* is interpreted by the same participant as the head in the Spanish N-N compound, a lack of correspondence that would have the following implications:

- i) If (8a) and (8b) are produced, the interpretation of the N-N compound may not be the same in both languages, but one of them responds to the expected directionality (*house* is the head) and the other to the non-expected one (*seta* is the head);
- ii) If (8c) and (8d) are produced, they would represent the expected directionality in both languages (i.e. a house with the shape of a mushroom);
- iii) if (8e) and (8f) are produced, we can infer that even though they represent non-expected forms in terms of directionality, in terms of interpretation they are similar in both languages (i.e. a mushroom with the characteristics of a house).

Although the discussion of these implications would lead to a further interesting research, since they have been observed in few items and because of space limitations, we will only point them out as a condition that may affect the production of N-N compounds, but it will not be taken into consideration in our analysis.

6.3. RESEARCH QUESTION 4

The fourth research question accounts for the possibility of the pragmatic origin of the items being important when producing an English N-N compound. Table 5 shows the number of N-N compounds produced by both groups (expected and non-expected answers), as well as the amount of other grammatical forms used to refer to the items that were presented to the participants (non-app(licable)).

Table 5: Production of N-N compounds according to the pragmatic origin of the items (task 1).

GR.	DEICTIC (375)			ESTABLISHED (375)		
	EXPECTED	NON-EXPECTED	NON-APP	EXPECTED	NON-EXPECTED	NON-APP
A	285 (76%)	29 (7'7%)	61 (16'2%)	308 (82'1%)	13 (3'4%)	54 (14'4%)
B	143 (38'1%)	46 (12'2%)	168 (44'8%)	143 (38'1%)	27 (7'2%)	205 (54'6%)

Focusing on the forms produced by group A, the number of N-N compounds is notably higher with both deictic and established elements (83'7% and 85'5%) than any other grammatical construction (16'2% and 14'4%). Taking a closer look at the two pragmatic classifications, group A produced a higher amount of expected established N-N compounds (82'1%) than deictic ones (76%). Thus, there is a difference between the production of both pragmatic elements: this group is more likely to produce a correct N-N compound when dealing with established compounds. However, this contrast is not observed in group B. In this case, the number of N-N compounds produced (both expected and non-expected) is very similar to that of other constructions, being predominant the non-applicable parameter in both the deictic and the established categories. Although this group has produced the same number of expected N-N compounds in both pragmatic categories (38'1%), the amount of non-expected N-N compounds is higher when dealing with deictic elements (12'2%) than with established ones (7'2%).

Therefore, comparing the production of both groups in terms of non-expected N-N compounds, it seems that both groups have more problems with producing the expected directionality in the case of deictic compounds (7'7% and 12'2%, in groups A and B, respectively) rather than in the case of established ones (3'4% and 7'2%, in groups A and B, respectively).

6.4. RESEARCH QUESTION 5

The analysis of five categories to determine whether the semantic property of the first element of the English compound discussed in section 5.2.1 will help us to determine its production in terms of a possible semantic influencing factor. Table 6 provides basic information to determine the number of N-N compounds used to name the items belonging to each category (each of them includes a total of 150 elements per group).

Table 6: Grammatical forms according to the semantic classification of the premodifier (task 1).

GR.	SHAPE		MATERIAL		CHARACTERISTIC	
	N-N	OTHER	N-N	OTHER	N-N	OTHER
A	140 (93'33%)	10 (6'66%)	112 (74'66%)	38 (25'33%)	137 (91'33%)	13 (8'66%)
B	68 (45'33%)	82 (54'66%)	81 (54%)	69 (46%)	109 (72'66%)	41 (27'33%)

GR.	PURPOSE		POSITION	
	N-N	OTHER	N-N	OTHER
A	141 (94%)	9 (6%)	105 (70%)	45 (30%)
B	74 (49'33%)	76 (50'66%)	27 (18%)	123 (82%)

As seen from table 6, virtually all the semantic categories (shape, material, characteristic, and purpose) induce group A to produce a higher number of N-N compounds, with more than the 90% of compounds in each of them (the purpose category represents 70%). The same is not found in group B, where the difference is not so obvious, and where two categories (i.e. purpose and position) present a higher percentage of usage of other structures different from N-N compounds; especially noticeable in the position category, with just a 18% of N-N compounds.

