THE ACQUISITION OF DIFFERENTIAL OBJECT MARKING IN L2 SPANISH LEARNERS

BY

ALYSSA MARIE MARTOCCIO

DISSERTATION

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Doctoral Committee:

Professor Silvina Montrul, chair and co-director of research
Associate Professor Melissa Bowles, co-director of research
Associate Professor Diane Musumeci
Associate Professor Karlos Arregi, University of Chicago
ABSTRACT

This dissertation tests a grammatical structure, differential object marking (DOM), which is particularly difficult for L2 learners to acquire. DOM is a phenomenon in which some direct objects are morphologically marked to distinguish them from subjects (Comrie, 1979). In Spanish, animate and specific direct objects are marked with the preposition ‘a,’ as in Juan ve a María ‘Juan sees DOM María.’ DOM in Spanish has been found to be problematic for second language (L2) learners whose first language is English, with errors persisting after instructional intervention including positive and/or negative evidence (Bowles & Montrul, 2008; Bowles & Montrul, 2009a; Farley & McCollam, 2004; Guijarro-Fuentes & Marinis, 2007; Wiebe, 2004). Structures such as DOM in Spanish are not acquired quickly by L2 learners, and as such this structure is ideal for testing learners who have some prior knowledge of a structure, but who still make errors on the structure. This was the primary purpose of the current study.

One way to improve learner acquisition of difficult structures is by increasing their awareness of these structures. The noticing hypothesis (Schmidt 1990, 1993, 1995, among others), maintains that noticing is necessary to learn target forms. Several studies have tested the noticing hypothesis using think-aloud protocols, in which participants speak their thoughts aloud while carrying out a task. These studies have found that in general higher levels of awareness correlate with increased acquisition of targeted forms (Alanen, 1995; Leow, 1997a, 1998a, 2001a, 2001b; Rosa & O’Neill, 1999). One way to increase awareness of grammatical structures in SLA is through explicit instruction and feedback, which have both generally been found to be effective (Li, 2010; Norris & Ortega, 2001; Russell & Spada, 2006; Spada & Tomita, 2010).

This study tested 58 L2 learners of Spanish (L1 English), 27 with no prior knowledge of DOM, as shown by the pretest, and 31 with some prior knowledge, who still made
comprehension and production errors with DOM, as shown by the pretest. Half of the learners in each group carried out computer administered explicit instruction and feedback, followed by two tasks, and half completed only the two tasks (comparison group). The study consisted of a pretest, posttest, delayed posttest design, with the posttest taking place one week after the pretest, and the delayed posttest two weeks later. The tasks were an oral picture description task and an untimed grammaticality judgment task, during which a subset of the participants completed think-aloud protocols.

Results indicated that both instructed groups improved significantly more after instruction on the two tasks than the uninstructed groups, although not equally, with the instructed group with prior knowledge maintaining increases better than the instructed group without prior knowledge on the oral picture description task. Think-aloud protocols indicated that participants who demonstrated some level of awareness tended to have higher accuracy rates than those with no awareness of the structure, and that both instruction and prior knowledge were related with higher levels of awareness.
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CHAPTER 1: INTRODUCTION AND STATEMENT OF THE PROBLEM

One of the goals of second language acquisition (SLA) is to understand how adult second language (L2) learners develop grammatical accuracy in the second language. A related question in instructed SLA is whether and how instruction contributes to help L2 learners gain grammatical accuracy. Previous research in SLA has focused extensively on two types of learners: those learners with no prior knowledge of structures of the language, and those at the endstate of development. Endstate is considered to be “the outcome of L2 acquisition” (White, 2003, p.129), or the point at which second language learners’ acquisition stops. Similarly, near-native learners, or those who are at the most advanced stage of second language acquisition (Sorace, 1993, p. 22), are often discussed in the SLA research. Learners at the intermediate level, whose proficiency would be between that of learners with no prior knowledge of structures and near-native speakers, have been examined as well in previous SLA research. Yet, this research has not taken into account a particular type of intermediate level second language learner— those who have some prior knowledge of a structure— as an independent variable, as compared to learners without prior knowledge of the structure.

This type of intermediate level learner has some prior knowledge of a specific grammatical structure of the language, but still makes errors on the structure, on both comprehension and production.\(^1\) Thus, these learners are unlike endstate learners in that they are still in the process of acquiring structures of the language, but they are also not beginning learners, who have no knowledge of particular language structures. This last type of learner is, nevertheless, pertinent to SLA research, because some structures are not acquired early on. This

\(^1\) This difference in acquisition of a structure can be explained in terms of three levels of knowledge: no knowledge/emergence, acquisition, and mastery. No knowledge/emergence, then, can be defined as 0% knowledge of the structure in question, acquisition as production and/or comprehension of a structure between 20%-90% of the time accurately, and mastery as about 90% accuracy on the structure. This terminology is often utilized in child language acquisition, but relates to the acquisition of structures in SLA as well.
process of acquisition is as yet untested, so it is unclear whether learners with some prior knowledge of structures will be more like beginning learners, more like endstate learners, or different from both.

Studies of the first type, on those learners with no prior knowledge of certain structures, have generally been interested in whether learners are able to acquire structures of the language that are particularly difficult for L2 learners. In research on instruction, these studies compare one or more instructional treatment groups to a comparison or control group. Investigators who carry out this type of research often seek learners who have no knowledge of the structure in question prior to being tested, as it then more clear whether the treatment itself has been useful to the learners (Leow, 1997a; Leow, 1998a; Leow, 2000; Rosa & Leow, 2004a, 2004b, for example).

Alternatively, whether learners have some prior knowledge in these types of studies is simply not considered as a variable, as in Sanz and Morgan-Short (2004), or Van Patten and Cadierno (1993), for example. The researchers in these two studies instead focused on whether learner groups were statistically similar to each other in score on the pretest, since otherwise, comparison among groups on posttests would confound pretest differences with gains from instructional treatments. Consequently, the research on learners without prior knowledge tends to consider prior knowledge to be another confounding factor, and often to either omit from the final dataset those learners who are shown to have prior knowledge of the structure, or to ignore this factor entirely.

The research on L2 learners at endstate is also concerned with whether learners are able to fully acquire structures or not, often in terms of whether the learners are able to perform at the level of native speakers (see Birdsong, 1992; Coppieters, 1987; Franceschina, 2001; Hawkins &
Franceschina, 2004; Sorace, 1993; Sorace, 2003; Sorace, 2005; Sorace & Filiaci, 2006; White, 2003, among others). Much of this research has been carried out within the framework of Universal Grammar. Often, investigations on endstate learners ask whether these learners are able to acquire all structures in the L2, and if not, why. Differences between L2 learners and native speakers are attributed to a lack of availability, or only partial availability, of Universal Grammar in second language acquisition. This research also focuses on the phenomenon of fossilization, or stabilization of L2 grammars, as most times the outcome of L2 acquisition is not the same as the outcome of L1 acquisition (Lardiere, 1998a; Selinker, 1972; White, 2003).

A third type of learner, as mentioned above, remains relatively untested in SLA research—those learners who are not at the endstate of development in their L2, but who do have some prior knowledge of a particular structure of the language. Research on this type of learner is nevertheless essential, because the acquisition of some structures does not fit within the two most common strains of SLA research. These structures are not acquired quickly by learners, but may well be acquired, or at least partially acquired, before learners have reached the endstate of language acquisition. Since the research has tended to study learners at the two extremes in terms of the acquisition of structures, the acquisition process for these types of structures remains unclear. For this reason, it is important to consider those learners with some prior knowledge of a structure as an independent variable, in addition to those at both extremes of the acquisition spectrum. Figure 1.1, below, depicts these different types of L2 learners.

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2 Much research on learners with little or no prior knowledge of the second language has been carried out within a Universal Grammar framework as well. In fact, most of the SLA research conducted within the framework of Universal Grammar has been concerned with these types of learners. This research is concerned with whether the initial state for L2 acquisition is Universal Grammar or the first language. It also examines the availability of Universal Grammar in SLA, and whether L2 learners are able to restructure their developing interlanguage grammars to conform to the grammar of the L2 (see Montrul, 2004 for a detailed explanation of these theories).
Yet, only one L2 study has investigated learners with some prior knowledge of a grammatical structure. Ellis, Loewen and Erlam (2006) tested second language learners of English on a structure, past tense –ed, of which they had some knowledge prior to carrying out the study. These researchers found that the learners did benefit from feedback on the structure. However, they did not analyze prior knowledge as an independent variable in this study. Despite the fact that learners do not acquire all structures early on, second language acquisition research lacks investigations regarding whether learners with some prior knowledge can still benefit from instruction and feedback on grammatical structures that are difficult to acquire.

The purpose of this dissertation is to fill this gap, by focusing on differential object marking (DOM), or ‘personal a’ in Spanish, a structure that is particularly difficult for L2 learners of Spanish to acquire, and is therefore ideal for testing learners with and without prior knowledge of it. Differential object marking is used to distinguish the direct object from the subject of the sentence, but is not used in all sentences of the language. The most prototypical use in Spanish is when the direct object is animate, as in Juan ve a María ‘Juan sees DOM María,’ and when the structure is obligatorily absent with inanimate direct objects, as in Juan ve el árbol ‘Juan sees the tree.’ Despite clear evidence that native Spanish speaking children in a monolingual environment acquire at least this most prototypical use of differential object marking very early on, by age 3 (Rodríguez-Mondoñedo, 2008), L2 learners of Spanish tend to
have difficulties with differential object marking even after instruction and/or feedback on the structure (Bowles & Montrul, 2008, 2009a; Farley & McCollam, 2004; McCollam Wiebe, 2003), and even up to advanced proficiency levels (Guijarro-Fuentes & Marinis, 2007).

Given that some structures are particularly difficult for L2 learners to acquire, various methods for improving acquisition of grammatical structures have been examined in the research on L2 acquisition. One strain of research in this area relates to the effectiveness of instruction and feedback in SLA. Previous research in general on instruction and feedback has found that both are useful to second language acquisition and grammatical development (Li, 2010; Norris & Ortega, 2001; Russell & Spada, 2006; Spada & Tomita, 2010). Indeed, existing research on the L2 acquisition of differential object marking in Spanish that utilized instruction and feedback did generally find that the learners benefitted from this treatment as well (Bowles & Montrul, 2008, 2009a; Farley & McCollam, 2004; McCollam Wiebe, 2003). However, these learners were still significantly different in their accuracy scores from native speakers after the instructional treatment. Despite the fact that learners improved significantly in score after treatment, then, those learners who did not have prior knowledge of the structure before testing still made many errors on the structure, even after treatment.

This dissertation focuses on answering the question of whether those L2 learners of Spanish with prior knowledge of differential object marking acquire the structure better than those learners without prior knowledge of the structure after instruction. It compares these learners to native Spanish speaking participants as well, as in some of the previous research on the acquisition of DOM in L2 Spanish (Bowles & Montrul, 2008, 2009a). This study has implications for SLA research, and contributes to scholarship on instruction, feedback, and L2 acquisition of differential object marking in Spanish. At the same time, it has implications for
pedagogy, as it will help to determine whether continued instruction on a difficult structure at the intermediate level, after it has been partially acquired, is useful. Since explicit instruction is used in the current study, it will also specifically have repercussions for the effectiveness of this type of instruction.

Another goal of this study is to understand the role of awareness, which, as per Tomlin and Villa (1994, p. 193), “refers to a particular state of mind in which an individual has undergone a specific subjective experience of some cognitive extent or external stimulus.” In addition to instruction and prior knowledge of a structure, awareness has been shown to have an important effect on the acquisition of grammatical structures.

Much research in this area has found that awareness in general (Schmidt, 1990, 1993, 1994a, 1994b, 1995, 2001; Robinson, 1995a, 1995b, 1996a, 1996b, 1997b, but see Tomlin and Villa, 1994, and Williams, 2005, for differing opinions) and attention in particular, defined as focus (Schmidt, 1994), are necessary to the acquisition of particular grammatical structures. Continued research on the relevance of awareness to language acquisition will have implications not only for awareness research but also for pedagogy. This research will help to determine whether learners with some prior knowledge of structures of the language are likely to fossilize in their acquisition of these structures, or whether they can still benefit from factors that increase awareness, such as continued instruction containing explicit feedback.³

Awareness in this study was operationalized through the use of think-aloud protocols, in which participants spoke their thoughts out loud during certain parts of the study. These think-alouds were transcribed and analyzed, to add to previous research evidence as to whether

³ The concept of fossilization cannot be directly linked to the current study due to the intermediate level of participants and the relatively short duration of the study. As will be described in detail in Chapter 3, instruction aids in the acquisition process, and can help to prevent fossilization of certain features (Han, 2004). However, future research would benefit from analyzing whether learners with and without prior knowledge of a structure are able to maintain gains made after instruction in the long term.
attention to this structure was related to accuracy with the use of differential object marking in Spanish as well as prior knowledge of the structure.

This dissertation is outlined as follows. Chapter 2 examines differential object marking in languages in general and in the Spanish language, and discusses prior studies on differential object marking in L2 Spanish in more detail. Next, Chapter 3 discusses previous research on attention, awareness and Schmidt’s noticing hypothesis, followed by instruction and feedback in second language acquisition, and in particular, the efficacy of explicit instruction and feedback as compared to implicit instruction and feedback. Chapter 4 begins with the research questions of the study, and the predictions for the experiment that follows. Then, it details the methodology of the current study, including the participants, tasks, procedure, and analysis. Chapter 5 presents the results of the current study, in terms of the research questions. Finally, Chapter 6 discusses the results in light of current debates in the field of SLA and offers directions for future research.

First, as mentioned above, some structures are more difficult to learn than others during the acquisition of a second language. It takes longer for learners to achieve mastery in structures such as differential object marking in L2 Spanish. This particular structure is difficult to acquire because of the differential nature of the use of the structure, its semantic and syntactic complexity, as well as other factors such as low perceptual salience and communicative value. L2 learners of Spanish tend to make errors on DOM, despite having received instruction and feedback on the structure. The use of the structure as well as the acquisition of DOM among monolingual Spanish native speaking children as well as adult L2 learners of Spanish are the topic of Chapter 2.
CHAPTER 2: ACQUISITION OF DIFFERENTIAL OBJECT MARKING

2.0 Introduction

One particularly difficult structure for second language learners of Spanish to acquire is differential object marking. The structure and its acquisition are discussed in detail in this chapter, and the research questions of this dissertation seek to further analyze the acquisition of the structure by L2 learners of Spanish.

The first section of this chapter examines differential object marking (DOM) as a general linguistic phenomenon common in many languages, and then more specifically how it functions in Spanish. This section concludes by describing the results of studies on the second language acquisition of this structure in Spanish. These studies help to demonstrate the difficulty that second language learners have in acquiring DOM, as learners still tend to make errors with even the most prototypical use of the structure, even after receiving instruction and/or feedback. The second section consists of an explanation of the Full Transfer Full Access Hypothesis as it applies to this research.

2.1 Differential object marking

Differential object marking (Bossong, 1991) is a phenomenon that exists in hundreds of languages, in which some direct objects are marked by prepositions or postpositions, but others are not. The marked objects are those that are in some way similar to, and thus need distinguishing from, subjects (Comrie, 1979). As such, certain factors such as the animacy, specificity and definiteness of the direct object are relevant to the marking, and the relative weight of these factors differs among languages. For example, in Spanish, DOM occurs most often with animate and specific direct objects, as in (1). In this language, inanimate direct objects are typically not marked, as shown by the ungrammaticality of (2).
One theoretical approach to DOM, Aissen (2003), broadly accounts for the differences in importance of these factors among languages, and distinguishes One-Dimensional DOM languages from Two-Dimensional DOM languages. For Aissen (2003), languages in which only one of the above factors is relevant to the marking, such as in Turkish and Yiddish, are called One-Dimensional DOM languages. Contrarily, languages like Hindi, Persian and Spanish, where more than one factor is considered in the marking, are called Two-Dimensional DOM languages (Aissen, 2003).

