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Perspectivas actuales en la enseñanza y el aprendizaje de lenguas en contextos multiculturales

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Capítulo 14

Noun-noun compounds in a game task: what child data can tell us about teaching practices[1]

Los compuestos nominales en datos de producción semi-espontánea: lo que los datos del lenguaje infantil nos pueden decir sobre los métodos de instrucción

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Noun-noun compounds in a game task: what child data can tell us about teaching practices[1*]

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Abstract

The modification of a noun by another noun (e.g. *paper plane*) is not part of the English curriculum in Spanish schools. This is so in spite of the presence these structures have in the textbooks used both in the English subjects as well as in the content subjects taught in English. We have analyzed the noun-noun constructions (NN compounds) produced by L1 Spanish-L2 English children in order to address (i) the role of direct explicit instruction as opposed to indirect implicit instruction in the English classroom; and (ii) the effect length of exposure can have in native-like attainment in these cases. Four groups of participants have been considered: two groups that have been part of a 3-year teaching program involving explicit NN instruction (a 9-year-old group and an 11-year-old group); and the same two age groups following the regular instruction where NN modification is not explicitly addressed in the classroom. Participants were tested by means of a director-matcher task which prompted them to produce NN compounds. Results show that (i) explicit instruction has an effect and that this effect is positive in that not only a more native-like production is achieved but also a higher number of these structures do appear after the explicit instruction period; and (ii) length of exposure has a parallel effect but is accentuated when combined with explicit instruction. This has a double implication: explicit teaching of grammatical properties is effective and the productivity of English NN compounds is something that can actually be taught.

Keywords: Noun-noun compounds; Implicit and explicit instruction; Instructed second language learning

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Resumen

En los colegios españoles la modificación en inglés de un nombre por otro nombre (compuestos NN; p.ej. *paper plane*) no es parte habitual del currículum a pesar de la alta incidencia de estas estructuras en los libros de texto usados tanto en la asignatura de inglés como en las de contenido que se enseñan en inglés. Este estudio se centra en los compuestos NN producidos por niños L1 español-L2 inglés y persigue analizar (i) el papel de la instrucción explícita directa en contraposición a la instrucción implícita indirecta en la clase de inglés; y (ii) el efecto que el tiempo de exposición puede tener para alcanzar producciones gramaticales. Se estudian cuatro grupos de participantes: dos han recibido durante tres años un plan específico de instrucción explícita en compuestos NN (estudiantes de 9 y 11 años), y otros dos grupos de las mismas edades han seguido la instrucción habitual que no incluye la modificación NN. Se ha usado una tarea experimental semi-espontánea (*director-matcher*) que favorece la producción de compuestos NN. Los resultados muestran que (i) la instrucción explícita tiene un efecto positivo que implica un mayor índice de corrección gramatical tras el período de instrucción explícita; y (ii) el tiempo de exposición tiene un efecto paralelo, pero además se acentúa cuando se combina con la instrucción explícita. Estos resultados tienen una doble implicación: que la enseñanza explícita de ciertas propiedades gramaticales es efectiva y que, además, la productividad de los compuestos nominales en inglés es algo que efectivamente se puede enseñar.

Palabras claves: Compuestos nominales; Instrucción implícita/explícita; Aprendizaje de segunda lengua con instrucción

I Introduction: Does instruction matter?

Studies on English as a second language (L2) in instruction contexts have frequently addressed how the knowledge and final attainment of the L2 have been modulated by, among other issues, the type of instruction as well the length of exposure (Norris & Ortega, 2000). While a certain agreement has been reached in that the longer the exposure to the L2 the more proficient students become (Gathercole, 2002, 2016; Unsworth, 2016), the role played by instruction is still subject to much debate as so is its relation (if any) to length of exposure. To begin with, the term instruction has been redefined and further specified in that not only direct explicit instruction but also the so-called implicit instruction needs to be taken into consideration and analyzed separately (Goo et al., 2015; Norris & Ortega, 2000; Spada & Tomita, 2010). In addition, how instruction should actually be instantiated in the L2 English classroom/curriculum has also been a matter of concern for both researchers and teachers with the more communicative approach, that includes other sub-competences like sociolinguistic or grammatical ones, gaining ground over the pure grammar lessons (Groot, 1975; López Rama & Luque Agulló, 2012; Munby, 1978).