Focusing on N-N production, characteristic is the semantic category in which both groups coincide to produce a remarkable number of N-N compounds, so we could consider this category as the most productive for the total of participants. Regarding the most problematic categories, group A has more difficulties with material N-N compounds (25% were not N-N compounds) and specially with position N-N compounds (30%); meanwhile, group B has problems with shape N-N compounds (54,6%) and, even more with the position category (82%). So, it seems that the position category implies a lower production of N-N compounds in both groups, mainly with those with less contact with English. From this, it can be concluded that it is when referring to the position of an element when participants tend to use other forms different from N-N compounds (mainly PPs), as in (9), where some instances of expected and non-applicable results for figure 10 (see appendix) can be seen.

(9)

(9a) Expect (N-N): *ear hat*

(9b) Non-app (PP): *beanie in the ear*

hat on the ear

ear with a hat

hat of ear

Deepening in the N-N compounds production, table 7 shows how both groups performed bearing in mind the semantic classification, comparing their actual production in terms of the expected *versus* non-expected directionality.

Table 7: Expected and non-expected N-N compounds according to the semantic classification of the premodifier (task 1).

GR.	SHAPE		MATERIAL		CHARACTERISTIC	
	EXPECTED	NON-EXPECTED	EXPECTED	NON-EXPECTED	EXPECTED	NON-EXPECTED
A	130 (92'85%)	10 (7'14%)	112 (100%)	0 (0%)	120 (87'59%)	17 (12'40%)
B	54 (79'41%)	14 (20'58%)	72 (88'88%)	9 (11'11%)	84 (77'06%)	25 (22'93%)

GR.	PURPOSE		POSITION	
	EXPECTED	NON-EXPECTED	EXPECTED	NON-EXPECTED
A	139 (98'58%)	2 (1'41%)	92 (87'61%)	13 (12'38%)
B	61 (82'43%)	13 (17'56%)	15 (55'55%)	12 (44'44%)

The most noteworthy aspect in group A is their perfect performance when dealing with material compounds, and the difference between expected (which show a higher percentage) and non-expected utterances is appreciable in all categories.

The perfection of group A's performance in material compounds cannot be found in group B, where even though the highest percentages are observed in the expected directionality in N-N compounds, it seems this group have difficulties with the position category, where the numbers are much more similar to the expected N-N compounds (44'44% *versus* 55'55%, respectively).

So, in general terms both groups of participants do not seem to have problems with directionality regarding the semantic categories of the N-N compounds, although the position category implies more chances to commit errors in directionality in the case of group B.

6.5. RESEARCH QUESTION 6

Research question 6 deals with the production of Spanish N-N compounds in task 2. Due to assertions like Val Álvaro's (1999: 4757), claiming the lower productivity of Spanish in terms of N-N compounds compared to that of English, in this study we also aim at verifying the tendency of Spanish L1 speakers to create more or less N-N compounds in their Spanish equivalents.

Table 8: Production of N-N compounds in English and Spanish (tasks 1 and 2).

GROUP	N-N (ENGLISH)	N-N (SPANISH)
A	635 (84'66%)	140 (18'66%)
B	358 (47'73%)	110 (14'66%)
TOTAL	993 (66'2%)	250 (16'66%)

In table 8 the number of N-N compounds produced in each language has been compiled. Looking at the total of N-N compounds in English, and bearing in mind that the total of items to name was 1500, 933 (66'2%) of them were produced by the 30 participants. That

number greatly differs from the amount found in the Spanish column. Out of 1500 items that could have been named with N-N compounds, only the 16'66% corresponds to that form. In addition, it is not remarkable the difference between groups in terms of their production in Spanish (18% vs. 14%) but it is in terms of their production in English (84% vs. 47%) so, it is evident that the higher the proficiency in English, the higher their production of N-N compounds in English, but not so high in Spanish.

The higher productivity of English when dealing with N-N compounds leads us to think about the role exerted by semantics in the production of such structures also in their Spanish equivalents, which is the purpose of the following analysis.