In DOM, then, there are differences in the number of factors relevant to the marking according to the language in question. Since the marking itself is differential, and thus not utilized in all sentences of a language, learners of DOM languages must learn the contexts in which it is obligatory, optional, and/or unacceptable to use this structure, as well as meaning differences associated with use or non-use of the structure.

2.1.1 DOM in Spanish

DOM, as explained above, occurs in some instances as a way to mark accusative case in Spanish, using the dative preposition *a*. The preposition is needed because of the relatively free word-order of Spanish, in which either the subject or the object can be the first element in the sentence.\(^4\) This leads to a lack of sufficient *positional*, or word-order, cues in the language.

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\(^4\) In this study, the different possible word orders in Spanish were also taken into consideration, and participants were provided with sentences with SVO and OVS word order. The OVS sentences are similar to the SVO sentences in that DOM is obligatorily present with animate direct objects and obligatorily absent with inanimates, as in i) and ii) below. These are examples of a phenomenon called clitic left dislocation.

i) A María la vio Juan.
   DOM Maria CL saw Juan
   ‘Juan saw Maria.’
While the most prototypical use of this marking in Spanish includes the obligatory insertion of the marker with [+animate] and [+specific] direct objects, and the obligatory lack of the marker with inanimate direct objects, there are other factors relevant to DOM in Spanish as well. For example, both the affectedness (by the action of the verb) of the accusative as well as its individuation, or the degree of difference between the object and the subject or the background, are relevant to the marking (Torrego, 1998; Weissenrieder, 1990). It is these semantic factors, as well as the syntactic complexity of the structure (explained below), that make DOM so difficult for Spanish second language learners to acquire.

In Spanish, both animacy and specificity are taken into consideration in the use of the case marker. The most typical use of this marking in Spanish is for [+animate] and [+specific] direct objects (Zagona, 2002, p. 13), as in (3) below. In example (3), with a specific and animate (in this case, human) referent, the *a* is obligatory, as shown by the ungrammaticality of (4). The direct object in example (3) is not only specific but definite as well. Definites are always specific, and therefore (3) also contains an example of the most prototypical type of NP that has DOM in Spanish, since it is both definite and specific. The NPs used in the current study were all definite as well as specific. Inanimate direct objects, specific or non-specific, typically obligatorily lack the *a* marking (but see Weissenrieder, 1991, for cases in which inanimate direct objects take the *a* marker in some varieties of Spanish). For example, in (5), below, with both a specific and non-specific inanimate referent, the *a* cannot be present, as shown in the

ii)  *A la mesa la vio Juan.*
     DOM the table CL saw Juan
     ‘Juan saw the table.’
ungrammaticality of (6). These first two sets of examples illustrate the most prototypical uses of
differential object marking in Spanish.⁵

(3) Vi  a  Susana.
I saw   DOM  Susana
‘I saw Susana.’

(4) *Vi  Susana.
I saw  Susana

(5) Vi  el/un  coche.
I saw  the/a  car

(6) *Vi  al/a un  coche.
I saw   DOM the/a  car
‘I saw the/a car.’

In terms of differences in specificity, examples (7) and (8) below illustrate that, with
indefinite articles, the presence of the differential object marker with an animate indefinite
accusative forces a specific reading, whereas a lack of this marker forces a nonspecific reading.⁶

Note that both of these sentences are grammatical, but the meaning changes with the presence or
absence of the case-marker. For Spanish, then, both the animacy and specificity of the accusative
are relevant to the marking of DOM, which as mentioned above, makes Spanish a Two-
Dimensional DOM language (Aissen, 2003).

(7) Busco  a  un  médico  inteligente.
I am looking for  DOM  a (specific) doctor  intelligent

(8) Busco  un  médico  inteligente.
I am looking for  a (any) doctor  intelligent

---

⁵ These examples, again, give only the most prototypical use of DOM in Spanish. The facts for Spanish DOM are
somewhat simplified here, given that only this use of DOM was employed in the current study (obligatory use of a
with animates and obligatory lack of a with inanimate direct objects). See Guijarro-Fuentes and Marinis (2007),
example, for more details on this phenomenon in Spanish.

⁶ Although see Rodríguez-Mondoñedo (2007) for evidence that this is not necessarily strictly true- indefinites with
the a can be considered nonspecific, for example.
The above sentences, again, show the relevance of both animacy and specificity to the marking of DOM in Spanish. However, Spanish DOM depends on other factors as well, such as the semantic roles of subjects and objects within the sentence, as well as within the discourse (Torrego, 1998; Weissenrieder, 1990). Torrego (1998) accounts for the differences between DOM and other (unmarked) objects semantically by showing that DOM objects tend to have subject properties more than unmarked objects. Torrego calls those objects with subject properties affected, since they are affected by the action of the verb more than objects without subject properties. Affectedness depends on properties of the verb as well; for example, the object of the verb ver ‘to see’ is less affected than the object of the verb golpear ‘to hit.’ With golpear but not with ver, case-marking of the direct object is obligatory with indefinite animate direct objects (p. 18).

Weissenrieder (1990) analyzed the presence or absence of the a using the idea of individuation, in particular for non-human animate direct objects in Spanish. According to Weissenrider, individuation is a noun’s “distinction from its subject and its background” (1990, p. 229), which is similar to the above description of the need to distinguish subject from object. So, an object that is individuated more from the subject and its background is more likely to be overtly case-marked than one that is less individuated.

For Weissenrieder, more individuated nouns are those that have characteristics such as human, animate, definite, concrete, and singular, among others (1990, p. 225). She discussed the importance of individuation at the level of the NP, the level of the sentence, and the level of discourse. These semantic factors again help to illustrate the semantic complexity of the structure, which learners of Spanish would need to understand from the input in order to acquire differential object marking in this language. However, since the above factors are not relevant to

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7 She also accounts for this syntactically in her theory, explained below.
the prototypical marking of Spanish DOM utilized in this dissertation, they will not be discussed further here. Some of these semantic factors involved in DOM in Spanish are explained syntactically by Rodríguez-Mondoñedo (2007) and Torrego (1998), described in the next section.

2.1.1.1 The syntax of DOM in Spanish

Two syntactic theories (Rodríguez-Mondoñedo, 2007; Torrego, 1998) have explained the semantic differences between marked and unmarked objects in Spanish. While the two researchers disagree upon where in the structure the marked accusatives move, they agree that the marked accusative involves movement to a different functional projection, whereas unmarked accusatives (and datives) do not move. As structures involving movement are syntactically more complex than those that do not involve movement, these theories further exemplify the complexity of this structure in Spanish. The two theories are discussed below.

Torrego (1998) syntactically accounts for some of the semantic differences between overtly case-marked and unmarked direct objects; that is, that DOM objects tend to have subject properties more than unmarked objects. She does this syntactically by attributing the differences to movement. Torrego believes that a marked objects are in a syntactically higher functional projection than unmarked objects, due to raising to [Spec, vP]. This raising is to a specifier position near the base position of the subject, which helps justify similarities between a marked objects and subjects (that they must be specific and animate). This higher functional category is also one that does not exist in English, according to Torrego. Despite that the functional projection does not exist in English, Torrego does liken differential object marking to the double object construction in English.

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8 However, Rodriguez-Mondoñedo (2007) claims that there are two problems with Torrego’s proposal here. He disagrees that all a marked objects must be specific, and that only animates can be a marked, both of which are consequences of her theory. Because she makes all a marked objects specific, Torrego needs to use telicity and many examples of differences in verbs to explain differences in specificity.

9 Despite that the functional projection does not exist in English, Torrego does liken differential object marking to the double object construction in English.
objects that she proposes, thus, makes them more complex than unmarked objects, which do not move.

Like Torrego (1998), Rodríguez-Mondoñedo (2007) believes that the nominal in DOM constructions raises to [Spec, vP]. However, differently from Torrego, Rodríguez-Mondoñedo claims that the reason they need to raise is that v does not have a person feature, only a number feature (it is φ-incomplete). A mismatch exists, then, only between v and nominals with [person]—all other nominals are φ-incomplete, and can be valued at v, thus not requiring movement. Since nominals marked with a are φ-complete and v is φ-incomplete, it cannot value them, which then blocks assignment of case in this position. In regular transitive constructions, he says, there is another case checker, a Dative head, which can value the case of φ-complete nominals.

So these nominals are able to get case, but must raise a second time to [Spec, DatP]. While this theory cannot account for the semantic differences as specifically as Torrego’s can, it does also propose that DOM objects are different from unmarked objects in that they require movement. This movement, again, makes DOM objects syntactically more complex than unmarked objects, which do not move. Based on the above discussion, marked objects differ from unmarked objects both semantically and syntactically, and the presence or absence of the a marker depends on a variety of semantic criteria, including the animacy and specificity of the object.

In addition to these factors, there are other reasons why DOM is believed to be particularly difficult to acquire. One such reason, mentioned above, is that this structure is not present in English, the L1 of the learners tested in this study. As described above with respect to Torrego’s theory, this means that these learners initially do not have the functional category that
is required for DOM in Spanish (but see footnote 9). Often, L2 learners require negative evidence in cases of structures which do not exist in their L1 but do exist in the L2 (White, 1989, 1991).

Additionally, although this will not be discussed in detail, the marker for DOM in Spanish is the same marker used for the dative ‘a’ in Spanish, as in (9), below. As can be seen in (9), this marker means ‘to’ in English. The polyfunctionality of the dative marker ‘a’ in Spanish, then, is another reason why this structure is so difficult to acquire for L2 learners of Spanish.

(9) Juan le da el libro a María
    Juan CL gives the book to María

Finally, this structure lacks both perceptual salience as well as communicative value, particularly when the SVO word order is utilized in Spanish. The low perceptual salience of the structure relates to the fact that DOM consists of only one letter, ‘a,’ which is difficult to perceive in the input, particularly in speech. The low communicative value refers to the fact that in SVO word order sentences, for native speakers of English, it is not necessary to comprehend or produce the ‘a’ in order to comprehend the sentence, nor is it necessary for these nonnative speakers to produce the ‘a’ in the sentence in order for native speakers to comprehend the sentence.

Therefore, the complexity of this structure, explained in detail above, suggests that DOM should be difficult for learners of Spanish to acquire, both for L2 learners as well as for native Spanish speaking children. In fact, DOM is learned very early on by native Spanish speaking children. Yet, this structure has been found to be quite difficult for L2 learners of Spanish (whose first language is English), who demonstrate persistent errors at intermediate and even advanced levels of proficiency. Acquisition of this structure by L1 children and adult L2 learners is discussed in more detail below.
2.1.2 Acquisition of DOM in Spanish

2.1.2.1 First language acquisition

Only one study to date, that of Rodríguez-Mondoñedo (2008), has looked at the first language acquisition of Spanish DOM, finding that monolingually raised children acquire the structure early and with very few errors. The researcher examined data from six native Spanish speaking children from the CHILDES database, and found that 4 of the 6 children had acquired at least the most prototypical use of the structure by age three.\(^{10}\) He found that these children made neither errors of omission nor errors of *commission* (use of the *a* when not necessary, with inanimates) on the structure, from the time of their earliest productions containing DOM. These results provide a clear contrast to the second language acquisition studies of DOM discussed below, in which learners make errors even at advanced proficiency levels, and are found to make both errors of omission and commission.

2.1.2.2 Second language acquisition studies

A variety of previous studies have examined the L2 acquisition of DOM in Spanish, finding without exception nonnative-like acquisition of the structure. Guijarro-Fuentes and Marinis (2007) found evidence that even advanced L2 Spanish (L1 English) learners were only able to begin to acquire what they determined to be the least complex use of DOM, which is the most prototypical use, described above. The remaining studies (Bowles & Montrul, 2008, 2009a; Farley & McCollam, 2004; McCollam Wiebe, 2003; Van Patten & Cadierno, 1993; Van Patten & Oikkenon, 1996) provided different types of instructional intervention and/or feedback to low-intermediate through intermediate (third to fifth semester) L1 English learners of Spanish with little or no previous DOM knowledge, generally finding improvement, but not to native-like

\(^{10}\) The researcher is somewhat unclear about which uses of the structure were considered, stating only that those uses considered by Aissen (2003) to be optional were not included in the analysis.
levels. After instruction, learners made errors of commission, or overgeneralization of DOM to inanimate direct objects, and still made errors of omission of DOM with animate direct objects.

The only study discussed here not involving an instructional intervention was that of Guijarro-Fuentes and Marinis (2007). These researchers tested three groups of learners of different proficiency levels (low-intermediate, high-intermediate, and advanced) on four properties of DOM in Spanish, using an acceptability judgment test. They were interested in the difficulty of acquiring elements of grammar at interfaces— in this case, the syntax/semantics/pragmatics interface— and found that only the advanced group was sensitive to the least complex (most prototypical) use of DOM, which L1 children produce by age 3. The researchers also used the same proficiency test as the current study, the DELE.\footnote{Diploma de Español como Lengua Extranjera. See Chapter 4 for more information regarding this proficiency test.}

Guijarro-Fuentes and Marinis tested four properties of DOM in Spanish: the first related to specificity and definiteness, the second was the most prototypical use of DOM, explained above, and the third and fourth uses related to subject theta roles. The researchers found that only the second property, the most prototypical use of DOM, had been acquired at all by the learners.

The first use that was tested in their study relates to specificity and definiteness, and is that objects marked by a are interpreted as necessarily specific and definite, as in (10) as compared to (11), below.\footnote{However, see Rodriguez-Mondoñedo (2007) for disagreements on this interpretation.}

\begin{align*}
(10) & \text{Busco } a \text{ una secretaria.} \\
& \text{I-am-looking-for a (specific) secretary (Guijarro-Fuentes & Marinis 2007, p. 71)}
\end{align*}

\begin{align*}
(11) & \text{Busco } una \text{ secretaria.} \\
& \text{I-am-looking-for some secretary (Guijarro-Fuentes & Marinis 2007, p. 71)}
\end{align*}
The second use is that the *a* is obligatory with animate direct objects but not with inanimate direct objects, as in (12) and (13), respectively, below. Again, this is the same as the most prototypical use of DOM in Spanish, explained above.

(12) Ayer vi *a* los vecinos. 
yesterday I-saw the neighbors (Guijarro-Fuentes & Marinis 2007, p. 71)

(13) Ayer visité el hospital. 
yesterday I-visited the hospital (Guijarro-Fuentes & Marinis 2007, p. 71)

The third and fourth uses relate to subject theta roles. For the third use, DOM is obligatory with verbs that take an agent or cause as the subject, as in (14) below, but not when the subjects are non-agentive, as in (15).

(14) El paciente reclamaba *a* una enfermera. 
the patient demanded a nurse (Guijarro-Fuentes & Marinis 2007, p. 72)

(15) *La situación reclamaba *a* una enfermera. 
the situation demanded a nurse (Guijarro-Fuentes & Marinis 2007, p. 72)

The fourth use relates to the aspectual class of the predicate. For example, accomplishment and achievement verbs are considered *telic* (with an endpoint). As such, these verbs require DOM regardless of the animacy of the subject, as in (16) and (17).