In the case of Spanish primary schools, L2 English explicit instruction typically targets differences between English and Spanish grammatical systems that could lead to non-native-like performance. A case in point is noun (N) modification where English (1a) favors pre-modification by adjectives (A), while Spanish (1b) shows a preference for post-modifying adjectives:

(1)	a.	big plane	A modifier + N head
	b	avión grande	N head + A modifier

However, pre-modification by nouns leading to the creation of NN compounds (2) is not typically part of the English curriculum, even if superficial similarities with adjective modification (1) arise:

(2)	a.	pirate ship	N modifier + N head
	b.	barco pirata	N head + N modifier

Even more so if we consider that English NN compounds (i) exhibit important differences when compared to Spanish NN compounds not only when it comes to word-order but also in terms of productivity; and (ii) involve a complex predicate construction that is shared by other similar (common and productive) constructions in English (e.g. adjective modification, phrasal verbs, resultatives; see Snyder, 2001). This makes English NN compounds a perfect candidate for the L2 English curriculum in that it is not only a productive structure in the language, but also a construction that can serve as the trigger for the teaching of other constructions that, although common in English,

are either not common or non-existent in Spanish (e.g. resultatives, double datives, phrasal verbs). However, this is not the case and so, although students are indirectly exposed to English NN compounds in the language they hear at school and in the text books they use, both the ones in the English subject and those in the content subjects, no direct instruction is done on these constructions. In the present study, we aim at exploring how instruction (both explicit and implicit) shapes the L2 English production of Spanish students in the case of English NN compounds with a view to determine (i) the role of (implicit and explicit) instruction and (ii) its interaction with length of exposure. This study will help shed further light on the characterization of instruction in general and of L2 English instruction in the Spanish primary school context in particular.

We start by outlining in section II the background of our investigation which includes a formal and empirical approach to both the study of NN compounds as well as the notion of instruction, as seen in previous works. Section III states the research methodology we followed: the participants we tested (4 groups divided in terms of the instruction program followed and the length of exposure to English), the task we used (a production task in the form of a game called the director-matcher task) and the variables we used to classify the data (total production, grammaticality, instruction type and length of exposure). Section III ends with the research questions that guided the data analysis and discussion that we present in section IV. Section V offers the conclusions we reached and points to further issues that could be addressed in subsequent work.

II Background

2.1. NN compounds

Formal and empirical analyses on NN compounds have examined the differences that appear across languages both in terms of the configuration these structures exhibit (e.g. directionality, productivity, recursivity), as well as in the use and interpretation different speakers with different linguistic profiles make when facing these structures.

Comparative studies such as those of Piera (1995) and Snyder (2001) pointed to two issues that are of special relevance for the present investigation: languages differ not only in the availability of NN compounds but also, when compounds are available, in the directionality and productivity these have in the language. To account for the first issue, Piera (1995) proposed the double bracket restriction to capture the differences that appear between languages like Spanish (3a), which are left-headed (i.e. the head of the compound is the N to the left), and languages like English (3b), which are right-headed (i.e. the head of the compound is the N the right):

(3) a. **[[**perr]o] policía
b. police **[**dog]

Based on Harris's (1991) seminal work, Piera (1995) argued that, in languages like Spanish (3a), a double bracket appears to the right of the N head (*perro*) because Ns incorporate a derivational constituent (*perr-*) and an inflectional constituent (*-o*). This double bracket bans adjunction to the left of the N and so modification has to go to the right (thus the N head appears to the left). Because English Ns incorporate no inflectional affix, no double bracket appears and modification can happen to the left (thus the N head appears to the right) (3b).

Snyder (2001) took a step further and argued that, as opposed to Spanish-like languages, English NN compounds are "interpreted compositionally in much the same way as syntactic phrases" (328) and that they are in fact a "product of syntactic derivation" (328). This involves that English NN compounds are broadly more flexible than Spanish NN compounds: they are not only interpreted in their original lexical sense, they are more productive and they are recursive. Because of their configuration as syntactic phrases, English NN compounds share similar grammatical properties to other also very productive constructions which are the result of productive root compounding and that Snyder refers to as complex predicates (e.g. phrasal verbs, resultative constructions, double object constructions). He tested his proposal both using a crosslinguistic comparison and by analyzing English monolingual acquisition data. He concluded that there is a strong evidence to consider English NN compounds as part of a group of predicates sharing a similar underlining representation (i.e. syntactic compounding) that differ from compounds in languages like French or Spanish where compounds are lexical and where these other related predicates are not productive if available at all (e.g. resultatives, phrasal verbs). This accounts, therefore, not only for the different formal representation of NN compounds in English and in Spanish but also for their different status in the language (as part of a broader group of structures in the case of English) and for the availability of other constructions in Spanish instead of the corresponding NN compounds in English (4):

(4)	a.	apple pie	= tarta de manzana	(N + prepositional phrase)
	b.	apple tree	= manzano	(single N)

These crosslinguistic differences have been explored in the case of bilingual acquisition data and for different language pairs, both considering simultaneous bilinguals (e.g. Foroodi-Nejad & Paradis, 2009; Krott et al., 2008; Kutsuki, 2019; Nicoladis, 2002, 2003a, 2003b; Onysko, 2016) and sequential bilinguals (e.g. Fernández Fuertes et al., 2008; Liceras & Díaz, 2001; Slabakova, 2002; Trías & Villanueva, 2013). These studies concluded that NN reversals (5b) appear in the production of these bilinguals and that these evidence crosslinguistic influence as a result of structural overlap and language dominance, in the case of simultaneous bilinguals, and transfer as a result of crosslinguistic differences and proficiency levels, in the case of sequential bilinguals:

(5) a. toilet paper
b. *paper toilet

However, to the best of our knowledge, no previous works have explored these differences in the classroom context and the consequences that instruction may have on the learning of English NN compounds. This type of approach can help complete the picture of how language properties are taught and learned in the L2 classroom and whether, in the case of English NN compounds, English-Spanish crosslinguistic differences can be overcome by L2 English L1 Spanish speakers. In order to address these issues, we have designed and implemented the study presented in the following sections.