6.6. RESEARCH QUESTION 7

Regarding Spanish, the production of N-N compounds, as can be seen from table 9, is more similar between both groups (A and B) than it was in English, when naming in their L1 those 50 drawings that were shown to the participants.

Table 9: Grammatical forms according to the semantic classification of the postmodifier (task 2).

GR.	SHAPE		MATERIAL		CHARACTERISTIC	
	N-N	OTHER	N-N	OTHER	N-N	OTHER
A	32 (21'33%)	118 (78'66%)	0 (0%)	150 (100%)	90 (60%)	60 (40%)
B	15 (10%)	135 (90%)	0 (0%)	150 (100%)	87 (58%)	63 (42%)

GR.	PURPOSE		POSITION	
	N-N	OTHER	N-N	OTHER
A	9 (6%)	141 (94%)	9 (6%)	141 (94%)
B	6 (4%)	144 (96%)	2 (1'33%)	148 (98'66%)

When looking at the production of N-N compounds in Spanish, the semantic category based on characteristics leads the whole table with the highest percentages (60% in group A and 58% in group B) followed by far by the shape category (21% in group A and 10% in group B) representing the very low percentages of the other three classifications. In contrast to this, all the participants produced N+PPs when referring to the material the head of the compound was made of. As expected, none of them produced *mesa piedra* as a valid option, but *mesa de piedra*, since a PP is the only way one can refer to the substance of an object (see section 2.2.1). Purpose and position are another example of the poor production of N-N compounds; position, as well as in the results from task 1 (see section 6.4) represents a really low percentage in terms of N-N compounds, so the relation between the English and the Spanish results could be explained for the tendency in group B to use N+PP in English, being more evident when referring to the location of something, tending to produce it as they would in Spanish.

Consequently, material would not be a productive semantic category in terms of compounding in Spanish. N-N compounds based on characteristics, as a boy with bat ears and wings –*niño murciélago*–, is the preferred one by both groups, alongside with shape –e.g. *botella estrella* to describe a bottle with the shape of a star. In order to determine if the semantic category of the postmodifier of the compound was a factor to explain the results in table 9, table 10 focuses on the correctness of the N-N compounds produced by the participants in each category.

Table 10: Expected and non-expected N-N compounds according to the semantic classification of the postmodifier (task 2).

GR.	SHAPE		MATERIAL		CHARACTERISTIC	
	EXPECTED	NON-EXPECTED	EXPECTED	NON-EXPECTED	EXPECTED	NON-EXPECTED
A	27 (84'37%)	5 (15'62%)	0 (0%)	0 (0%)	86 (95'55%)	4 (4'44%)
B	13 (86'66%)	2 (13'33%)	0 (0%)	0 (0%)	81 (93'10%)	6 (6'89%)

GR.	PURPOSE		POSITION	
	EXPECTED	NON-EXPECTED	EXPECTED	NON-EXPECTED
A	9 (100%)	0 (0%)	3 (33'33%)	6 (66'66%)
B	6 (100%)	0 (0%)	2 (100%)	0 (0%)

By looking at this table, one realizes that purpose is the only category in which none of the groups provided a non-expected utterance. In contrast, the characteristic category conveys some of the best results with more than the 90% of accuracy in both groups, which is a really high percentage compared to the rest. In contrast with the mistakes made in the production of English N-N compounds, group B did not provide non-expected answers when referring to the position category; however, there are only two N-N compounds to analyze. This position classification seems more problematic for group A, who interpreted differently the head of the compound from the one it was intended. It can be deduced that purpose, characteristic and shape are the three semantic categories which do not seem to be a difficulty when interpreting N-N compounds in Spanish.

As a final remark in this section, it is worth mentioning that, even though this type of instances was not generalized, some of the semantic categories were changed by the participants. For example, some participants when facing a cup, instead of producing *iron cup* (material), opted to say *coffee cup* (purpose); but, again, these cases only represent a 1'86% of 1500 utterances.

This last section based on the results and the analysis of the output obtained from the English and Spanish tasks (covering all the aspects proposed in section 4) aims to provide a clearer insight on the production and interpretation of N-N compounds, highlighting the importance of the L2 proficiency, the linguistic transfer from an L1 to an L2 and some grammatical dimensions, such as syntax and directionality, pragmatics, and semantics.