(16) Pedro emborrachó *a* los invitados. 
Pedro made-drunk the guests (Guijarro-Fuentes & Marinis 2007, p. 72)

(17) El vino emborrachó *a* varios invitados. 
the wine made-drunk several guests (Guijarro-Fuentes & Marinis 2007, p. 72)

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13 The relevance of the subject to the differential object marker was touched upon earlier, from Weissenrieder (1990), with respect to individuation, or the distinction of the subject from the object. The animacy of the subject, then, is relevant at times to the use of DOM in Spanish, particularly when the verb itself does not aid in distinguishing subject from object.
Stative and activity verbs, however, are considered *atelic* (without an endpoint), so DOM is required only when the subject is animate, as in (18), not when the subject is inanimate, as in (19).

(18) Inés conoce a varios artistas.  
    Ines knows various artists  
    (Guijarro-Fuentes & Marinis 2007, p. 72)

(19) La opera conoce (*a) muchos aficionados.  
    opera knows many fans  
    (Guijarro-Fuentes & Marinis 2007, p. 72)  
    ‘Opera has many fans.’

The researchers defined complexity based on how many features were affected by each use of DOM. For example, in the first use, two features are relevant— [+animate] and [±specific]. For the second use, only one feature, [-animate], is applicable, so this is the least complex usage according to the researchers. The last two uses involve knowledge of the differences among verb class as well as animacy of the subject, and so are the most complex, according to the researchers.

Results indicated that the learners were, in general, not sensitive to the distribution of DOM, as shown by the lack of difference in judgments of acceptable and unacceptable sentences on the acceptability judgment test. This was particularly true for the two intermediate groups, which did not give significantly different ratings to acceptable and unacceptable sentences for any of the above uses of DOM. As mentioned above, only the advanced learners showed sensitivity to the least complex usage (the most prototypical use of DOM), giving significantly different ratings to acceptable and unacceptable sentences of this type. However, the advanced group still scored significantly differently than the native speaker group in this usage, so had not fully acquired even this use of the structure. The learners in this study were the only learners of advanced proficiency level that have been considered in L2 Spanish DOM research.
Although this study did not include an instructional intervention, the researchers did suggest that the one use of DOM that the advanced learners had been able to acquire, the most prototypical use also employed in the current study, was the one use taught to the learners in the classroom. Since this study did not examine learners before and after instruction, however, it is not possible to know whether this one use was acquired because it was the least complex, most prototypical usage, because it was taught in the classroom, or for both reasons. The remaining studies, discussed below, examined this issue of the usefulness of instructional intervention and/or feedback on acquisition of differential object marking, generally finding that both significantly improved learner scores on a variety of tasks. It is important to note that all of the studies that included instructional interventions only instructed participants on the most prototypical use of DOM in Spanish, described above.

Van Patten and Cadierno (1993) and Van Patten and Oikkenon (1996) both indirectly looked at the acquisition of DOM in L2 Spanish, finding that processing instruction, in particular the structured input practice of processing instruction, aided in the acquisition of the structure.

First, Van Patten and Cadierno (1993) examined the acquisition of second year L2 Spanish (L1 English) students on Van Patten’s Principle 2, with regard to the processing of objects and object pronouns. Also called the First Noun Strategy, this principle states that the first noun in the sentence is analyzed as the subject by early and intermediate level learners, and the second noun is analyzed as the object. This strategy, while effective in a language like English, does not always lead to correct analysis of sentences in a language such as Spanish, which can have word orders other than subject-verb-object (SVO). The researchers, therefore, focused in both instructed groups on object pronouns in Spanish, in sentences such as Te amo ‘I love you,’ or Al chico lo sigue la chica ‘The girl follows the boy,’ in which the object is the first
element in the sentence. Learners often initially incorrectly assume sentences like these would mean ‘You love me’ instead of ‘I love you,’ or ‘The boy follows the girl’ instead of ‘The girl follows the boy.’

The researchers divided participants into three groups, including Processing Instruction (explicit instruction and structured input practice), Traditional Instruction (explicit instruction and output practice), and No Instruction. Participants in the processing group were specifically taught about the First Noun Principle and how to correctly interpret the above sentences, including interpretation of object pronouns and the meaning of the ‘personal a,’ particularly when (animate) direct objects are placed at the beginning of the sentence (p. 231). Those participants in the Traditional Instruction group, contrarily, were taught only about the forms of object pronouns and their position and meaning within a sentence.

Van Patten and Cadierno tested participants using an interpretation task (comprehension) and a written sentence completion task (production), finding that for the comprehension task, the Processing Instruction (PI) group scored significantly higher than the Traditional Instruction (TI) group, and that for the production task, the two groups were equal. For both the comprehension and production tasks, the PI group scored significantly higher than the No Instruction group as well. The results of these researchers therefore suggest advantages for PI over both TI and No Instruction. The researchers do not discuss the difference in DOM error rate before and after instruction on DOM, however, since they were not focused on this structure in particular. Thus, all that is known is that the learners improved on word order and possibly interpretation of DOM after instruction.

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14 The interpretation task consisted of five items like Al chico lo ama la chica ‘The girl loves the boy,’ and five similar to Lo ama la chica ‘The girl loves him.’ On the pretest, all groups were at or below an average score of two out of ten, but on the posttest, the processing group scored at least seven out of ten. It is probable that the initial two items were not both items that contained the ‘personal a,’ such that learners likely improved at least slightly on their
Van Patten and Oikkennon (1996) carried out a partial replication of Van Patten and Cadierno (1993). This study focused on isolating the presence of explicit instruction, or explanation, from Processing Instruction, which consisted of both explicit instruction and structured input in the previous study. The researchers tested fourth semester high school students, and utilized the same interpretation task and written sentence completion task as the previous study. The three groups tested were a Processing Instruction group, an Explanation Only group, and a Structured Input only group. Results showed that the Explanation Only group scores were significantly lower than those of the Structured Input group. Based on these results, the researchers stated that the structured input activities, not the explicit instruction of PI, are what helped the learners most to both comprehend and produce the structures. Yet, they again did not give results for DOM in particular. The means for the interpretation task were much lower than those of the previous study, so it is more difficult to speculate regarding whether the learners improved on this structure in this study. These studies thus can only indirectly provide evidence that instruction aids in the acquisition of DOM, in terms of comprehension of the structure.

McCollam Wiebe’s (2003) dissertation discussed processing instruction as well, but in the context of Processability Theory (Johnston, 1995; Pienemann, 1989), and did specifically examine the production of differential object marking by L2 Spanish learners. The researcher tested fifth semester learners who had had no formal DOM instruction in the course they were taking at the time of testing, but who were all considered ready to acquire DOM, or at stage 3, the stage before DOM on the Processability hierarchy according to Johnston (1995). These

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15 However, the researcher did suggest that the participants would likely have received previous instruction on, or at least exposure to, this form previously, due to their proficiency level.
learners were also tested on the subjunctive, although all learners were considered *unready* to acquire this structure.

Participants were placed in one of the following groups: an Explicit Information (EI) group, a Structured Input (SI) activity group, a Processing Instruction (EI and SI) group or a No Treatment (control) group. These learners were tested using a pretest, posttest, delayed posttest design, with the posttest taking place two weeks after the pretest, and the delayed posttest five weeks after the posttest. The pretest, posttest, and delayed posttest consisted of a grammaticality judgment task (GJT), in which students were instructed to correct incorrect sentences, and an oral picture description task, and the pretest and delayed posttest included an interview/narration task as well. McCollam Wiebe also provided implicit negative feedback to participants, such that they were informed whether their answers were correct or not, but not given reasons explaining the accuracy of their answers.

The results confirmed that at least some participants from each of the treatment groups increased their accuracy in terms of production of DOM after the treatment. Yet, despite being a form for which all participants were considered *ready*, not all showed development on DOM after the treatment. *Development* was defined on the posttest as at least three separate productive uses of the form in oral production, and on the delayed posttest as two productive uses of the form on each of the two oral production tasks (p. 96). No group was significantly different from any other in terms of either development or accuracy on this structure; however, descriptive statistics suggested that the group that received processing instruction demonstrated the most development over time.

On the subjunctive, as with DOM, some learners in each group showed development after the treatment. For this structure as well, no treatment group was significantly better with
respect to development than any other treatment group, although descriptively the PI group showed the most development on both posttests. The PI group was statistically better in terms of development than the control group, however. No treatment group was significantly more effective in terms of accuracy for this structure.

Farley and McCollam’s (2004) study was similar to that of McCollam Wiebe (2003) in format. The only differences were that Farley and McCollam included only a pretest and immediate posttest in their design, not a delayed posttest, and used only one oral production task, the picture description task, to measure development. The researchers in this study also tested intermediate level participants, who had not yet had formal instruction on DOM during the semester in which the study took place.

Pretest results indicated that almost all 29 learners were ready for acquisition of DOM, according to the Processability hierarchy, and that all were unready for acquisition of the subjunctive. On the immediate posttest, again, although a few individuals in each of the three treatment groups showed improvement on DOM, less than half of the learners showed development on the structure over the course of the study in any of the three treatment conditions. For the subjunctive, results were also similar; some learners in each treatment group demonstrated improvement after the treatment.

In this study, unlike in McCollam Wiebe (2003), all three treatment groups were significantly different (better) than the control group after the treatment, in terms of both emergence (development over time) and accuracy, on the picture description task. In terms of development, the PI group was significantly better here than the EI and SI groups as well. This significant difference was for DOM and the subjunctive together; the two structures were not separated in this analysis.
The results from both Farley and McCollam (2004) and McCollam Wiebe (2003) provide evidence for processing instruction but against Processability Theory, since on the subjunctive (*unready* structure), learners actually showed similar or in some cases even more improvement than on DOM (the *ready* structure). Perhaps, as the researchers suggested, this is because the *a* has less communicative value than the subjunctive. These two studies help demonstrate the difficulty of acquisition of DOM, since even those learners who were *ready* to learn DOM did not all improve on the structure after instruction.

However, these results do not necessarily indicate that instruction has very little effect on the acquisition of DOM in Spanish. Since the researchers tested Processability Theory, their main interest was in production, not comprehension, of the structure. Thus, it is possible that those *readies* who did not improve in their production actually *did* improve in their comprehension of the structure. In fact, McCollam Wiebe (2003) did indicate that on the posttest GJT, immediately after treatment, twenty-three of thirty-five participants in the treatment groups scored at or above 80% on ungrammatical DOM items (p. 99). Only eight of these participants also demonstrated this knowledge in terms of oral production, and this number decreased to four on the delayed posttest.\(^\text{16}\)

The last two studies to examine the L2 acquisition of DOM in Spanish, Bowles and Montrul (2008) and Bowles and Montrul (2009a), also provided instructional intervention to learners. The researchers gave low-intermediate (4\(^{th}\) semester) L2 Spanish, L1 English learners computer-based explicit form-focused instruction with both positive and negative evidence, as well as explicit feedback in the form of a grammar explanation. The participants had not yet been given explicit instruction on DOM in the class in which they were enrolled at the time of the

\(^{16}\) This is one of the reasons, explained in more detail below, why the current study included both a comprehension and a production task.
study, but some participants did demonstrate knowledge of the structure on the pretest. The learners in Bowles and Montrul (2008) were tested with a written GJT, and in Bowles and Montrul (2009a), with a written GJT and a controlled written production task.

The instructed learners from Bowles and Montrul (2008, 2009a) improved significantly from pretest to posttest on the written GJT, and in Bowles and Montrul (2009a), on the written production task as well. In the 2008 study, which included a control group that carried out the pretest and posttest but did not receive instruction, the instructed group improved more on the GJT posttest than the uninstructed group, but only on some items, since both groups improved over time. Instructed group results were significantly different from the uninstructed group in terms of rejecting ungrammatical animate and inanimate DOM sentences, but were not significantly different with regard to accepting grammatical DOM sentences.

Somewhat similarly, in Bowles and Montrul (2009a) which had no control group, there was a significant difference between the instructed group’s pretest and posttest scores on all but inanimate ungrammatical sentences on the GJT. Additionally, in Bowles and Montrul (2009a), after the instructional treatment the learners were also able to produce significantly more grammatical sentences involving animate objects than on the pretest. The instructed learners in both studies did somewhat overgeneralize the structure, producing sentences with inanimate objects with the preposition *a* slightly more than before instruction. Nevertheless, after instruction the L2 participants in both studies were still significantly different from the native speaker group in their responses, showing that despite their improvement, these learners still made errors on the structure.

The above studies indicate that (low) intermediate level learners, or even those at a more advanced level, still make errors of comprehension and production on DOM. The learners with
either no prior knowledge or very little prior knowledge of the structure did tend to benefit from various kinds of instruction. However, not all learners improved, and never to native-like levels, even after instruction and/or feedback. These persistent errors by second language learners of Spanish on DOM, while it is acquired early by native speakers of Spanish, make it an ideal structure for examining the ability of learners with some knowledge of a structure to benefit from continued instruction, as discussed in Chapter 3.

Of the above studies, only Bowles and Montrul (2009a) tested comprehension and written production of DOM in L2 Spanish. McCollam Wiebe (2003) and Farley and McCollam (2004) were interested in oral production only, and Van Patten and Cadierno (1993) and Van Patten and Oikkenon (1996) included DOM items only on the interpretation task. Processing theories of limited processing capacity (Van Patten 2003b; Wickens, 1984, 1989) support the idea that learners are capable of comprehending more than they can produce. Thus, it is important to examine both comprehension and production, to determine what learners comprehend in addition to what they can produce. The current study will therefore utilize both comprehension and (oral) production tasks.

These second language acquisition studies confirm that DOM is a difficult structure to acquire, even after instruction, and at advanced proficiency levels. As such, it is still somewhat unclear whether second language learners of Spanish whose first language is English are capable of acquiring this structure at the level of native speakers of the language. The Full Transfer Full Access Hypothesis, described below, allows us to hypothesize that if learners notice a structure, they should be able to restructure their developing systems to acquire the structure. It hypothesizes that for some structures, this restructuring takes a longer time to occur than for
other structures, which corresponds with the L2 acquisition of DOM in Spanish. This hypothesis will be defined below and explained in terms of differential object marking in Spanish.

2.2 Full Transfer Full Access Hypothesis

As described above, differential object marking is semantically and syntactically complex and difficult for second language learners of Spanish to acquire, even after they are given instruction and/or feedback on the structure. The Full Transfer Full Access Hypothesis (henceforth the FT/FA) of Schwartz and Sprouse (1994, 1996) helps to predict whether L2 learners of Spanish whose first language is English should be able to acquire this structure over time. First, the hypothesis will be explained, followed by the implications of this hypothesis for the second language acquisition of DOM in Spanish.

According to the FT/FA, the initial state of the adult L2 is the final state of L1 acquisition. This means that learners, upon starting acquisition of an L2, should already have all the principles and parameter values of the L1 grammar to utilize in their acquisition of the L2. Then, if the input allows learners to notice a gap between their interlanguage grammar and the grammar of the L2, restructuring will occur and these learners will acquire the correct properties of the L2 through the use of their full access to Universal Grammar (UG). The researchers also make clear that while this restructuring sometimes happens quickly in L2 acquisition, it can also take more time to occur, depending on the initial state, the input, UG itself, and issues of learnability (Schwartz & Sprouse, 1996, p. 41).