2.2. Implicit and explicit instruction

The present study is framed in an educational context where English is learned as an L2. Instruction is present in such contexts, therefore, Instructed Second Language Acquisition (ISLA) as a subfield of L2 acquisition needs to be considered. ISLA has been defined as "any systematic attempt to enable or facilitate language learning by manipulating the mechanisms of learning and/or the conditions under which these occur" (Housen & Pierrard, 2005, p. 2).

In a controlled language learning situation, and establishing the focus on the learner, instruction could be defined as an external factor intending to influence in the internal aspect of a learner's knowledge of a particular language.

This view on instruction as something external to the learner makes instruction be often identified to teaching in that, in both cases, a series of actions are implemented by instructors, or teachers, in order to create a desired output in their learners (i.e. an increase in the learner's knowledge). Thus, learning as something internal to the learner is expected to occur after an external intervention.

As for types of instruction, it would be of the utmost importance for the present study to establish a clear distinction between different types of instruction. Ellis (2009) argued that instruction "implies an attempt to intervene in interlanguage development" (p. 16), and he distinguished between indirect (implicit by nature) and direct (both implicit and explicit) interventions. The indirect ones aim at an experiential learning of the L2, in a communicative way and by means of tasks, whereas direct ways are typically based on planned structural syllabi. Though not directly correlated, Ellis asserted that indirect and direct interventions can be related to the implicit and explicit distinction. Thus, we are interested in defining and distinguishing the two elements in this dichotomy.

The objective of implicit instruction is the incidental acquisition of language. It guides "learners to infer rules without awareness" (Ellis, 2009, p. 16). It is focused on meaning and based on input that

includes the target linguistic feature, presented in a way in which learners are not aware of it. As per DeKeyser (1995), an intervention is considered implicit when there are no directions or display of particular forms.

On the contrary, explicit forms of instruction aim at the language itself and at the learners' attention to particular forms. They try to provide learners with the knowledge to consciously transform language with rules (DeKeyser, 1995). It is a form focused language type of instruction, in which metalinguistic explanations and rules are presented overtly.

Housen and Pierrard (2005) discussed the characteristics of each type of instruction as follows. The target form aimed by implicit instruction is encouraged to be used freely, it is presented in context and spontaneously, learners' attention is attracted towards it, and communication with free use is fostered with the absence of metalanguage. Conversely, explicit instruction makes use of metalanguage for obtrusive explanation of linguistic rules that are presented in isolation with controlled practice and with the learners' attention directed to them.

Regarding the effectiveness of methods of intervention in foreign language teaching, a great variety of investigations have been carried out and classified in major research phases (Long, 1991). The initial moments involve comparative, large scale, studies comprising long periods of time, with a big number of participants, centering on the product (Scherer & Wertheimer, 1964; Smith, 1970), with reports of slight or none at all advantage of one method over others and with unclear outcomes since classroom practice was in general overlooked. In a second moment in the investigation of foreign language teaching based on data (Baily & Ochsner, 1983; Ulichny, 1989), smaller scale studies were carried out with the spotlight only in the processes of what actually happens inside the classroom, ignoring other relevant variables. The different results obtained by these experiments were difficult to be generalized, due to the smaller number of participants, but they created a common terminology to be used by investigators for further in research.

Later, experimental studies on the effectiveness of implicit versus explicit instruction emerged. In general terms, they exposed one group of students to one type of instruction (i.e. explicit) and another group to its counterpart (i.e. implicit), and then, the outcomes of each group were compared. (Doughty, 1991; Long, 1988; Robinson, 1996; Schmidt, 1995, among others). However, this distinction of implicit/explicit is not straightforward and without controversy, since studies operationalize it in very different ways, and in general terms, many of the studies investigating the effectiveness of this pairing tend to favor explicit over implicit methods (Ellis, 2009).

More recent studies, meta analyses in this case, have tried to answer the key question regarding the effectiveness of these two types of instruction. Thus, for instance, Norris and Ortega (2000) analyzed 49 cases of empirical studies carried out between the years 1980-1998 aiming at testing the effectiveness of L2 instruction. They concluded that L2 instruction is indeed positive and that explicit

forms of instruction were favored over implicit ones because their effects were durable in time. However, Norris and Ortega also pointed the limited generalization capacity due to the variability of the type of instruction used in the L2 environments under scrutiny. Goo et al. (2015) updated and recovered part of Norris and Ortega's meta-analysis, by reanalyzing 11 of their 49 studies and including 23 new ones, which were carried out between the years 1999-2011. Their findings still showed explicit instruction being favored over implicit instruction.