7. CONCLUSION AND FURTHER RESEARCH

Having gone through all the research questions and the analysis of the production obtained from tasks 1 and 2, it is necessary to provide a global picture of the interpretation of the results derived from our detailed analysis.

First, a higher production of English N-N compounds was found in group A, concluding that the English proficiency is an actual factor to take into account (**research questions 1 and 2**). A higher knowledge on the language that is being learnt secures a better understanding of some common grammatical structures and makes possible to explain an idea in less words. This was also confirmed by Altelaarrea (2013) and Toquero (2016); the Spanish participants involved in their experiments produced a similar number of N-N compounds compared to the English speakers due to their high proficiency in their L2. On the contrary, a lower level in the L2 would make necessary for the learner to apply the patterns already known (L1) to the other language (i.e. cross-linguistic influence of the L1 over the L2). Related to this tendency we find the production of Spanish N-N compounds (**research question 6**). The frequency of production of this structure was significantly lower in Spanish than in English, due to the difference that exists between both languages regarding N-N compounds (see section 2.2); the participants do not find as easy to produce N-N compounds in Spanish as they do in English.

Concerning other grammatical forms used by the participants, and following the pattern observed in previous works about this topic –Altelaarrea (2009) and Toquero (2016)–, N+PP is the other most relevant one, so, if participants do not produce an N-N compound in their L2, they are more likely to use N+PP than any other structure, supporting also the results from previous studies.

This rooted knowledge on the L1, also influences the syntax of the compounds. Group B produced more easily structures similar to the Spanish ones, i.e. those in which the postmodifier is placed after the head of the compounds (e.g. *elephant fire-fighter* referring to *elefante bombero*), making use of this pattern instead of the correct one in English (e.g. *fire-fighter elephant*). Thus, cross-linguistic influence is found in terms of form because when producing an N-N compound in English, a relevant proportion of structures

correspond with PPs (followed by ANs), which is the form preferred in the Spanish production as well; however, according to the results in table 3, there is no cross-linguistic influence in terms of syntax (**research question 3**), because neither group A nor group B had significant difficulties with directionality, as Toquero (2016) found through his research. Nonetheless, even though none of the them showed significant problems with the directionality of the compound, there is a difference between these groups, since group B had more problems than group A.

Focusing on the pragmatic aspect of the items (i.e. pragmatic or established N-N compounds), the participants of group A (with a higher proficiency in English) easily create established N-N compounds, which explains their better performance in the deictic categories, that is, when they have to create a new compound. For group B participants performing accurately in both categories is more difficult, since they have not learnt the already established forms and so they seem to have more problems with the production of deictic compounds (**research question 4**). This results cannot be compared with the previous works mentioned in section 3, since those analysis do not involve pragmatics.

Regarding semantics (**research questions 5 and 7**), while the characteristic category is the most productive in terms of N-N compounds in both groups, position is not neither in English nor in Spanish. In the case of characteristic N-N compounds, most easily found and used in both languages, they did not mean a great challenge, and this is reflected even in the production of the expected directionality in the compounds. In contrast, position N-N compounds seem to be problematic in group A (the only one that produces them although in a low proportion), and this semantic factor seems to have an influence on the directionality of these compounds. Regarding this category [position], the most typical grammatical pattern in Spanish (N+PP) is also used in English (especially by group B), since making explicit the fact that an element is placed somewhere seems to be more natural for both groups of participants. This could be explained by the idea that location does not seem to be interpreted as an intrinsic quality of an object, so the participants may not recognize the item as a single unit or as a whole; hence, they do not tend to use an N-N compound in order to refer to it, and, in the case they use it, syntactic problems arise, pointing out to the fact that a semantic factor may have a certain influence on the

directionality problems in the production of English N-N compounds by Spanish speakers. This semantic analysis differs from the one found in Toquero (2016). According to his study, this factor did not play an important role, since there were no relevant differences in the production of N-N compounds depending on the semantic nature of the components.