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17 Except for the phonetic matrices of items in the L1 lexicon/morphology, which do not transfer from the L1.
18 Schwartz and Sprouse (1996) do not specifically mention “noticing a gap” in their original FT/FA hypothesis. They do, however, note that “This initial state of the L2 system will have to change in light of TL input that cannot be generated by this grammar; that is, failure to assign a representation to input data will force some sort of restructuring of the system” (p. 41). This failure to assign a representation to input because the input from the TL does not fit with the current state of learners’ interlanguage grammars is very similar to the idea that when learners notice a gap between the target language and their developing interlanguage, they are able to restructure their interlanguage to fit with the input data. Thus, although this hypothesis does not directly mention noticing a gap, this idea is directly applicable to the hypothesis.
The input on DOM in Spanish, though complicated due to the differential nature of differential object marking, may allow learners to notice this gap, particularly with the help of instruction and/or feedback. The unclear input, described above in terms of semantic and syntactic complexity and the differential nature of the structure, can in part explain why second language learners do not acquire this structure easily or early in the acquisition process. L2 research in this area has shown that learners are able to acquire this structure to a certain extent over time, and with the help of instruction and/or feedback.

In fact, Bowles and Montrul (2008, 2009a) also utilized the FT/FA in their research, finding that learners had begun to restructure their interlanguages after receiving instruction and feedback on differential object marking. What the L2 Spanish DOM research lacks is data on learners like those at the end of the instructional studies explained above— that is, those learners who have some knowledge of the structure, but who still make errors of comprehension and/or production. This distinction is mentioned in footnote 1, and relates to the difference between acquisition and mastery. The learners at the end of these studies are at the level of acquisition of the structure, but do not yet have full mastery of DOM in Spanish. Since learners in the previous studies continued to make errors on the structure even after instruction, the crucial question remains as to whether further instruction, or merely more exposure to the DOM input (positive evidence), can lead to noticing, or attending to forms with some small degree of awareness (Rosa & Leow, 2004a), as well as further acquisition of the structure. Noticing will be described further in Chapter 3.

The FT/FA, therefore, allows us to predict that if learners are able to notice the structure despite the differential nature of the input, they will be able to restructure their developing systems and perhaps eventually acquire the structure to native-like levels. As discussed in more
detail in Chapter 3, noticing itself is operationalized in this dissertation through the use of concurrent verbal protocols (think-alouds). This allows for a clear prediction; if learners notice DOM, they will continue to restructure their developing systems. This process may occur quickly, due to their prior knowledge of the structure, leading to similarities with native speakers, or may mean that learners continue to gradually restructure their interlanguages over time.

With respect to the initial state of the L2 Spanish learners (L1 English) tested in this dissertation, crucially, I will assume, as per Torrego (1998) that the functional projection for differential object marking does not exist in English (see footnote 9 regarding the double object construction, however).

In summary, the FT/FA allows the prediction that if learners notice differential object marking, as operationalized in this dissertation by evidence from their think-aloud protocols, they will be able to acquire it. This acquisition takes time, due to the complex nature of the structure, and so testing learners with some prior knowledge of the structure is important in order to determine whether L2 learners of Spanish are capable of noticing DOM and continuing to restructure their developing interlanguages.

2.3 Conclusion

This chapter has examined in detail differential object marking and its first and second language acquisition. This structure, while acquired early by monolingual native speaking children of Spanish, is acquired with more difficulty by L2 learners of Spanish, who continue to make errors on the structure in comprehension and production even up to advanced levels of proficiency (Guijarro-Fuentes & Marinis, 2007), and even after receiving instruction and/or feedback on the structure (Bowles & Montrul, 2008, 2009a; Farley & McCollam, 2004;
McCollam Wiebe, 2003). The difficulty in L2 acquisition of DOM in Spanish makes this structure ideal for examining methods that teachers and researchers can use to facilitate the acquisition of grammatical structures throughout the process of second language acquisition.

Consequently, Chapter 3 will explain in detail various techniques to improve learner acquisition of structures in SLA. The importance of awareness research will be discussed first, followed by the general usefulness of instruction and feedback in previous SLA research. The latter two methods are used to increase awareness of structures in general in SLA, which, as previous research has indicated, can lead to increased accuracy on tasks containing these structures.
CHAPTER 3: AWARENESS AND INSTRUCTED SECOND LANGUAGE ACQUISITION

3.0 Introduction

This chapter discusses how intake and system restructuring, or learning, in SLA are enhanced through increased awareness of and attention to second language structures. Instruction and feedback are looked at as well, as they are both considered methods of increasing learner awareness of structures during language acquisition.

The first section of this chapter touches on the importance of input and intake in SLA, and how these two factors relate to noticing and theories of attention. Then, section two examines theories of attention and awareness in cognitive psychology and SLA. One such theory of attention and awareness, Schmidt’s (1990, 1993, 1994a, 1994b, 1995) noticing hypothesis, is discussed here, along with its relevance to acquisition, and operationalization of the theory in empirical research using concurrent verbal protocols. The last part of this section covers a possible issue with concurrent verbal protocols, called reactivity, or the idea that the act of thinking aloud affects mental processes. Finally, section three concludes the chapter with the role of instruction and feedback in SLA, with comparisons of the relative effectiveness of explicit and implicit instruction as well as explicit and implicit feedback. First, the importance of input, intake and noticing in SLA will be discussed.

3.1 Input, intake and the noticing hypothesis

Input, or “visual or auditory stimuli in the learner’s environment” (Carroll, 2004, p. 297), is generally agreed to be necessary to second language acquisition. However, while researchers tend to agree that input is a necessary component to learning, the most effective way to use this input in second language acquisition is less agreed upon. Krashen (1982, 1985) for example,
claims that (comprehensible) input alone leads to second language acquisition. Yet, most researchers believe that input alone is not enough for acquisition to occur. For example, Gass (1997, 2003) and Long (1996) look at the relevance of interaction to the processing of input, while Swain (1985) believes that output is what is essential to acquisition. Van Patten (1996, 2002, 2004) and Schmidt (1990, 1993, 1994a, 1994b, 1995) focus on the importance of drawing learner attention to difficult structures in the input. Such theories of attention have been growing in importance in SLA theory in the past few decades, and in particular the noticing hypothesis of Schmidt (1990, 1993, 1994a, 1994b, 1995). According to Schmidt, learning cannot occur without attention to the input, and noticing of target forms is what leads to the crucial step of intake of these forms. Intake is defined by Van Patten (2004) as “that subset of the input that has been processed in working memory and made available for further processing” (p. 7).

Thus, though input is essential to acquisition, acquisition cannot take place unless learners perceive this input, leading to intake and further processing of structures in learners’ interlanguage grammars. According to Schmidt (1990), it is attention and in particular noticing of target forms that leads to intake of these forms. So, while input includes any and all visual and auditory stimuli around the learner, intake is only that part of the input that is further processed by the learner. Schmidt’s theory on the importance of attention to intake and further processing of structures will be examined further below. As will be discussed next, attention and awareness theories have been relevant to cognitive psychology for many years, and have generally found that attention, as well as awareness, are essential to learning.

3.2 Attention and awareness

Theories of attention and awareness from both cognitive psychology and SLA tend to agree that attention is necessary for learning, or system restructuring, to take place, although
there is less agreement on awareness in learning. According to Schmidt (1995), while attention is a mechanism of information processing, awareness is a subjective experience (p.18). Again, awareness is defined as “a particular state of mind in which an individual has undergone a specific subjective experience of some cognitive extent or external stimulus” (Tomlin & Villa, 1994, p. 193). Further analysis of research in cognitive psychology shows that those studies that have found learning without awareness have tended to use less reliable methods of collection of awareness data. These methods include asking for participant awareness at the end of the study or at the end of many experimental trials.


In cognitive psychology, researchers have found what they call a dissociation between awareness and learning (Carr & Curran, 1994; Nissen & Bullemer, 1987). Yet, the studies that found this dissociation between awareness and learning used methods of determining awareness that were not without problems. Carr and Curran (1994) utilized a post-exposure questionnaire, while Nissen and Bullemer (1987) used a retrospective verbal protocol to determine participant awareness. A post-exposure questionnaire is not completed until the end of the study, and even though the retrospective verbal protocol was completed at the end of a certain number of trials during the study, these methods may not reflect what the participants were thinking at the time of the study itself. Additionally, in Carr and Curran (1994), the researchers themselves did not claim that the learners were unaware, only that some were more aware and that some were less aware.

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19 This phenomenon is called veridicality and will be discussed further below.
aware. Those participants who were more aware outperformed the less aware learners, which is consistent with the studies based on Schmidt’s noticing hypothesis, explained below. So, these studies from cognitive psychology did not necessarily clearly demonstrate a dissociation between awareness and learning.

In SLA research, while Schmidt and Robinson agree that awareness is necessary, others believe that while it is useful, it is not required for acquisition (N. Ellis, 2005; Tomlin & Villa, 1994; Williams, 2005). For example, Tomlin and Villa (1994) claim that while awareness aids detection, the “cognitive registration of sensory stimuli” (p. 192), or the process that leads to learning, it is not a necessary part of learning. One study (Leow, 1998b) empirically tested Tomlin and Villa (1994), finding support for this hypothesis. However, as will be discussed below, this study does not necessarily demonstrate learning without awareness, and does not provide evidence against the noticing hypothesis. In summary, the necessity of attention to language acquisition is generally agreed upon, and while the need for awareness is somewhat more debated, learning without awareness has not been clearly proven. As such, this dissertation will consider attention and awareness in terms of Schmidt’s noticing hypothesis, which claims that attention and awareness are crucial to learning. This hypothesis is defined below.

3.2.1 The noticing hypothesis

Schmidt’s (1990, 1993, 1994a, 1994b, 1995) noticing hypothesis suggests that what is necessary (though not sufficient) to learn target forms is noticing of these target forms. As mentioned above, Schmidt believes that both attention and awareness are crucial to learning,

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20 However, see Hama and Leow (2010) for a replication of Williams (2005), but with different results.
21 In terms of implicit learning, Schmidt (1993) asserts that this type of learning is certainly not the most common form of learning in SLA, but that it might be possible. However, Schmidt (1995) is somewhat unclear whether implicit learning, which he defines as learning without awareness at the level of understanding, can occur at all in second language acquisition, stating a lack of research demonstrating this type of learning.
rejecting the idea of learning without awareness. Forms that are noticed, or attended to with some small degree of awareness (Rosa & Leow, 2004a), are those that will be able to be converted from input to intake in the learners’ interlanguages. As mentioned above, for Schmidt (1990), intake is “that part of the input that the learner notices” (p. 139). These noticed forms are learned on an item-by-item basis (Schmidt, 1993). The higher level of understanding is needed for learners to compare, analyze, and test hypotheses (Schmidt, 1990, p. 132), which leads to learning, or system restructuring. In other words, those forms that are not noticed in the input by learners cannot be learned, but noticing alone is not enough for learning to occur. For Schmidt (1990), noticing, or “focal awareness,” can be operationalized as availability for verbal report (p. 132), as will be done in the current study.

Schmidt’s (1990, 1993, 1994a, 1994b, 1995) noticing hypothesis has had a significant impact on the field of second language acquisition in both awareness research (Alanen, 1995; Jourdenais, Ota, Stauffer, Boyson & Doughty, 1995; Leow, 2001a; Rosa & Leow, 2004a; Rosa & O’Neill, 1999, among others) and interactional research (Egi, 2004; Mackey, Gass & McDonough, 2000; Mackey, McDonough, Fuji & Tatsumi, 2001; Nabei & Swain, 2002; Philp, 2003). The hypothesis has also led to many studies that have utilized concurrent and retrospective verbal protocols to operationalize noticing. In concurrent verbal protocols, also called think-alouds, participants speak their thoughts out loud while completing a task. In retrospective verbal protocols, participants carry out a task first and later describe to a researcher what they were thinking while they carried out the task. Schmidt’s noticing hypothesis and the usefulness particularly of concurrent verbal protocols for testing this hypothesis are described below. First, the different types of verbal reports are discussed in more detail, along with their strengths and possible drawbacks.
3.2.2 Definitions of verbal reports

Verbal reports have become an increasingly accepted method with which to improve our understanding of the cognitive processes of learners. While they have been used for many years in non-linguistic fields, in SLA research, work on the usefulness of these verbal reports is still fairly recent. This section will define the different types of verbal reports.

In verbal reports, participants are asked either during a task (known as a concurrent or introspective verbal report, or think-aloud) or at some point after completion of a task (a retrospective verbal report) to verbalize their thoughts. This terminology of concurrent and retrospective verbal reports comes from Ericsson and Simon (1984, 1993), who believed that retrospective verbal reports might not be as useful as concurrent protocols. This is because of the issue of veridicality in retrospective verbal reports, or the ambiguity as to whether subjects are really accessing the same information after a task as they did during completion of the task. There is some evidence that participants are more likely to forget or invent information in retrospective verbal reports (Bowles & Leow, 2005). Veridicality is not relevant to concurrent reports, however, since the task and the protocol occur at the same time. The other important issue regarding the validity of verbal protocols is reactivity, or “whether the act of thinking aloud alters the end state of the cognitive process (accuracy of task performance)” (Bowles & Leow, 2005, p. 417). Reactivity, unlike veridicality, is relevant to both concurrent and retrospective verbal reports.

These two types of verbal reports, introspective or retrospective, are either metalinguistic or nonmetalinguistic (Bowles & Leow, 2005). In nonmetalinguistic verbal reports, participants are asked to say only their general thoughts regarding the task, while in a metalinguistic verbal report, participants are asked to state their thought processes as well as to give reasons and
justifications for these thoughts. Ericsson and Simon (1993) claimed that metalinguistic verbal reports (what they call Type 3 verbalization) could, but would not necessarily, be reactive (p. xxxiii). As will be touched upon in section 3.2.4, studies looking specifically at the reactivity of concurrent verbal reports have found differing results regarding reactivity for accuracy, latency, and metalinguistic as compared to nonmetalinguistic protocols.

As mentioned above, Schmidt (1990) has suggested that noticing can be operationalized as availability for verbal report. Indeed, many previous studies have used concurrent and/or retrospective verbal reports to test Schmidt’s noticing hypothesis. These studies will be discussed below, with a particular focus on those that have looked at concurrent verbal reports, or think-alouds, in SLA. Since only the issue of reactivity, not veridicality, is relevant to these verbal reports, they are considered a stronger method of data collection, and utilized in this dissertation. As will be explained below, previous studies in this area have tended to find evidence supporting Schmidt’s noticing hypothesis.

3.2.3 Research on awareness in SLA

Numerous L2 studies have utilized either concurrent verbal reports or both concurrent and retrospective verbal reports to directly test the noticing hypothesis of Schmidt. The findings of these studies have confirmed this hypothesis to varying degrees, in terms of noticing only, or both noticing and understanding. One study, Leow (2000), specifically looked for a dissociation between awareness and further processing, instead finding that the unaware group had not improved from pretest to posttest. Additionally, Leow (1998b) tested Tomlin and Villa’s (1994) approach to attention and awareness, finding support for detection, but not finding evidence against Schmidt’s noticing hypothesis or for a dissociation between awareness and learning. Together, these studies provide strong evidence supporting Schmidt’s noticing hypothesis. First,
in addition to extensive research that has been carried out on verbal reports using Schmidt’s noticing hypothesis, verbal reports have been used extensively in other areas of SLA research as well, as discussed briefly below.