Similar results were found by Spada and Tomita (2010) in their study that focused not only on instruction type but also on the degree of complexity of the English grammatical features being taught. In the 41 studies under analysis, larger effect sizes of explicit over implicit intervention were found, regardless of the complexity of the rule at stake.

The way the implicit/explicit dimension has been tested in the literature is very diverse. For instance, in studies with adult participants, such as Green and Hetch (1992), participants were exposed to different grammatical rules and then were asked to identify what the mistake was, as one of the parts of the experiment. What may be appropriate for older participants with a broader metalinguistic knowledge, is not for the profile of the child participants of our study (see III.1).

To sum up, the intention of our investigation is to operationalize and test the implicit/explicit instruction distinction in our experiment insomuch that we intend to make explicit concrete language aspects of NN structures in English to part of the child participants of our study, and test if for the others it is actually learned from input, therefore in an implicit way.

The present study wants to contribute to the characterization of instruction as well as to this debate on the effectiveness of explicit instruction in a classroom experience. The focus is placed on the productivity and directionality of English NN compounds as produced by two different age groups of L1 Spanish L2 English learners.

III Methodology

3.1. Participants and experimental groups

Eighty-four L1 Spanish L2 English primary school students participated in this study. All of them were native speakers of Spanish who came from monolingual Spanish families and they studied English as an L2 in a non-immersion school in Valladolid (Spain).

They started learning English in the same institutional context at the age of 3 and were later incorporated to the so-called bilingual section model in their primary education stage. Bilingual sections are a very common educational model in Spain whereby a minimum of 2 and a maximum of 3 non-language subjects (or content subjects, as they are commonly referred to in this context) may be taught using a foreign language under the CLIL methodology (Content and Language Integrated Learning). These subjects cannot exceed 50% of the total amount of teaching sessions per week. In

the school where our participants came from, 3 of the content subjects are taught in English throughout the 6-year period in primary education: Social Science (in the first two grades; ages 6 to 7), and Natural Science and Arts (in all grades; ages 6 to 12). The students are also taught English as an L2 subject, starting in infant education (ages 3 to 6).

The 84 participants were divided into different groups in order to fit our research interests (Table 1). In particular, there were 2 groups depending on the type of instruction that they had received regarding English NN compounds: the non-instruction group and the instruction group; and 2 age groups depending on the length of exposure to English that they had had: the younger group (age 8; 5 years of exposure) and the older group (age 11; 8 years of exposure). These 2 issues (type of instruction and length of exposure) constituted our variables for the data analyses, together with NN compound productivity and grammaticality rates. Given the complexity of the instruction variable and the fact that it was a key issue in the present investigation, we provide a more detailed information in the following paragraphs.

Table 1. *Participant groups*

	non-instruction		instruction	
	younger	older	younger	older
N of participants	20	22	20	22
L2 exposure (in hours)	568.75	1023.75	568.75	1023.75

With regards to instruction, participants came from 2 groups depending on whether they had received or not explicit instruction on English NN compounds. Attending to the two instruction types presented in section II above (i.e. implicit and explicit instruction), both participant groups had been exposed to English NN compounds, as they appear in the materials they use in both the 3 content subjects and the English subject, in what constitutes implicit instruction. To the best of our knowledge, no previous works have actually addressed what to count as implicit instruction and how to do so. In a previous study on nominal modification, Gómez Garzarán (2017) provides a counting of the NNs that appear in the textbooks that are used in the school where all our child participants came from (Table 2):

Table 2. *NNs in primary school textbooks*

Subjects	NNs
Natural and Social Sciences	2,256
Arts & Crafts	340
English as an L2	3,925

Total	6,521

The counting in Table 2 comprises written input, since an attempt to do the same for oral input was difficult to operationalize. Data in Table 2 show that our participants were indeed exposed to NNs and, as per Krashen's (1982) comprehensible input, this could count as an instance of an implicit approach. In fact, input frequency has been said to affect the acquisition of vocabulary in the case of L1 children (e.g. Krott et al., 2008). Therefore, we took these data in Table 2 as an indication of the implicit input these children were exposed to when it comes to English NN compounds.

As for explicit instruction, a 2-and-a-half-year NN teaching program was implemented only for the instruction group. The non-instruction group, therefore, did not receive any explicit instruction in this respect. The NN teaching program was specifically designed to address the role (if any) played by explicit instruction and was clearly directed to the target form (i.e. English NN compounds). Under Housen and Pierrard's (2005) proposal, such program was predetermined and planned beforehand, obtrusive, and it included controlled practice and presented the target forms in isolation, as will be explained next. Furthermore, and given the young age of some the participants, some adaptation of the specific grammatical terminology and the corresponding explanation was implemented for the duration of the NN teaching program (see the "*1-2 importance rule*" below).