Due to the broad spectrum on which this dissertation is based, further research related to the difference in the production and interpretation of N-N compounds in English and Spanish (or in other languages) could be carried out deepening into other aspects that may influence the use of such pattern, such as the distinction between animate and inanimate entities as the head of the compound (e.g. *mouse boy* vs. *mouse door*, animate vs. non-animate). From this perspective, the semantic scope of the N-N compound would be increased by adding new classifications, which may imply a factor to be taken into account when producing or interpreting these structures (i.e. would animacy in the head N or the premodifier N be an influencing factor?).

Other nuances that could be taken into consideration in further investigation would deal with the interpretation-directionality correspondence of N-N compounds in both languages, since in section 6.2. we could see a difficulty arising due to the lack of correspondence in English and Spanish in some items (i.e. *mushroom house* versus *house mushroom*, is it more a house with a mushroom shape or a mushroom used as a house?), which may or may not imply an incorrect N-N directionality between these languages.

All in all, the present work has aimed at suggesting new points of view through which the role of N-N compounds in two of the most prominent languages in the world, i.e. English and Spanish, could be elucidated; in a broad sense, its purpose has been to provide an effective understanding about the acquisition of the L2 and its potential influence on the L1, because, is this not one of the main purposes of comparative grammar?

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APPENDIX⁷

Deictic

- Shape



Figure 1

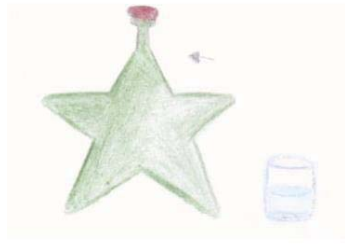


Figure 6



Figure 24



Figure 27

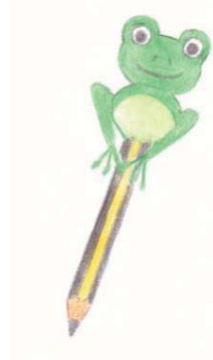


Figure 36

- Material



Figure 14

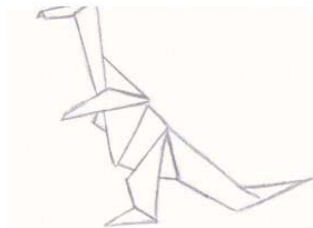


Figure 28

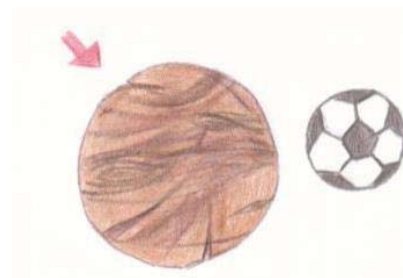


Figure 42

⁷ The numbers of the figures correspond to the number they are given in the Excel document found in the CD attached to this dissertation.