3.2.3.1 Research utilizing verbal reports

Though much research has utilized verbal reports to test the noticing hypothesis, many other types of second language acquisition studies have included verbal reports as well. For example, studies have utilized verbal reports to look at L2 reading strategies and the effects of these strategies on comprehension (Carrell, 1989; Cohen, 1987; Pritchard, 1990), L1 and L2 reading strategies (Davis & Bistodeau, 1993; Nevo, 1989; Yang, 2006), and test-taking strategies in the L2 (Cohen, 2000; Cohen & Upton, 2007; Norris, 1992). Verbal reports have also been utilized in interaction research (Egi, 2004; Mackey, Gass & McDonough, 2000; Mackey, McDonough, Fuji & Tatsumi, 2001; Nabei & Swain, 2002; Philp, 2003), though mainly retrospectively (see Gass & Mackey, 2000, for more information on retrospective verbal reports). These interactional studies generally focused on learner ability to notice a gap between a form in the target language and a form in their interlanguage, with the assumption that the more learners notice these gaps, the more they will learn (Gass, 1991, 1997; Gass & Varonis, 1994; Mackey, 1999; Schmidt, 1990, 1994a). Again, since this dissertation tested the noticing hypothesis in SLA, the above studies will not be discussed further here. SLA studies testing the noticing hypothesis are examined below.

3.2.3.2 Empirical research on the noticing hypothesis

Verbal protocols have also been used frequently in the empirical attentional research on the noticing hypothesis (Alanen, 1995; Camps, 2003; Leow, 1997a, 1998a, 2000, 2001a, 2001b; 22 See Bowles and Leow (2005), Bowles (2008), Bowles (2010) and Ericsson and Simon (1984, 1993) for a more detailed treatment of SLA and non-SLA studies that have included verbal protocols in the design.
Rosa & Leow 2004a, 2004b; Rosa & O’Neill, 1999), generally finding evidence supporting this hypothesis. Of these studies, Alanen (1995), Camps (2003) and Leow (2001b) looked at discourse in SLA, while Leow (1997a, 1998a, 1998b, 2000, 2001a) and Rosa and O’Neill (1999) examined problem-solving tasks in SLA. Some of these researchers (Alanen, 1995; Camps, 2003; Leow, 2000; Rosa 1999; Rosa & Leow, 2004a, 2004b) used both concurrent and retrospective verbal reports to determine which subjects had demonstrated noticing and/or understanding. Only one study, Leow (1998b), did not find evidence directly supporting the noticing hypothesis, although as will be discussed below, even this study did not find evidence against this hypothesis. While the above studies generally supported the noticing hypothesis, some looked only at noticing, whereas others tested for awareness at the level of noticing and understanding.

3.2.3.2.1 Studies analyzing noticing

A few SLA studies (Alanen, 1995; Camps, 2003; Jourdenais et al., 1995; Leow, 1998a) interested in attention and awareness research utilized concurrent protocols or concurrent and retrospective protocols to discuss noticing and its effect on awareness. These studies did not examine higher levels of awareness, but generally found that noticing correlated with more learning.

Alanen (1995) used both on-line think-alouds and a posttest questionnaire (including statement or restatement of the rules, and questions on whether participants had noticed the highlighting) to compare the effects of explicit form-focused information versus implicit textual

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23 Swain and Lapkin (1995) also utilized think-alouds in a L1 English, L2 French 8th grade immersion classroom on a discourse (writing) task. Participants in this study thought aloud while writing and editing their papers. The researchers found that the learners that had been marked earlier as more proficient (by their language teacher) had more noticing LREs (language related episodes) and mentioned grammar more than the less proficient ones. However, this research analyzed data from only two learners in each group, and did not state whether the learners with more noticing LREs were more accurate than those with fewer LREs. As such, it does not provide direct evidence for (or against) the noticing hypothesis.
enhancement on the acquisition of locative suffixes and consonant gradation in semi-artificial Finnish. Participants carried out the think-alouds after reading the text, during a rule explanation task. Alanen found that, regardless of treatment type, noticing of target forms positively correlated with acquisition of at least some aspects of these target forms, as measured by accuracy on a sentence completion task. However, Alanen only looked at noticing, so could only state that noticing correlated with better sentence completion task scores, while no noticing correlated with lower scores.

Camps (2003) also included both concurrent think-alouds and retrospective verbal reports in the design, using a reading task and a multiple choice activity in Spanish, regarding pronouns and their agreement. Camps also found evidence for noticing, in that those learners who noticed the targeted structure (defined as those who mentioned pronouns or their agreement features) were more likely to perform better on the multiple choice activity. This effect held only for second semester learners and not for first semester learners; however, the evidence supporting noticing was true for both types of verbal report for these learners.

Jourdenais et al. (1995) utilized only think-aloud protocols, during the written production of a short story. Participants wrote this story after reading a text, in which the preterit and imperfect forms in Spanish were either enhanced or unenhanced. They found that the protocols from the textual enhancement group had significantly more noticing, defined as explicit verb related episodes, or references to selection and conjugation of the verb, than the comparison, or non-textual enhancement group. The enhancement group was also significantly better at accurate production in obligatory contexts than the unenhanced group. In this study again, then, noticing correlated with more accurate production in obligatory contexts.
The last study to investigate only noticing, Leow (1998a), analyzed the effect of amount (number of times) of exposure and type of exposure (through instruction or a task) on the amount of learning of irregular preterit forms in L2 Spanish. Although he was not specifically interested in the coding and explanation of think-alouds in this study, Leow included think-alouds in the design. In terms of these verbal reports, Leow found that noticing/detection led to more cognitive registration of the targeted form, again supporting Schmidt’s noticing hypothesis at the level of noticing. The participants who demonstrated cognitive registration of forms were from the task group, and this cognitive registration correlated with very high scores on the task (above 97%). These four studies, then, found evidence for the usefulness of noticing in the acquisition of various SLA structures. Other SLA attention and awareness studies tested a higher level of learning, that of understanding, as well as noticing, strengthening the claims of the above studies that found evidence for noticing alone.

3.2.3.2.2 Studies analyzing noticing and understanding

Some SLA studies were able to establish both a lower level of awareness (noticing) and a higher level of awareness (understanding), generally finding that more awareness correlated with more learning, or a higher level of processing, whereas less awareness correlated with less learning, or a lower level of processing (Leow, 1997a, 2001a, 2001b; Rosa, 1999; Rosa & Leow, 2004a, 2004b; Rosa & O’Neill, 1999). Additionally, one study at least (Leow, 2000) provides some evidence for a lack of dissociation between awareness and learning; that is, that those learners with no awareness of the target structure did not improve on the posttest as compared to the pretest, whereas aware learners were significantly better on the posttest.

Leow (2001b) used concurrent think-aloud protocols to test recognition and controlled written production of the formal imperative in Spanish on a reading task. He found significant
correlations only between noticing and recognition of the targeted form for both groups (textually enhanced and unenhanced) on the posttest. So those learners who demonstrated noticing of the structure performed better on this task than those who did not demonstrate noticing. Additionally, two participants showed what Leow called meta-awareness, including hypothesis testing, metalinguistic description and rule formation (or understanding, as in Schmidt). These two learners performed much better on the tasks than the other participants. Because there were only two learners, however, inferential statistics could not be run on these data. Still, these results provide at least weak support that more awareness of the structure was correlated with higher posttest scores.

Rosa and O’Neill (1999) assessed input conditions (explicit versus implicit) and level of awareness to determine whether these factors affected intake on a jigsaw puzzle, on contrary-to-fact conditionals in L2 Spanish. They used concurrent think-aloud protocols to operationalize awareness at the level of noticing, understanding or no report, finding significantly more intake for those who reported awareness at the level of understanding and significantly less for those who only reported awareness at the level of noticing. The researchers did not, however, find a significant difference between the noticing and no report groups. Thus, this study found that more awareness correlated with more intake, though not that noticing was better than no report, again partially supporting Schmidt’s noticing hypothesis.

Leow (1997a, 2001a) also employed concurrent think-aloud protocols, to examine awareness and its effect on learners’ responses on a recognition and written production task after completing a crossword puzzle task, using the irregular preterit forms in L2 Spanish. He found that more meta-awareness (understanding) was correlated with more conceptually-driven

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24 Participants had very low scores on the posttest and delayed posttest for the controlled written production task, and on the delayed posttest for the recognition task, so inferential statistics could not be carried out on these data.
processing (hypothesis testing and rule formation). Less meta-awareness (noticing) contributed to an absence of this conceptually-driven processing. In terms of recognizing and (though somewhat less strong) producing the targeted forms, more awareness contributed to better scores. In other words, more awareness meant more recognition and accurate written production of the irregular preterit forms. Thus, in terms of recognition and controlled written production, Leow provided evidence here for Schmidt’s noticing hypothesis at both the level of noticing and the higher level of understanding. However, because of the nature of the crossword puzzle task, all participants demonstrated at least cognitive change after completing the task (in that they changed the verbs to the correct, irregular, forms). As such, Leow was not able to include a group that had no report of awareness, so again there was not a clear difference between noticing and no awareness here.

Rosa (1999), like Rosa and O’Neill (1999), considered exposure to the L2 input (contrary-to-fact conditionals in the past in Spanish) under varying conditions of explicitness of the instruction and feedback, using a jigsaw puzzle task. Rosa examined whether these learning conditions affected recognition and production of old and new exemplars of the target structure. She also utilized both think-aloud protocols and a post-exposure questionnaire to verify awareness levels of participants. Rosa found that learning condition, recognition of new exemplars, and production of new exemplars all affected awareness reports.

For learning condition, this meant that the more explicit the learning condition, the more awareness was shown in the awareness reports. For recognition and production of new exemplars, the researcher found that understanding was significantly better than noticing, but that noticing was still significantly better than no report. In general, high levels of awareness helped to generalize to new items, and led to more hypothesis formation and testing, whereas at
lower levels of awareness there was more overgeneralization and individual item learning. Rosa, like Schmidt, suggests that noticing entails more item level learning, whereas understanding involves more generalizing. Rosa, then, like Leow (1997a, 2001a) provided evidence for Schmidt’s noticing hypothesis in terms of both noticing and understanding, but was also able to include a group with no report of noticing that scored lower than the noticing group.

In a more recent study, Rosa and Leow (2004a, 2004b) measured both intake (on a recognition task) and controlled written production of old and new exemplars of the targeted structure, contrary-to-fact-conditionals, after completing a jigsaw puzzle. They included think-aloud protocols as well, to test noticing and understanding of the targeted structure. The researchers, similarly to Rosa (1999) and Schmidt, defined noticing as item level learning and understanding as system level learning. Here, again, all three levels of awareness differed significantly (no report, noticing and understanding) in terms of both intake and controlled written production of new exemplars of the target structure, both immediately after exposure and over time. That is, those learners with more awareness were more accurate on the tasks than those with less awareness. Again these results support Schmidt’s noticing hypothesis for both the levels of noticing and understanding, as well as for a difference between noticing and a lack of reported noticing.

3.2.3.2.3 Learning without awareness

The above studies provided evidence that more awareness correlates with more learning and that less awareness correlates with less learning, but were not specifically interested in whether learning can occur without awareness. Given this, Leow (2000) wanted to look more carefully at this last part of Schmidt’s noticing hypothesis, of whether there is evidence for

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25 Like Rosa (1999), Rosa and Leow (2004a, 2004b) do not discuss results on old exemplars of the targeted structure with respect to the think-aloud protocols.
processing without awareness. Leow again used a crossword puzzle for the irregular preterit in L2 Spanish and included think-aloud protocols in the design. He added two probe questions, and interviews with unaware participants, to help verify awareness level. Even so, Leow did not find evidence for a dissociation between awareness and further processing of targeted forms. He found that for the unaware group, there was no difference between the pretest and posttest for either the recognition or written production test, whereas for the aware group there was a significant difference between pretest and posttest scores for both tasks. This provides some evidence against Tomlin and Villa (1994), who claimed that awareness is not necessary for learning, and at the same time further supports the noticing hypothesis.

3.2.3.2.4 Test of Tomlin and Villa (1994)

Finally, one study, Leow (1998b), tested Tomlin and Villa’s (1994) fine grained analysis of attention and awareness in SLA, and did find evidence supporting this hypothesis. However, this study does not provide direct evidence against Schmidt’s noticing hypothesis. Leow (1998b) again used concurrent think-aloud protocols during a crossword puzzle task on the irregular preterit forms in Spanish. This study consisted of four groups, including a control group, a group with inhibitory orientation (incorrect instructions), a group with help on both orientation and detection who received clues in the crossword to help them provide the correct irregular forms, as well as bolded instructions, and finally a fourth group, detection without orientation, which was similar to the third one with clues in the crossword, but without the bolded instructions.

In groups 3 (orientation and detection) and 4 (detection) only, the think-alouds indicated further processing on the part of these participants. So, only attention at the level of detection seemed to contribute to further processing, in terms of significantly higher posttest and delayed posttest scores on the multiple-choice recognition test and the written production task. This
further processing was demonstrated in the think-alouds in terms of hypothesis testing and morphological rule formation on the part of the learners.\textsuperscript{26} 

Although this does provide support for Tomlin and Villa (1994), in that only detection led to further processing, the most significant difference between the hypotheses of Schmidt and Tomlin and Villa is that Tomlin and Villa maintain that attention without awareness is possible, whereas Schmidt does not. According to Robinson (1995b, 1996a), in fact, noticing is simply detection with awareness plus rehearsal in short term memory.\textsuperscript{27} This study did not find that those learners who detected were unaware— in fact, those in the detection group were those who had shown high percentages of verbal or written corrections or comments on the targeted forms. Thus, regardless of the support for Tomlin and Villa (1994) that these results offer, they do not provide evidence against the noticing hypothesis, or against learning without awareness in general.

In conclusion, research on the noticing hypothesis generally supports that more awareness correlates with more learning, although there are still some conflicting results. Some studies (Alanen, 1995; Camps, 2003; Jourdenais et al., 1995; Leow, 1998a) only analyzed, and found evidence for, awareness at the level of noticing, not understanding, while other studies (Leow, 1997a, 2001a; Rosa & O’Neill, 1999) did not find clear evidence that noticing was better than no awareness. However, other studies (Rosa, 1999; Rosa & Leow, 2004a, 2004b) were able to find that understanding correlated with a higher level of learning than noticing, which in turn

\textsuperscript{26} See Simard and Wong (2001) and Leow (2002) for further discussion of this research.

\textsuperscript{27} Robinson (1995b) suggested incorporating both Schmidt and Tomlin and Villa’s hypotheses, claiming that detection involves attention but not awareness and occurs even earlier than noticing. He then defined noticing as “detection plus rehearsal in short-term memory, prior to encoding in long-term memory” (1995b, p. 296), and stated that it involves awareness and is crucial for learning. Robinson (1995a, 1996a, 1996b, 1997b) found that while awareness at higher levels (of verbalizing rules) led to improved learning in at least some conditions, noticing did not result in more learning for participants in any experimental condition. Yet Robinson only utilized retrospective protocols, which as discussed above have the added potential issue of veridicality, rather than concurrent verbal protocols, so his research is not examined further here.
correlated with more learning than no report of awareness. Finally, Leow (2000) found more
direct evidence for a lack of a dissociation between awareness and learning. These studies form
support for Schmidt’s noticing hypothesis, although more research in this area is warranted to
clarify the findings of these earlier studies.