The NN teaching program comprised a series of varied activities and interventions. Due to space limitations, we present here the following 2 activities: "*What is an N+N?*" and "*1-2 importance rule".* The first activity was meant as an introduction to the concept and interpretation of English NN compounds, while the second activity focused on the directionality of NN compounds and is, in fact, a constant practice that was followed throughout the whole duration of the NN teaching program. The "*What is an N+N?*" activity is an interpretation task which involves the explanation of what an NN compound such as *paper plane* actually means. Definition-like explanations such as the following are used: "if we have a plane that is made out of paper, we describe this type of plane as a *paper plane*". This activity was carried out for one full session (1 hour), using different examples and with the aid of visual cues. The second activity, the "*1-2 importance rule*" involved an interpretation task focused on the specific word order between the two Ns in the NN compound and on how this differs from the order (and sometimes even the whole term) these constructions have in the participants' L1 (i.e. Spanish) (see examples 2a and 2b above). The activity was implemented as follows: every time an NN appeared contextualized in the textbook, the teacher wrote the NN on the blackboard and numbered the 2 Ns in the compound. Number 2 was written above the last N of the NN compound and number 1 above the first N. An explanation such as the following was used by the teacher: "when we want to understand what words like *rain coat* mean, we always have to pay attention first to word number 2 (*coat*), and then to word number 1 (*rain*). So a *rain coat* is a coat that we use to protect

ourselves from the rain. We are describing a type of coat, and not the rain". A note as to how these compounds are differently expressed in Spanish was also made (as in examples 2, 3, and 4 above). In order for the participants to be aware of crosslinguistic differences as explicitly as possible and as part of the instruction program, differences between English and Spanish were constantly pointed out, especially in terms of directionality but also when it came to productivity.

Participants were administered the *Cambridge Young Learners Exams* of the corresponding age levels (*Starters* and *Movers*), a common practice followed in the school to make groups as homogeneous as possible. When comparing across instruction groups in terms of proficiency, no significant differences emerged, neither in the younger groups between the non-instruction group and the instruction group (U=1.433, p=.1517, ξ=0.22) nor in the older groups between the non-instruction and the instruction group (U=0.492, p=.622, ξ=0.07). In both cases the effect size was small. For the present investigation, all these variables were, therefore, controlled for in order to have comparable and similar groups, except for the instruction variable.

As for L2 exposure, the calculation was done as follows. Participants received 6.5 hours per week of input in English on average (6 to 7 hours, depending on the grade), including both the content subjects and the language subject. This made a total amount of approximately 227.5 hours of English input per year, considering that the average number of weeks in an academic year is 35 (175 days). Since testing took place around halfway of the academic year, the amount that appears in Table 1 was consequently adjusted. Out-of-school exposure to English was not controlled for but no English immersion activities and no stays in an English-speaking country were done by the participants.

All participants were taught by the same teacher both in the content and in the language subjects, making use of the same textbooks and following the same teaching practices, except for the specific NN teaching program that only the instruction group followed.

3.2. The data elicitation procedure: the director-matcher task

For the present study, participants were tested by means of a director-matcher task (DMT) that prompted the production of NN compounds. The DMT is an oral production task used to elicit semi-spontaneous data and is presented as a board game. It is a referential communication task with two distinct roles for the participants involved: the *director* and the *matcher* (Schober, 1995; Yule, 1997). The DMT was originally designed as a toy task by Schober (1995) and we used the adaptation for children done by Chavez Verdezoto (2017), which we further adapted to test NN structures. Previous works using a similar toy task have focused on other grammatical properties and structures (e.g. Alferink & Gullberg, 2014; Arbuckle et al., 2000; Chavez Verdezoto, 2017; Gullberg et al., 2009; Parafita Couto et al., 2015).

In the NN DMT, the role of the director was played by the child participant, and that of the matcher by the investigator (acting as an L1 English speaker). The whole game was conducted entirely in English. The DMT was presented to the participants as a board game (Figure 1) called *Name it* that they would play together with a person who can only speak English.

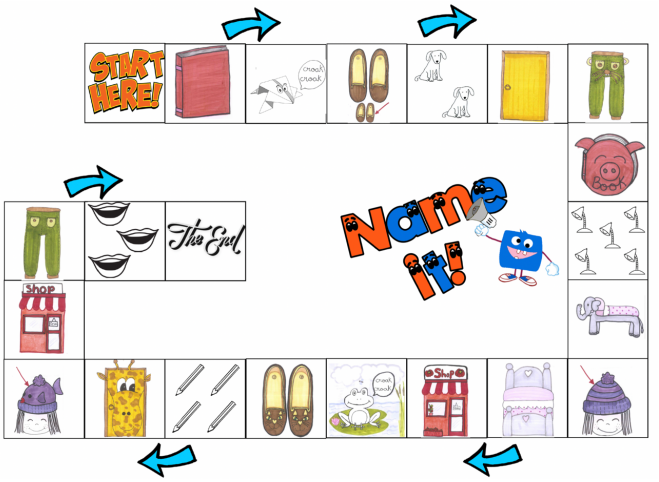

Figure 1. *Director's board for the task*

During the development of the task, the director was instructed, as part of the game play, to uncover, one by one, a set of picture cards placed on his/her board and to give instructions to the matcher, whose empty board could not be seen by the director due to a physical barrier (as in Eisenbeiss, 2010). The matcher had to find the right card among the set of cards and place it on his/her board in the same spot it occupied in the director's board. The objective of the game was for both director and matcher to have the cards ordered in the same way in their corresponding boards.