Figure 43

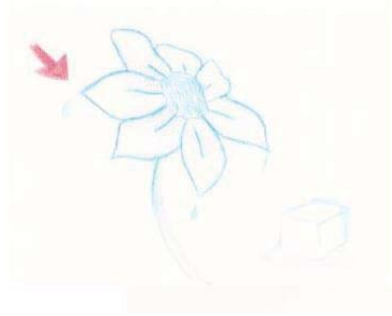


Figure 45

- **Characteristic**



Figure 7



Figure 22

Figure 30

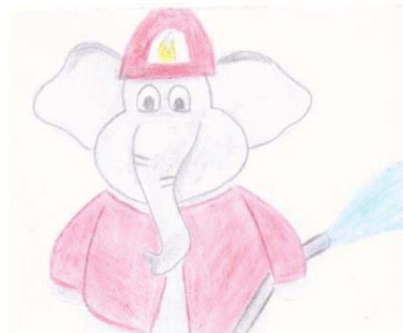


Figure 31



Figure 37

- Purpose



Figure 8



Figure 16



Figure 5



Figure 46



Figure 48

- Position



Figure 4



Figure 10

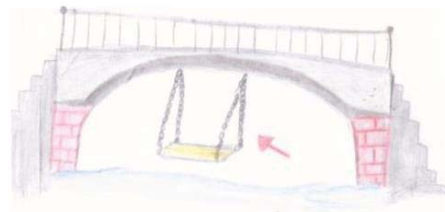


Figure 12



Figure 25



Figure 26

Established

- Shape



Figure 15



Figure 18



Figure 23



Figure 35

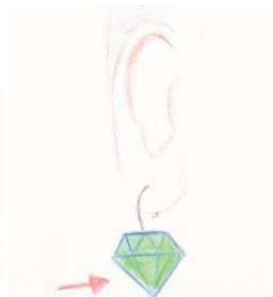


Figure 39

- **Material**

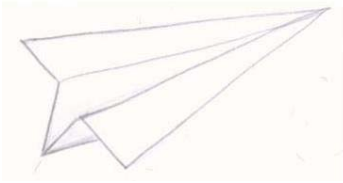


Figure 2



Figure 33



Figure 34

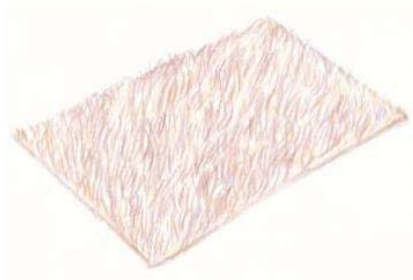


Figure 44

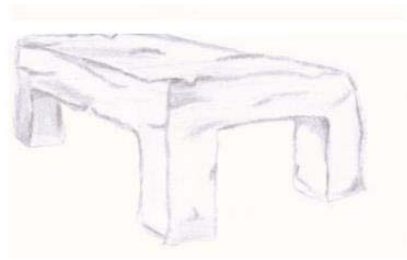


Figure 47

- **Characteristic**



Figure 9



Figure 11



Figure 29

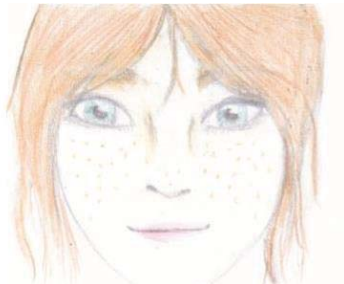


Figure 41



Figure 38

- Purpose



Figure 13

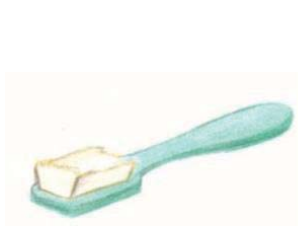


Figure 19

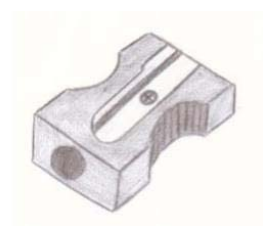


Figure 20



Figure 21

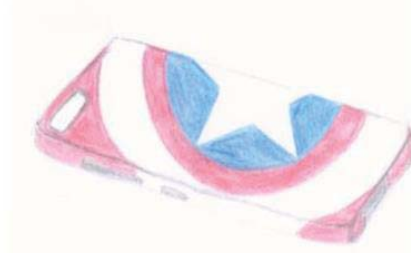


Figure 32

- Position

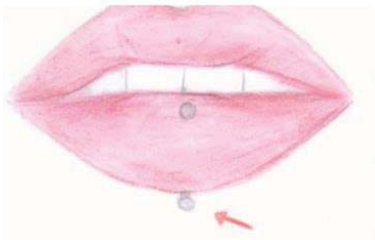


Figure 3



Figure 17

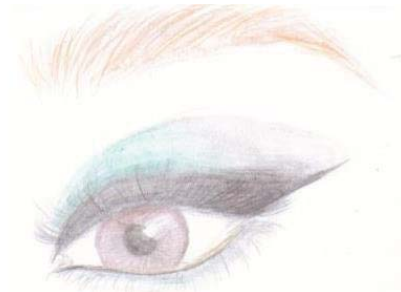


Figure 40



Figure 49

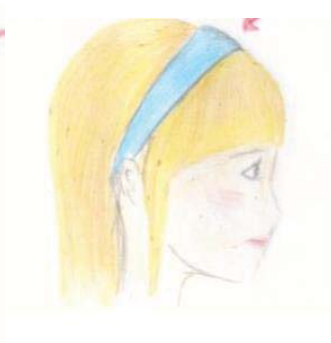


Figure 50

Fillers