3.2.4 Reactivity studies

Another strain of research on the use of think-aloud protocols in second language
acquisition focuses on the possible issue of reactivity, or whether the act of thinking aloud
changes learners’ cognitive processes. Reactivity has been considered with respect to accuracy
and latency (time spent on task), and also in terms of differences between metalinguistic and
nonmetalinguistic protocols. Yet, this research has not reached clear conclusions regarding the
reactivity of think-alouds in any of these areas. For accuracy and latency, some L2 studies have
found reactivity for latency only (Sanz, Lin, Lado, Bowden & Stafford, 2009, experiment 1;
Yoshida, 2008), some have found reactivity for accuracy only (Polio & Wang, in review;
Rossomondo, 2007; Sachs & Polio, 2007, experiment 1; Sanz et al., 2009, experiment 2), and
some for both latency and accuracy (Bowles, 2008; Bowles & Leow, 2005).28

Additionally, different L2 studies have found discrepancies in the reactivity of groups
who carried out metalinguistic as compared to nonmetalinguistic protocols. For example, Leow
and Morgan-Short (2004) found a nonsignificant role of reactivity in learner performance on
nonmetalinguistic verbal protocols for comprehension, intake and written production with
respect to text comprehension. However, in a replication of Leow and Morgan-Short (2004) with
more advanced speakers, Polio and Wang (in review) found a significant difference in
comprehension for the nonmetalinguistic think-aloud group as compared to a silent control
group. For metalinguistic protocols, Bowles and Leow (2005) found reactivity for text

28 Some of these studies did not look at reactivity in terms of both accuracy and latency.
comprehension only, while Bowles (2008) found reactivity for production of old exemplars of
the targeted structure, and Yoshida (2008) found reactivity for latency on an L2 reading task.
Together, these results show that reactivity research is still somewhat unclear in terms of whether
think-aloud protocols affect accuracy and/or time spent on task. These results suggest some
cautions in using think-alouds, since the very act of thinking aloud may affect the thinking
processes of learners.

One final point regarding the use of verbal protocols is needed here. Verbal protocols are
useful in language acquisition research because they can strengthen support for a hypothesis or
theory by providing both qualitative and quantitative evidence of what learners are thinking at a
given time. However, despite the many studies that have utilized verbal protocols, the validity of
these verbal protocols is still somewhat debated in terms of both veridicality and reactivity
(Bowles, 2010).

It is difficult to determine whether participants are saying what they are thinking, rather
than what they think they should be thinking, or whether they say everything that they are
thinking, or even if what they verbalize to be thinking is the same as what they are really
thinking (veridicality). It is also still not completely agreed upon that the act of thinking aloud
does not change the learning processes of participants (reactivity), as shown by the lack of
agreement in the results of the reactivity studies discussed above. Because of this continued
uncertainty, verbal reports are perhaps best used as a supplement to quantitative data, to aid in
the understanding of how and/or why participants perform the way they do on tasks. As such,
this is the manner in which verbal reports are utilized in this dissertation.

Research on awareness, such as the studies on the noticing hypothesis and reactivity
discussed above, has focused on the importance of attention and awareness in the processing of
input. In another area of study in SLA, researchers such as Norris and Ortega (2001) and Spada and Tomita (2010) have found evidence that instruction helps learners process input more effectively than when these learners receive no instruction. Additionally, Li (2010), Mackey and Goo (2007), Norris and Ortega (2000), and Russell and Spada (2006) have found similar results for the effectiveness of feedback; that is, that feedback generally helps learners to process input more effectively than when this feedback is not provided. Both instruction and feedback, therefore, demonstrate another approach to helping learners process input, by drawing their attention to structures in the input, either explicitly or implicitly. Below is a review of studies in the areas of instruction and feedback.

3.3 Explicit and implicit instruction and feedback

SLA studies have generally concluded that instruction, particularly explicit instruction, is more effective than implicit or no instruction. The importance of feedback, however, is more debated. Nevertheless, many studies have suggested that feedback in general is at least useful to L2 acquisition. Specifically, explicit feedback has been found to be effective, and more effective than implicit feedback, in various studies. First, the above terms will be defined, followed by a review of the literature on instruction and feedback.

Generally, instruction is further divided into two categories: explicit instruction and implicit instruction. *Explicit instruction* is defined by Norris and Ortega (2001) as instruction involving either rule explanation (metalinguistic explanation) or as instructions to attend to a particular form or forms, in order to reach a metalinguistic explanation. *Implicit instruction* is defined by these researchers simply as instruction lacking these two features. In this dissertation, explicit instruction was operationalized in terms of metalinguistic explanation, and implicit instruction was not utilized.
Feedback is defined as a response to a learner’s error. This response can be written or spoken, and can consist of negative evidence only, or both positive and negative evidence. Positive evidence is information about what is possible in the target language, whereas negative evidence consists of information regarding what is not possible in the target language.

In terms of spoken feedback, Lyster and Ranta (1997) defined six different types: elicitation, clarification requests, metalinguistic feedback, explicit correction, recasts and repetition. Elicitation is defined by Lyster and Ranta (1997) as one of three techniques used in order to elicit the correct form from the student—pausing to allow students to “fill in the blank,” using questions such as “How do we say X in French?” or asking students to reformulate their utterance (p. 48). Clarification requests ask learners for clarification on accuracy, comprehensibility, or both, as in “Pardon me?” or “What do you mean by X?” (p. 47).

Metalinguistic feedback relates to the accuracy of the utterance but does not provide the correct form, as in “Can you find your error?”, “No, not X,” or “Is it feminine or masculine?” (p. 47). Explicit correction does provide the correct form, as in “We don’t say X in French, we say Y.” Recasts are a reformulation of all or part of the utterance said by the learner, but corrected for errors. In repetition, the teacher repeats the incorrect utterance of the student, often with intonation adjusted to draw attention to the error. See Table 3.1, below, for more information on which of these types of feedback include positive evidence, negative evidence, or both.

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<tr>
<th>Type of feedback</th>
<th>Type of evidence</th>
<th>Positive evidence</th>
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<tr>
<td>Clarification requests</td>
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<td>Metalinguistic feedback</td>
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<td>Explicit correction</td>
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These different types of feedback can be more explicit or more implicit; for example, while explicit correction and metalinguistic feedback are considered more explicit forms of feedback, elicitation, clarification requests, recasts and repetition are generally considered to be more implicit forms of feedback (but see Doughty and Varela (1998) for data regarding more explicit recasts). However, what constitutes explicit or implicit feedback is not always defined in the same manner across studies (see Ellis, Loewen & Erlam, 2006). In the current study, learners were given computer-generated written metalinguistic feedback and explicit correction.

As mentioned above, though results for instructional studies tend to agree that instruction, in particular explicit instruction, is effective in increasing learner accuracy on forms, research on feedback is somewhat less clear. However, various studies have shown feedback in general to improve accuracy on targeted forms, and specifically explicit feedback. Below, this research on instruction and feedback will be discussed in more detail.

3.3.1 Instruction in SLA

With the introduction of Krashen’s (1982, 1985) Input Hypothesis that comprehensible input alone aids acquisition, the effectiveness of instruction in SLA became a more debated topic. Throughout the years, however, a substantial body of empirical evidence has helped determine that instruction in general, and explicit instruction in particular, is useful to second language acquisition. Regarding instruction, researchers were first interested in whether instruction itself is useful to second language acquisition. Long (1983) concluded in his review of studies that instruction in general is effective. These results were confirmed by many subsequent studies, which were brought together in the later meta-analytic review of Norris and Ortega (2001).
Norris and Ortega’s (2001) meta-analysis also provided an answer to the question of which kind of instruction is most effective. Although this answer is not as agreed upon as the effectiveness of instruction in general, the researchers found explicit instruction to be more useful than implicit instruction. As a follow-up to Norris and Ortega (2001), Spada and Tomita (2010) carried out a meta-analysis to more unambiguously determine whether explicit or implicit instruction is most effective. Using some studies from Norris and Ortega’s earlier meta-analysis as well as some more recent studies, Spada and Tomita confirmed the finding of Norris and Ortega that explicit instruction is generally more useful than implicit instruction. Together, this evidence has established both that instruction itself is effective in SLA, and that explicit instruction is more useful than implicit instruction, in terms of increasing accuracy on targeted forms. This section will discuss the findings of these studies in more detail.

3.3.1.1 Early research on instruction in SLA

Long’s (1983) study, together with the more scientific 2001 meta-analysis of Norris and Ortega, concluded that instruction is in fact useful to second language acquisition. In an early study that considered whether language instruction is more effective than no instruction, Long (1983) was able to provide an answer in the affirmative, despite some ambiguity in the specific studies (see Long, 1983 for more details). This study led to others that continued the debate as to the usefulness of instruction. The more scientific meta-analytic study of Norris and Ortega is one such study that will be discussed in more detail here. This meta-analysis provided robust evidence for instruction, in terms of significantly higher posttest scores for instructed groups as compared to uninstructed groups.

In their meta-analytic review of 49 experimental and quasi-experimental studies carried out between 1980 and 1998, Norris and Ortega (2001) found strong evidence for the
effectiveness of instruction over no instruction (baseline or control groups) in SLA. The studies also suggested that explicit instructional methods were best, resulting in significantly more improvement in accuracy over time on various tasks than implicit instructional methods.

First, the evidence in the meta-analysis for instruction over no instruction (baseline, comparison or control groups) was robust, with an effect size of \( d = .96 \).\(^{29}\) Additionally, the effect size for explicit instruction was \( d = 1.13 \), while the average implicit instruction effect size was \( d = .54 \), again showing a large gap in the usefulness of these two types of instruction in the studies included in this meta-analysis. The researchers did mention one problem with these results— the large standard deviations found among the studies. These large standard deviations throughout suggest varying effects of the different treatments. Despite these caveats, the results still indicate that instruction in general is more effective than no instruction and that explicit instruction is more useful than implicit instruction.

3.3.1.2 More recent evidence for instruction in SLA

In an updated meta-analysis, Spada and Tomita (2010) again found evidence for the effectiveness of explicit over implicit instruction, strengthening the previous findings by Norris and Ortega. They also addressed two possible issues with the results from this earlier meta-analysis: a lack of both free response measures and studies utilizing implicit instruction.

The researchers found explicit instruction to be more effective than implicit instruction in terms of both simple and complex grammar rules (in English only), and for immediate posttests (from immediately after the treatment to two weeks later) and delayed posttests (from one to sixteen weeks later). The researchers reported that of the thirty studies included in the meta-analysis, 20 were new, or not examined by Norris and Ortega, while 10 were from Norris and Ortega (2001). For complex rules, the effect size was \( d = .88 \) for explicit instruction, and only

\(^{29}\) An effect size of .80 or higher is considered a large effect size, .5-.8, medium, and lower than .5, small.
$d = .39$ for implicit instruction. For simple rules, the effect size for explicit instruction was somewhat lower, at $d = .73$, although the effect size for implicit instruction was small, at $d = .33$.

For the posttests, effect sizes were large for explicit instruction ($d = .84$ for complex forms and $d = .88$ for simple forms), and lower for implicit instruction ($d = .29$ for complex forms, and $d = .66$ for simple forms). For the delayed posttests, the effect sizes for explicit instruction were even larger ($d = 1.02$ for complex forms and $d = 1.01$ for simple forms), whereas implicit instruction effect sizes were lower ($d = .56$ for complex forms, and $d = .51$ for simple forms).\(^{30}\)

This meta-analysis also addressed two issues from Norris and Ortega (2001), thus eliminating possible problems with the conclusions of the latter study. First, as described above, Norris and Ortega had also found that explicit instruction was more effective than implicit instruction. However, few studies at that time, or only 16% of those included in Norris and Ortega’s meta-analysis, had focused on more free response tests, which are considered in general to be more implicit measures of knowledge. The studies at that time instead had tended to include controlled response tests, generally thought to be more explicit. As such, it is possible that the explicitly instructed groups improved more than the implicitly instructed groups simply because the tests they were given after instructional treatment were more similar to the explicit instruction provided than to the implicit instruction. In the Spada and Tomita (2010) study, contrarily, the researchers found that 50% of the studies had included free outcome measures (again as compared to only 16% in Norris and Ortega).

Despite this increase in free outcome measures since Norris and Ortega’s (2001) meta-analysis, Spada and Tomita still found explicit instruction to be more effective than implicit instruction, and they found this to be true on both controlled and free outcome measures. For controlled outcome measures, explicit instruction effect sizes were again large, at $d = .84$ for

\(^{30}\) The number of studies for the delayed posttest measures was much smaller than that of the posttests, however.
complex forms, and $d = .78$ for simple forms, whereas implicit instruction effect sizes were small, at $d = .34$ for complex forms and $d = .17$ for simple forms. Free outcome measures did tend to vary more, with large or medium effect sizes for explicit instruction, at $d = .86$ for complex forms and $d = .63$ for simple forms, and small or medium effects for implicit instruction, at $d = .23$ for complex forms, but $d = .56$ for simple forms.\(^{31}\)

Secondly, fewer of the studies in Norris and Ortega’s meta-analysis had either focused on or included implicit instruction (only 21 out of 45, or 46%). Spada and Tomita (2010) found that the use of implicit instruction in studies had increased as well since Norris and Ortega’s meta-analysis. In Spada and Tomita, 19 of the 30 studies (or 63%) had focused on or included implicit instruction, allowing for a more robust claim by these researchers that explicit instruction is more effective than implicit instruction in second language acquisition.

Spada and Tomita’s (2010) study thus helps to confirm the findings of Norris and Ortega (2001) that explicit instruction is more effective than implicit instruction. The researchers found this to be true on controlled and free response outcome measures, on simple and complex rules, and over time. With the aid of meta-analyses, SLA research has confirmed the usefulness of instruction in general as compared to comparison, baseline or control groups, and the effectiveness of explicit instruction over implicit instruction. The next area of interest in instruction discussed here is the usefulness of feedback, and the effectiveness of explicit as compared to implicit feedback.

### 3.3.2 Feedback in SLA

While the evidence regarding the usefulness of instruction, and in particular explicit instruction in SLA, is fairly well established, there is somewhat more uncertainty regarding the

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\(^{31}\) However, these were the only results in this meta-analysis with overlap of confidence intervals, suggesting less reliability of these differences than the others.
efficacy of feedback in SLA. Some believe feedback to be generally useful, yet others claim it is detrimental to learning. There is also debate regarding explicit as compared to implicit feedback. Despite this uncertainty, various studies have shown evidence for the usefulness of feedback in general, and, though less strong, for explicit over implicit feedback. This section will discuss the results of four meta-analyses (Li, 2010; Mackey & Goo, 2007; Norris & Ortega, 2000; Russell & Spada, 2006) that have brought together data from a variety of individual studies looking at the effectiveness of feedback in SLA, and have generally found feedback to be effective. It will also look in more detail at some individual studies from Ellis et al. (2006) and from the above meta-analyses, to help interpret the results of these meta-analyses. Finally, the Ellis et al. (2006) study itself will be discussed in terms of results for learners with some prior knowledge of a structure. Together, these studies provide reasonably strong evidence that feedback, in particular explicit feedback, is useful to SLA.

3.3.2.1 Views on feedback in SLA

Contrary to the general agreement that exists regarding the value of instruction in second language acquisition, some researchers disagree on the necessity and usefulness of feedback in SLA. Some, as in Krashen (1985) and Truscott (1999), have claimed that feedback is not necessary, and can actually be detrimental to SLA. Others, such as Schachter (1991), believe that the usefulness and/or necessity of negative evidence will depend on the structure (and the age group of learners). Still others, as in Trahey and White (1993) and White (1991) have found empirical evidence that feedback is useful in the L2, but only in certain cases where positive input in the L2 will not be able to disconfirm learner hypotheses. Despite these claims that feedback is not necessary, or even detrimental, researchers like Swain (1985) believe that feedback has an important role in SLA. Swain found persistent grammatical errors on the part of
learners in immersion classrooms, in spite of many years of instruction and immersion in the language. More recently, various meta-analyses have brought together data from experimental and quasi-experimental feedback studies, finding strong evidence for the value of feedback in general and, though less clearly, for explicit feedback in particular (Li, 2010; Mackey & Goo, 2007; Norris & Ortega, 2000; Russell & Spada, 2006). These meta-analyses are examined below.