In order for the director to find the correct card, the participant had to briefly describe the picture in the card, a picture that in some cases (see below) represented the target structure under analysis, that is an NN. The cards in the game were specifically designed so that they constituted pairs of very similar pictures (Figure 2) in which one had to be necessarily named with an NN. For instance, there were two cards containing pictures of pink books, but one of the books had the shape of a pig. In order to secure the production of an NN, participants were explained that the game, whose intentional name was *Name it*, consisted in naming the different pictures with as few words as possible (the fewer, the better, and always trying to use only two words). This way, we expected to get "pig book" for the alternative experimental item corresponding to the pink book pair. If the item appearing first was the one intended to be named with an NN, and the director named it just with an adjective-noun structure (i.e. pink book), the matcher would need say that he/she had two of those, and would inquire for an alternative name or further information, urging the director to produce the expected NN (i.e. pig book).

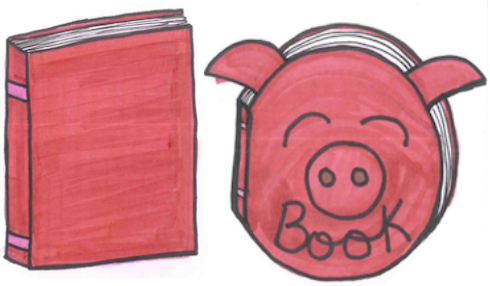

Figure 2. *Experimental item: pink book pair*

A pilot study for the task was carried out before testing the final participants, with the aim of assessing the validity of the items and the corresponding pictures selected. The objective was to ascertain that the production of NNs would be the most obvious choice for the participants. In the pilot study we tested both L1 English and L2 English adults and also L2 children.

The actual task was preceded by a warming-up session, following the recommendations in the bibliography when testing young children (e.g. Blom & Unsworth, 2010; Gass & Mackey, 2007), and an explanation of the workings of the task to both the director and the matcher together. As part of the warming-up session, the teacher acted as an usher to get the participants acquainted with the investigator-matcher.

The task consisted of 20 items as follows: 8 experimental items (6a), 8 distractor items which represented adjective-noun combinations (6b) and 4 filler items representing a noun in the plural (6c). The experimental and distractor items were in fact pairs (see Figure 2 above) in which the adjective in the adjective-noun pair involved the color of the corresponding NN pair.

(6) a. (purple) elephant bed
b. purple bed
c. five lamps

All sessions were audio recorded and transcribed for analysis.

3.3. Research questions

The study explored the nature and the impact L2 English instruction has in the Spanish primary school context and focused on English NN compounds. In particular, it sought to provide an answer to the following 2 research questions taking as a point of departure previous work on instruction and NN compounds (see section II) and using the methodology presented in the preceding sub-sections:

1. Is instruction effective and, in particular, how does direct explicit instruction impacts on the knowledge L2 speakers have of English NN compounds? In order to address this question, we compared the experimental production of two groups of L2 English primary students: the instruction group who had received explicit instruction on English NN formation throughout a 2-and-a-half-year teaching program specifically designed and implemented to make the Spanish students aware of both the properties and productivity of these constructions in English when compared to Spanish; and the non-instruction group who was not part of the NN compound teaching program but rather followed the traditional English curriculum in which no direct mention of NN compounds was provided. Both groups shared a similar exposure to NN compounds through indirect instruction in that the same text books were used both in the instruction and the non-instruction group in all subjects (English and content subjects) and the same teacher was involved in the teaching process as part of the same school program. Therefore, indirect exposure to English NN compounds through oral input as well as interaction with the teachers and through text books made both groups alike. What indeed made them differ was their exposure to direct explicit instruction to English NN compounds. This involves that a difference between the groups in both the NN production rate and the grammaticality rate (i.e. lack of reversals) on the part of the instruction group could be attributed to the effect of the NN teaching program, that is, to explicit instruction.

2. Does length of exposure to L2 English have a similar or parallel effect as explicit instruction? In order to address this question, we compared the two age groups within each participant group (i.e. instruction and non-instruction): the 8-year old group (the younger group) versus the 11-year old (the older group). The two age groups shared the same teaching program (instruction in the case of the instruction group and non-instruction in the case of the non-instruction group) so what made them different was the length of exposure to L2 English they had received in that the older group had been exposed to L2 English in the classroom context for longer than the younger group. The increase in the length of exposure should result, in principle, in a higher NN production rate and in a higher grammaticality rate and this would be so for both the instruction and the non-instruction groups. A comparison in terms of age across instruction groups could yield interesting results as to how length of exposure and instruction interact in the case of NN compound production. That is, the combination of explicit instruction and age could bootstrap production and this would be seen especially in the case of the older instruction group.

The answer to these 2 questions contributes to the characterization of instruction and broadens our knowledge of the impact direct instruction may have and how it interacts with other issues related to the teaching of English as a L2 such as length of exposure to the L2.

III Results and discussion

The analysis of the NN compounds produced by our participants as obtained through the NN DMT is presented next. We articulated the analysis in terms of, first, the role played by instruction and, second, the role played by length of exposure to L2 English.

Participants produced a total of 735 NN compounds. The NNs produced by the 2 groups (the instruction and the non-instruction group) appear in Table 3:

Table 3. *English NN compound production: instruction*

	Total NNs produced				Correct NNs produced			
	#	Mean	SD	%	#	Mean	SD	%
Non-instruction	357	8.50	2.94	48.57	268	6.38	3.61	75.07
Instruction	378	9.00	1.86	51.43	312	7.43	2.73	82.54
Total	735			100	477			100

Data were classified in terms of NNs produced (production) and correct NNs produced (grammaticality) for each of the variables under consideration: type of instruction and length of exposure.

In what follows, statistical analyses in terms of proportions were made given the nature of the data. As these were free production data, proportions rather than the actual number of instances produced ensure that comparisons between groups can be made. A robust test (Yuen test) with trimmed means at 0.2 was used as per the lack of homogeneity of variance and normal distribution.

No differences across the 2 instructions groups appeared in terms of their overall production of NN constructions (t=0.19, df=47.98, p>.001, ξ=0.04). However, significant differences were found when comparing the grammatical (i.e. correct) NNs produced by each instruction group (t=2.91, df=32.06, p<.001, ξ=0.65).

When comparing between grammatical and ungrammatical NNs, significant differences appeared both in the instruction group (t=21.70, df=25, p<.001, ξ=0.94) and in the non-instruction group (t=5.54, df=25, p<.001, ξ=0.7), with a higher proportion of grammatical NNs being produced.

Table 4 shows a break-down of the data in terms of the 2 age groups (i.e. age in the sense of length of exposure):

Table 4. *English NN compound production: length of exposure*

Non-instruction		Instruction	
younger	older	younger	older

Total NNs				
#	150	207	169	209
mean	7.50	9.40	8.45	9.50
SD	2.39	3.14	1.27	2.17
%	42.02	57.98	44.71	55.29
Correct NNs*				
#	89	179	143	169
mean	4.45	8.13	7.15	7.68
SD	2.81	3.38	2.71	2.78
%	59.33	86.47	84.62	80.86

*Percentages are calculated in each case out of the total number of NNs produced by each age group.

Considering the overall NN production, a two-way factorial ANOVA with age and instruction as factors showed no effect of either the interaction between age and instruction ($F_{(1,80)}$=.692, p>.05, η^2=0.008) or main effect of instruction alone ($F_{(1,80)}$=.940, p>.05, η^2=0.011). However, there was a main effect of age alone ($F_{(1,80)}$=8.212, p<.05, η^2=0.09). When comparing NN correct production across groups by the same statistical model, an effect was found both in the case of the interaction between age and instruction ($F_{(1,80)}$= 4.172, p<.05, η^2=0.05) as well as in the case of instruction ($F_{(1,80)}$=4.203, p<.05, η^2=0.04) and age ($F_{(1,80)}$= 4.916, p<.05, η^2=0.05).

Comparisons between age groups (i.e. in terms of length of exposure) in the production of correct NNs yielded the following results where a Tukey p-value adjustment was used (see Figure 3): within the instruction group, older participants did not outperform younger participants (p=0.999), while in the non-instruction group older participants did outperform younger participants (p=0.017).

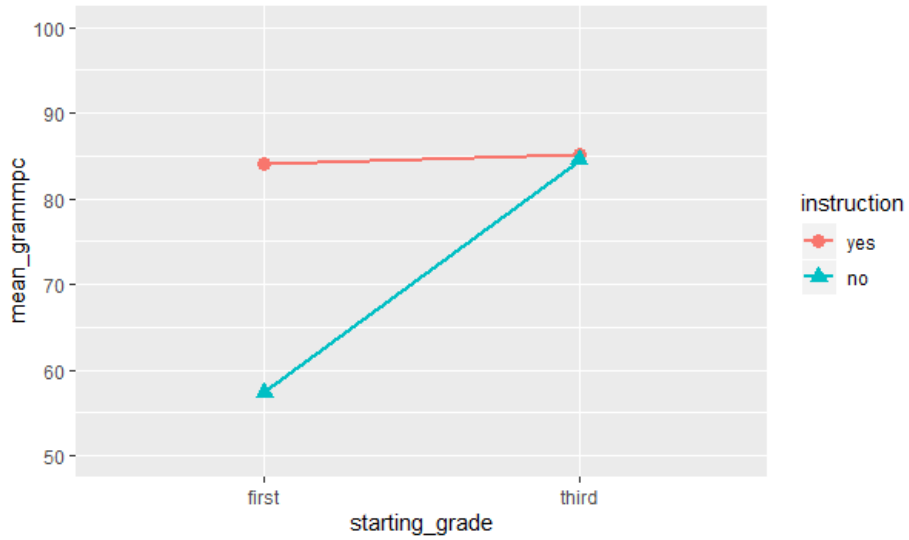

Figure 3. *Grammaticality rates across age in the 2 instruction groups*

While differences appeared between the two younger groups (instruction versus non-instruction) (p=0.024), these were not found between the older groups (p=0.999).