3.3.2.2 Meta-analyses of feedback in SLA

In a meta-analysis of fifteen studies of corrective feedback in SLA, Russell and Spada (2006) found a high weighted mean, $d = 1.16$, supporting the effects of feedback in general. Of the fifteen studies, the researchers found that two showed no effect of feedback, one found a small effect, two a medium effect size, and ten studies found large effect sizes. Additionally, although they did not have enough studies to strongly compare effects over time, those studies that had delayed posttests (five in total) were found to have either medium or large effect sizes. These delayed posttests took place from one week to five weeks after the treatment. However, as only three studies considered here had examined both implicit and explicit feedback (and only one had compared the two), the researchers were unable to discuss whether explicit or implicit feedback had a larger effect size. Still, these results show strong support for the positive effects of feedback in general in SLA.

Though not a major part of their meta-analysis, Norris and Ortega (2000) did take into account the usefulness of explicit feedback as compared to implicit feedback. Specifically, they looked at the effectiveness of metalinguistic feedback (generally considered to be explicit feedback) as compared to recasts (generally considered to be more implicit). They found that metalinguistic feedback had an effect size of $d = .96$, while the recasts had an effect size of $d = .81$. While this is not a large difference in effect size, and both of these effect sizes are
considered large, not many studies contributed to this analysis, and the effects of feedback were somewhat mixed with the effects of instruction. This study, then, provided some evidence supporting explicit feedback, although differences between the two types of feedback were not substantial.

More recently, Mackey and Goo (2007) carried out a meta-analysis including data on feedback in negotiated interaction studies. These researchers looked at feedback in general and also compared the effects of explicit feedback to those of implicit feedback. They included 28 unique studies on feedback from 27 reports, published between 1990 and June 2006. This meta-analysis did find some evidence for the usefulness of feedback, particularly after a short delay, since the mean effect size for immediate posttests was $d = .71^{32}$ whereas on short delay posttests it was $d = 1.09$.

Mackey and Goo seemingly found evidence for the effectiveness of implicit over explicit feedback, since the mean effect size for recasts was $d = .96$, whereas for metalinguistic feedback it was only $d = .47$. However, while there were ten studies that included recasts, there were only three studies that used metalinguistic feedback. The researchers do state that the differences in effect size are not statistically significant due to a lack of studies comparing both feedback to no feedback, as well as explicit to implicit feedback. Thus, results on meta-analyses to this point indicated somewhat unclear and conflicting data regarding feedback, though generally seemed to at least show that feedback in general is useful to second language acquisition.

In an attempt to update the previous meta-analyses by Norris and Ortega (2000), Russell and Spada (2006), and Mackey and Goo (2007), Li (2010) examined 22 published studies and 11 PhD dissertations, published between 1988 and 2007. This meta-analysis again considered the

\[d = .93.\] However, very few studies had no feedback conditions (six on the immediate posttests, and four on the short delay posttests), so these differences are not statistically significant.
effects of feedback in general compared to no feedback, as well as the effects of explicit compared to implicit feedback. Li found a medium effect size for corrective feedback in general as compared to comparison or control groups (around $d = 0.60$). This effect was maintained over time.

Statistically, the researcher found no difference between explicit and implicit corrective feedback, defined in this meta-analysis as explicit correction and metalinguistic feedback as compared to recasts, clarification requests and elicitation. However, non-statistically, Li found that explicit correction had larger immediate effects (on immediate posttests, defined as less than seven days after treatment) than metalinguistic feedback and recasts. Explicit feedback in general was found to be better than implicit feedback on both immediate and short posttests (less than thirty days), whereas scores were maintained better with implicit feedback after thirty days. Again, these results were not statistically significant.

3.3.2.3 Further analysis of specific studies

In summary, while the above meta-analyses tend to demonstrate that feedback in general is effective in second language acquisition, the differences between explicit and implicit feedback are less clear. After analyzing some of the studies from these meta-analyses and from Ellis et al. (2006), at the individual level, however, a clearer picture emerges. The individual studies that included both explicit and implicit feedback measures tended to find either that explicit and implicit feedback effects were equal, that explicit feedback was better for some structures but not others, or that explicit feedback was more effective than implicit feedback. These results are important to consider in addition to those of the meta-analyses because no

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33 This effect size was much smaller than that found in the other meta-analyses presented above. The author suggests that these differences are due to different inclusion/exclusion criteria in her meta-analysis as compared to the others, and in part due to her elimination of outliers (which the other meta-analyses did not do).
study that included both explicit and implicit feedback found that implicit feedback was better than explicit feedback.

First, though not all of these individual studies found explicit feedback to be significantly more useful than implicit feedback, none found implicit feedback to be more effective than explicit feedback. Some individual studies that did not find explicit feedback to be significantly more effective than implicit feedback simply found that the two groups (explicit and implicit) were equal, not that the implicit group was better (DeKeyser, 1993; Hino, 2006; Kang, 2007; Kim and Mathes, 2001; Loewen & Nabei, 2007; Sanz, 2003). Somewhat similarly, Loewen and Erlam (2006) found that neither group improved after the computer-mediated feedback treatment. Some studies found that the explicit group scores were higher on some of the structures, but not all (Ellis, 2007; Lyster, 2004; Nagata, 1993; Sauro, 2007).

Moreover, some of the individual studies did find a statistical advantage for explicit feedback over implicit feedback, including Carroll and Swain (1993), Ellis et al. (2006), Murano (2000) and Sheen (2007). The studies by Rosa (1999) and Rosa and Leow (2004a), explained in more detail above, also found explicit feedback to be more effective than implicit feedback, particularly for generalizing to new exemplars of the target structure (contrary-to-fact conditionals in Spanish). These last two studies provide evidence that learners are in fact able to restructure their developing systems with the help of feedback, thus strengthening the argument for the effectiveness of feedback in general in SLA. These individual studies together, then, help to clarify that while explicit feedback may not always be statistically more effective than implicit feedback, it is in fact effective, and at least as effective as implicit feedback.

Ellis et al. (2006) also carried out a study to compare the relative effectiveness of explicit feedback and implicit feedback. This study is particularly important to the current dissertation, as
it is one of very few studies to test learners with some prior knowledge of a structure.\textsuperscript{34} In their study, Ellis et al. (2006) considered a form (past tense –ed in English) of which the learners had previous knowledge, but which they still comprehended and produced with errors. Their study was carried out in the classroom, but by an instructor who was not the students’ usual instructor.

The researchers found that negative evidence in the form of explicit and implicit corrective feedback did help these low-intermediate level ESL learners. However, the explicit feedback in the form of metalinguistic information improved learner accuracy significantly more than implicit feedback in the form of recasts, on both the (untimed) grammaticality judgment task and the oral imitation test.\textsuperscript{35} This study thus demonstrated that learners with some previous knowledge of a structure did benefit from feedback, particularly explicit feedback, on the structure.

Together, the meta-analytic studies of Li (2010), Mackey and Goo (2007), Norris and Ortega (2000), Russell and Spada (2006), and various individual studies, including Ellis et al. (2006), Rosa (1999), and Rosa and Leow (2004a) demonstrate that feedback, and particularly explicit feedback, helps learners make significantly fewer errors on a variety of grammatical structures as compared to groups who receive implicit feedback or no feedback. Despite some uncertainty that still exists regarding the efficacy of explicit feedback as compared to implicit feedback, various studies have shown explicit feedback to be useful in second language acquisition, and in general at least as effective as implicit feedback. Explicit instruction has been

\textsuperscript{34} This is not to say that no researchers have examined prior knowledge as a factor in general. Han and Peverly (2007), Park and Han (2008) and Van Patten, Williams and Rott (2004) have considered prior knowledge in terms of how learners process form and meaning when they have some or no prior knowledge of the target language. The two former studies found that learners with no knowledge of the target language rely on form, whereas Van Patten, Williams and Rott found that learners (with some knowledge of the target language) tend to rely on meaning first.

\textsuperscript{35} A third test, of metalinguistic knowledge, was administered as well, but due to the small number of items, inferential statistics were not calculated on this test. Descriptively, scores were very similar for the explicit and implicit group on the posttest and delayed posttest.
more clearly shown to be beneficial to SLA, and more beneficial than implicit instruction (or no instruction).

3.4 Conclusion

This chapter discussed the importance of attention and awareness to second language acquisition, and improving this attention and awareness in L2 learners through instruction and feedback. In various studies using concurrent verbal protocols, more awareness was found to generally correlate with higher accuracy on target forms, while less awareness correlated with lower accuracy. These results strongly supported the noticing hypothesis of Schmidt, that while noticing is necessary to acquisition, the higher level of understanding is what leads to system restructuring, or learning.

Additionally, this chapter established that research robustly supports the effectiveness of instruction, in particular explicit instruction, in second language acquisition. Though less clear, evidence was provided here showing that feedback, particularly explicit feedback, is useful to SLA as well. Through increased awareness from instruction and feedback, learners can more effectively process structures found in the input, leading to intake and learning of the language more quickly than those learners not given this instruction and feedback.

This dissertation seeks to strengthen the previous research in the above areas, by including explicit instruction and feedback, as well as think-aloud protocols, in the design. Yet, while much previous research has been carried out in the areas of instruction, feedback, and even verbal protocols in SLA, very little of this research considered learners with some prior knowledge of a structure. As mentioned above, only the Ellis et al. (2006) study looked at learners with some prior knowledge of a specific structure, and yet these learners were not systematically compared to those with no prior knowledge of the structure.
This dissertation includes participants with some prior knowledge of differential object marking as an independent variable as compared to those with no prior knowledge of DOM, to determine whether the previous research holds for both groups of learners. The results will therefore have implications for instruction on more difficult structures that are not quickly acquired by L2 learners.

To this point, then, differential object marking as it is acquired in Spanish, and the usefulness of instruction to second language acquisition in general as well as to DOM in particular, have been analyzed in detail. Chapter 4 examines the research questions and predictions of the research questions of the current study, and details the methodology utilized in order to answer these research questions.
CHAPTER 4: METHODOLOGY

4.0 Introduction

This study examines whether intermediate level learners with no prior knowledge of DOM in Spanish, as well as those with some prior knowledge, are able to benefit from explicit instruction and explicit feedback on the structure. It also considers other factors in the acquisition of DOM in Spanish, such as reports of awareness of the structure and the accuracy of the L2 learners compared to that of the native speakers. These questions will be described in the research questions, in the first section below.

In order to assess the linguistic profile of the participants, two tests were designed – an oral picture description task and an untimed written grammaticality judgment task. The second section of this chapter discusses these tasks in more detail, in addition to the participants, awareness reports and procedure from the main study. The third section concludes the chapter with the scoring procedures for the two tasks and the awareness reports.

4.1 The current study

Based on the research presented in Chapter 2, it is apparent that second language learners of Spanish make errors in both comprehension and production of DOM even up to higher levels of proficiency. They make these errors despite the fact that instruction tends to include both positive evidence and explicit (or implicit) negative evidence. The learners tested in the instructed studies of McCollam Wiebe (2003) and Farley and McCollam (2004), while considered ready to acquire DOM, did not all show development on the structure after the treatment, while the learners in the Bowles and Montrul (2008) and Bowles and Montrul (2009a)

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36 A timed picture interpretation task, in which participants were asked to determine as quickly as possible whether a picture and a sentence matched, was also included as part of the original study. However, data from this task were eliminated from the final analysis presented in Chapter 5, and as such the task itself will not be discussed further. Briefly, participants carried out this task after the oral picture description task and before the grammaticality judgment task, and it took about 5-7 minutes to complete.
studies improved but to levels still well below native speakers. Of the learners in Guijarro-Fuentes and Marinis’ (2007) study, only the advanced learners had been able to begin to acquire only the most unambiguous and prototypical use of DOM, which the researchers suggested was also the one use taught to the learners in the classroom. These learners, at least those in the instructed SLA studies mentioned above, tended to have either no or very little prior knowledge of DOM before beginning the studies.

As such, it is important for pedagogical purposes to determine whether learners who do have some prior knowledge of DOM, like the learners at the end of these previous studies, can benefit from instruction and feedback on the structure. If, unlike learners without prior knowledge of DOM, learners with some prior knowledge of the structure are found not to be able to benefit from instruction on the structure, then instruction should be emphasized with learners like those in the previous DOM studies, with no prior knowledge of the structure. However, if the learners with prior knowledge are found to benefit from continued instruction, then this continued instruction on differential object marking should be supported in order to improve the learners’ acquisition of DOM in Spanish.

The results for learners with some prior knowledge of DOM also have implications for Universal Grammar theory, and in particular the Full Transfer Full Access Hypothesis. While other studies (Bowles & Montrul, 2008, 2009a) have shown that L2 learners are able to begin restructuring their developing systems to acquire DOM in Spanish, based on input and instruction/feedback in the L2, whether this restructuring continues once learners have partially acquired the structure is uncertain. This study looks more clearly at the link between the noticing of a structure, measured using concurrent verbal protocols, and the acquisition of this structure, in terms of the FT/FA.
Many of the studies mentioned in Chapter 3 within the attentional framework claim (as per Schmidt, 1990, 1994a) that more awareness of a gap between a form in the target language and a form in a learner’s interlanguage will lead to more intake and restructuring of the developing system (Rosa, 1999; Rosa & Leow, 2004a). This claim is tested in this dissertation as well, in terms of DOM in L2 Spanish.

Thus, the current study expanded upon previous research, and included two main groups of intermediate level second language learners of Spanish (L1 English): one that consisted of learners with no prior DOM knowledge, as in previous research, and one that contained learners with some previous knowledge of DOM, as shown by the pretest. Then, half of the learners in each group received positive and negative evidence on the structure in the form of explicit instruction and explicit feedback, followed by two tasks (an oral picture description task and a written grammaticality judgment task), and half of the learners in each group completed only the tasks, without the instruction and explicit feedback. These groups as well as the design of the study will be discussed in section 2, below. First, the study’s research questions and predictions are presented below.

4.1.1 Research questions and predictions

The research questions for the current study are as follows:

1) Does explicit instruction with explicit feedback significantly improve the posttest and delayed posttest scores of intermediate learners on two tasks as compared to those learners who complete only the tasks?

   a. Do instructed learners with no prior knowledge of DOM, as measured by the pretest, significantly improve, as compared to the comparison group with no prior knowledge that completes only the tasks?
b. Do instructed learners with prior knowledge of DOM, as measured by the pretest, significantly improve, as compared to the comparison group with prior knowledge that completes only the tasks?

2) Do the scores of any of the groups of intermediate level learners who are tested demonstrate acquisition of the structure, as measured by statistically similar scores to the Native Speaker group on both tasks?

3) Do the instructed intermediate learners with prior knowledge of DOM retain the structure on the delayed posttest two weeks later better than the instructed intermediate learners with no prior knowledge?

4) Is level of awareness as shown in concurrent verbal reports (think-alouds) related to the accuracy of learners on the tasks? Is there a relationship between level of awareness of differential object marking and participant group? Specifically, do those learners who received instruction tend to have different levels of awareness than those who did not receive instruction? Do those learners who had prior knowledge of the structure tend to have different levels of awareness than those learners who did not have prior knowledge of the structure?

5) Will this study support the FT/FA in terms of continued restructuring of the target language based on noticing of the structure?

Predictions based on previous findings are as follows.

1) The first part of research question 1 asked whether learners who receive explicit instruction and feedback will significantly improve in score on the posttest and delayed posttest as compared to those learners who do not receive instruction.
With regard to the usefulness of instruction, a substantial base of previous research, discussed in detail in Chapter 3, has provided support for the usefulness of instruction as compared to no instruction (Long, 1983; Norris & Ortega, 2001), in terms of increasing learner scores on tasks. This research has also more specifically found support for the effectiveness of explicit instruction as compared to implicit instruction (Norris & Ortega, 2001; Spada & Tomita, 2010).