These results suggest that instruction is indeed effective (research question 1) in that the instruction group outperformed the non-instruction group when producing grammatically correct English NN compounds. It seems that the instruction program implemented for 2-and-a-half years for the 2 instruction groups (i.e. younger and older groups) helped them to set the directionality of NN compounds in the reversed order when compared to their L1 (i.e. Spanish).

As for length of exposure to L2 English (research question 2), it did make a difference in the case of the non-instruction groups with older participants having a higher grammaticality rate. However, no such difference was found in the case of the instruction groups in that no differences appeared between younger and older participants. This was expected in that both age groups had been exposed to the NN teaching program for the same amount of time (2 and a half years). Therefore, these results suggest that it is not length of exposure per se but rather explicit instruction what is behind the higher grammaticality rate. Thus, direct explicit instruction impacts on the knowledge L2 speakers have of English NN compounds. Furthermore, and even if the 2 older groups exhibited high grammaticality rates, the instruction group showed a higher degree of homogeneity (Figure 4).

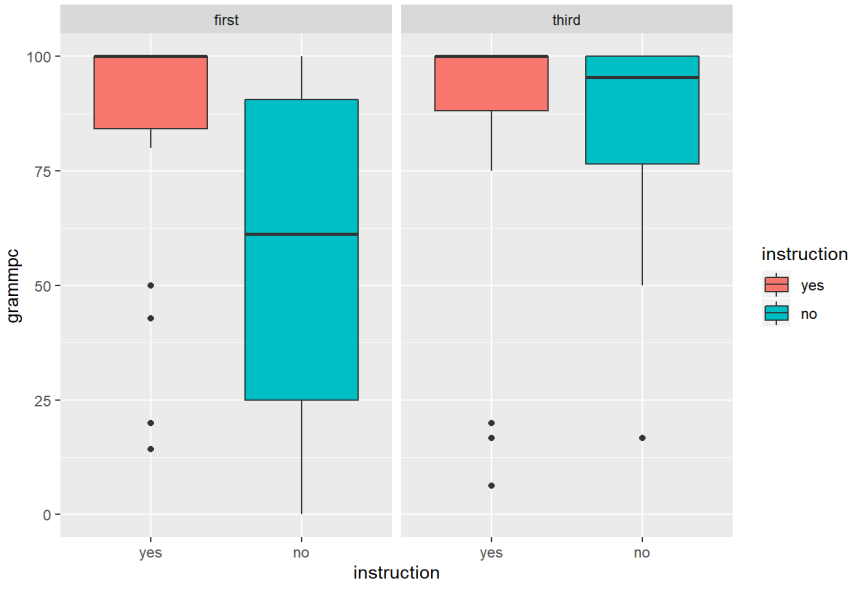

Figure 4. *Distribution of grammaticality rates across age in the 2 instruction groups*

Our investigation is in line with previous studies that point to direct explicit instruction being more effective and having a higher incidence in the overall native-like behavior than implicit instruction (Goo et al., 2015; Norris & Ortega, 2000; Spada & Tomita, 2010).

In the case of production, no actual differences between the amount of NNs produced by the instruction and the non-instruction group appeared, a fact that we attribute to the nature of the task itself.

IV Conclusions

Previous studies exploring the role of instruction have pointed out that explicit instruction is indeed an effective method to attain native-like performance (Goo et al., 2015; Norris & Ortega, 2000; Spada & Tomita, 2010). In the present investigation we focused on English NN compounds as produced by L2 child learners with Spanish as an L1. The participant group receiving direct explicit instruction on NN compounds for a 2-and-a-half period showed better results in the NN director-matcher task and this was so both in the younger and in the older group. The non-instruction group only reached the instruction group level after longer exposure (i.e. the older group). We attribute this fact to the effect of instruction and not so much a matter of length of exposure given that both age groups showed similar results in the instruction group despite the 3 more years of exposure to English received by the older group compared to the younger group. These results point to the effective role of explicit instruction and, specifically, to how focalizing grammatical properties in the L2 can actually have a direct impact on students' L2 performance. In future work, it is our intention to look into other related structures, such as adjective-noun combinations, to determine whether the advancement on NN performance is actually transferred to other similar predicates, in the spirit of Snyder (2001).

Although a difference in grammaticality appeared across instruction groups, no such difference was found in the case of production. In fact, both groups (the instruction and the non-instruction group) produce a similar NN rate. Given that the task not only favored but was directly contingent on the production of an NN construction, we do not consider this an odd outcome. Further work using a free production task where the production of NN compounds is not so much determined by the nature of the task itself could help shed light in this matter.

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