Additionally, despite research that is somewhat more ambiguous regarding the benefits of explicit feedback as compared to implicit feedback, based on the meta-analyses of Norris and Ortega (2000) and Li (2010), among others, explicit negative evidence in the form of explicit feedback has been shown to be useful, even if not essential, in SLA.

Consequently, it is predicted that learners in general in the instruction and explicit feedback groups will improve significantly more over time than those in the comparison groups. However, a) and b) below further examine the predictions for this research question, as specific predictions change for this study, depending on whether the learners had knowledge of the structure, DOM in Spanish, or not, prior to beginning the study.

a) Research question 1a) specifically asked whether learners without prior knowledge of DOM who receive instruction will outperform learners without prior knowledge who do not receive instruction.

The previous L2 studies of DOM in Spanish have all analyzed learners with little or no prior DOM knowledge. This research has in general found a benefit for instruction and explicit (or implicit) feedback (Bowles & Montrul, 2008, 2009a; Farley & McCollam, 2004; McCollam Wiebe, 2003). That is, the
learners in these studies improved significantly in score on the tasks after instruction, as compared to their pretest scores and/or the scores of a control group. These results were found on both an oral task (Farley & McCollam, 2004; McCollam Wiebe, 2003) as well as on written tasks (Bowles & Montrul, 2008, 2009a).

As such, it is predicted that the instructed learners with no prior DOM knowledge as measured by the pretest will improve significantly over time as compared to the uninstructed learners with no prior DOM knowledge, regardless of task.

b) Research question 1b) asked the same question as research question 1a) but for learners with prior knowledge. Unlike research on learners without prior knowledge of DOM, previous research on learners with prior knowledge on DOM in Spanish does not exist.

Nevertheless, the results from one study, by Ellis et al. (2006), on L2 learners of English on the acquisition of past tense -ed, suggest that even learners with some knowledge of a structure can benefit from explicit instruction and explicit feedback on the structure. Based on this study, it is predicted that the instructed learners with some prior knowledge of DOM as measured by the pretest will also improve significantly over time compared to those learners with some prior knowledge who do not receive such instruction.

2) The second research question asked whether the scores of any of the intermediate level L2 learners who are tested will be statistically similar to the Native Speaker group on the tasks.
In the research on DOM in Spanish, no studies that have compared L2 learners to 
native speakers have found statistical similarity between the two groups. In terms of the 
instructional studies on intermediate level learners without prior knowledge of DOM in 
Spanish, only Bowles and Montrul (2008, 2009a) compared learners directly to native 
speakers. Both studies found that, despite significant improvement after instruction, these 
learners’ scores were still significantly different from those of native speakers.

The one previous study of the L2 acquisition of DOM in Spanish that did not 
include instructional intervention, Guijarro-Fuentes and Marinis (2007), found that 
learners at the low-intermediate, high-intermediate and advanced levels were all 
significantly different in score as compared to the native speaker group. The above 
researchers also utilized the same proficiency test (a portion of the DELE) used in this 
dissertation.

Based on a lack of similarity between L2 learners and native speakers on this 
structure in previous DOM research, it is predicted that none of the groups of learners in 
this study will be statistically similar to the native speakers, even after instruction, on 
either of the two tasks.

3) The third research question asked whether the intermediate level learners with prior 
knowledge who receive instruction will outperform the intermediate level learners 
without prior knowledge who receive instruction, in terms of retaining the structure better 
on the delayed posttest.

First, the learners with no prior knowledge will be discussed. Of the previous 
DOM instructional studies, only McCollam Wiebe (2003) utilized a delayed posttest. 
This researcher found that the scores of instructed intermediate level learners without
prior knowledge of DOM in Spanish decreased from posttest to delayed posttest, despite increasing immediately after instruction.

Looking again at the more general meta-analysis of Norris and Ortega (2001), the researchers found that effects of instructional treatments generally lasted until the delayed posttests. However, like in McCollam Wiebe (2003), Norris and Ortega also tended to find a small decrease in scores over time from posttest to delayed posttest. The studies in their meta-analysis also generally included participants who did not have prior knowledge of the structures tested.

As such, for this study, a small decrease is expected over time, at least for the learners with no prior knowledge of the structure, on one or both tasks.

Next, the predictions for learners with prior knowledge of DOM will be discussed. There has been no previous research specifically on the maintenance of a grammatical structure over time by intermediate level learners with some prior knowledge of that structure. However, one theory discussed briefly above, Pienemann’s Processability Theory, makes predictions about learners who are developmentally “ready” to acquire a structure— that they will be better than those learners who are “unready.”

Research by Farley and McCollam (2004) and McCollam Wiebe (2003) on the acquisition of DOM in L2 Spanish conducted within the framework of Processability Theory did not suggest that Processability Theory was accurate for the development of L2 learners with respect to DOM in Spanish. However, again, the learners in these previous studies were intermediate level learners who were merely “ready” according to the Processability hierarchy, to acquire this structure, or developmentally at the level
below that of DOM on the hierarchy. Thus, these learners did not have any actual prior knowledge of the structure.

Perhaps, on a structure like DOM in Spanish that is so difficult for learners to acquire, those learners who are not only developmentally “ready” to learn the structure but who already have some prior knowledge of the structure will be able to benefit more from instruction than learners without prior knowledge.

Consequently, it is predicted that learners with prior knowledge of DOM will retain the structure better over time than those without prior knowledge, who will likely decrease in score from posttest to delayed posttest.

4) The first part of the fourth research question asked whether level of awareness as shown in the think-alouds will be related to the accuracy of learners on the tasks. Previous attention and awareness literature that has examined awareness at the levels of both noticing and understanding (Leow, 1997a; Leow, 2001a, 2001b; Rosa, 1999; Rosa & Leow, 2004a, 2004b; Rosa & O’Neill, 1999) has generally indicated that higher levels of awareness shown in verbal protocols are correlated with more learning (defined as higher accuracy on tasks) of the structures tested. Likewise, lower levels of awareness generally correlate with less learning (lower accuracy on tasks) on the structures tested.

As suggested in Schmidt (1990), awareness is operationalized in this study through the use of concurrent verbal protocols (also called think-alouds), in which learners state their thoughts out loud while completing a task. Based on this previous research, then, the prediction is that those learners who show higher levels of awareness of DOM in Spanish on the think-alouds will also demonstrate higher levels of learning of the structure, as indicated by higher scores on the two tasks.
The second part of this research question asked whether those learners who receive explicit instruction and feedback on DOM will have different levels of awareness of DOM than those who do not receive this instructional treatment. Previous research by Rosa (1999), Rosa and Leow (2004a) and Rosa and O’Neill (1999) has found that those learners who received more explicit information regarding the structure reported higher levels of awareness than those who received less explicit information (more implicit information) about the structure. Despite a failure to compare explicit and implicit conditions in the current study, it is still predicted that those learners who receive explicit instruction and feedback will demonstrate higher levels of awareness than those learners who do not receive this explicit instruction and feedback.

The third part of this research question asked whether those learners who had prior knowledge of DOM before beginning the study will have different levels of awareness of DOM than those who did not have knowledge of the structure prior to the study.

As no previous research has considered learners with some prior knowledge of a structure, no predictions can be made regarding awareness differences between the groups with prior knowledge and without prior knowledge at this time. As such, it is predicted that there will be no difference between groups with and without prior knowledge of the structure in terms of awareness levels.

5) Finally, the fifth research question asked whether this study will support the FT/FA in terms of continued restructuring of the target language based on noticing of DOM. Chapter 2 explained that the FT/FA has been used in previous research on the acquisition of DOM in L2 Spanish, by Bowles and Montrul (2008, 2009a). These studies indicated
that L2 learners had begun to restructure their interlanguages with the help of instruction and feedback on the structure. Yet again, these studies had only analyzed learners without prior knowledge of DOM, finding that they still made significant errors on the structure even after instruction.

Based on the FT/FA, it is predicted that if the learners do demonstrate noticing of the structure in the think-aloud protocols, they will continue to restructure their developing systems to include this structure, regardless of whether they have prior knowledge.

4.2 Main study

4.2.1 Participants

A total of 106 subjects participated in the study. Of these, 70 were included in the final analysis. The criteria to be included in the study consisted of proficiency scores of 14 or above (out of a total of 50 possible points), completion of all three sessions of the study, and not scoring 60% or higher on the oral picture description task on the pretest (but see footnote 41). Therefore, those whose data were excluded from the final analysis included participants whose proficiency scores were below 14 on the proficiency test, and those L2 participants who did not complete all three sessions of the study. The results of 18 participants were also eliminated from the final analysis because they scored 60% or higher on the oral picture description task.37 Finally, those participants for whom some data was lost due to a computer program malfunction were also excluded from the final analysis.

The 70 participants included in the final analysis consisted of 58 L2 learners of Spanish whose first language was English, and 12 native speakers of Spanish. This native speaker group

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37 These participants tended to score above 6 (out of 12 total items) on the oral picture description task, demonstrating an already well-established knowledge of DOM in Spanish. As such, these participants were not asked to return for the posttest and delayed posttest, and their data was not included in the final analysis.
was included in part to ensure that the tasks elicited language as expected by native speakers of
Spanish, but also to compare native speaker results to those of the L2 learners, as in previous
research.

The average age of the L2 participants was 19.1 years (range 18-22 years). The average
age at which the L2 participants had started learning Spanish was 12.8 (range 8-15), and they
had been studying Spanish for an average of 6.1 years at the time of testing. Eight of the L2
participants had studied abroad, for 1 month up to 11 months, with most having studied abroad
for around a semester, approximately 4-6 months. The first language of all of the learners was
English, although a total of 7 of the learners indicated that they had up to intermediate
knowledge of some other language. Additionally, L2 participants were asked before beginning
the study whether they had spoken Spanish or any other language in addition to English from
birth or during childhood, and all stated that they had not. At the time of testing, the L2
participants were enrolled in a variety of intermediate level Spanish courses, including courses
on reading comprehension, grammar, oral Spanish, Spanish composition, service learning,
literary analysis, Hispanic linguistics, and cultural analysis.

The average age of the native speakers at the time of testing was 34.6 years (range 27-50). Since dialect was not expected to be particularly relevant to DOM in Spanish, or at least for
animate, specific direct objects, these participants came from a variety of locations in the
Spanish-speaking world, including Spain, Argentina, and Mexico. These participants had started
learning English at an average age of 12.75 years, but with a range of 2.5-25 years of age. See
Table 4.1, below, for background questionnaire information for L2 learners and native speakers.

38 Although the range was 8-15, those who had started prior to age 10 or 11 said that they had only studied Spanish
for one or two hours a week during these years.
4.2.1.1 Pretest participant groups

The participants were divided into two groups of second language learners of Spanish, as well as the smaller native speaker group of 12 participants. Results from the pretest indicated that the proficiency level of learners was not necessarily tied to their prior knowledge of DOM. As such, the learners were separated into groups based on their pretest scores, rather than their proficiency scores. One of the groups consisted of learners who had very little prior knowledge of DOM, as demonstrated by their scores on the pretest, as detailed below, and henceforth called the No Prior Knowledge group. The second group consisted of those learners with some previous knowledge of DOM, who still made errors in comprehension and production on the pretest, henceforth called the Prior Knowledge group.\(^{39}\)

Prior knowledge of the structure was determined primarily based on learner scores on the oral picture description task. This distinction among groups was made using this task in

\(^{39}\) Despite not being separated into groups based mainly on proficiency scores, the scores on the proficiency test were slightly higher among members of the group with prior knowledge of DOM than for members of the group with no prior knowledge of the structure. See Table 4.2, below.
particular, given that pretest scores on the grammaticality judgment task were somewhat similar, at least among individual members of the two groups of learners. Those participants categorized as having no prior knowledge of the structure were those who tended to produce DOM on the picture description task zero, one or two times (out of a maximum of 12) with animate direct objects, whereas those in the group with prior knowledge tended to use DOM at least three or four times on this task. Figure 4.1, below, shows the scores of individual participants on the picture description pretest. This figure indicates that the No Prior Knowledge group generally consisted of learners who scored under 10% on the picture description pretest, while the Prior Knowledge group contained participants who tended to score between 10% and 60% on the pretest. As such, these Prior Knowledge participants can be considered to have an intermediate level of knowledge of the structure, the level of acquisition, rather than emergence or mastery (see footnote 1). The No Prior Knowledge group, contrarily, was at the level of emergence.

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40 Although there were some individual similarities on the grammaticality judgment task, averages for both the grammaticality judgment task and oral picture description task were higher for the group with prior knowledge than for the group without prior knowledge.

41 As this figure shows, two participants were kept in the study that scored above 60% on the pretest. These participants were not excluded because unlike other participants who scored so high on the picture description pretest, their GJT pretest scores indicated that they did not have mastery over the structure before beginning the study.
4.2.1.2 Posttest and delayed posttest participant groups

On the posttest and delayed posttest, the 58 participants from the two L2 participant pretest groups (No Prior Knowledge and Prior Knowledge) were each split in half. Half of each group was given explicit instruction and explicit feedback on DOM in Spanish. These will henceforth be called the Experimental Prior Knowledge (or Exp Prior) and Experimental No Knowledge (or Exp None) groups. The other half of the No Prior Knowledge and Prior Knowledge groups were comparison, or task only groups, which completed the tasks without receiving instruction. These will be called the Comparison Prior Knowledge (or Comp Prior) and Comparison No Knowledge (or Comp None) groups.

All participants had normal or corrected to normal vision, and were sought from among the students at a large Midwestern university during the spring, summer and fall of 2010, as well as the spring of 2011.
4.2.2 Tasks

4.2.2.1 Vocabulary worksheet

On the pretest, the L2 participants only (not the native speakers) received a two-page worksheet with the twenty-eight non-distracter verbs tested in the study. This worksheet consisted of pictures of the verbs being acted out, with the word above in the infinitive in Spanish (Appendix A). The participants were asked to read the word in Spanish, look at the picture, and then write the word in English if they knew the meaning. This worksheet was included in the study in order to remove from the final data analysis items that contained verbs with which participants were not familiar.

4.2.2.2 Background questionnaire

Both the L2 and native speaker groups also filled out a short background questionnaire, to determine their age, length of time spent studying Spanish, number of hours spent outside of school practicing Spanish, whether they had studied or traveled abroad, and their perceived skill level in both Spanish and English, as well as in any other languages (see Appendix B). These results are described above, in section 4.2.1 about the participants.

4.2.2.3 Proficiency test

All participants also completed a modified cloze test of Spanish proficiency during the pretest session only, which consisted of a section of the Diploma de Español como Lengua Extranjera (DELE). This task included a multiple choice vocabulary section as well as a modified cloze grammar passage from the DELE, also multiple choice, for a total of 50 possible points. The DELE is the official accreditation of degree of fluency of the Spanish language, typically issued by the Ministry of Education, Culture and Sport of Spain, and is a widely used

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42 The distracter item verbs from the grammaticality judgment task were not included here. However, care was taken to ensure that these verbs, as well as the majority of the verbs tested on the vocabulary task, could be found in the beginning level Spanish textbooks used at the university from which participants were recruited.
test of Spanish proficiency. The modified test employed in this study has also been administered as a method of determining proficiency in other studies of SLA (Guijarro Fuentes & Marinis, 2007; Montrul & Rodríguez Louro, 2006; Montrul & Slabakova, 2003). This task was untimed.

Out of 50 total possible points, native speakers scored an average of 46.5 on the proficiency test, with a range of 43-48. Only those who receive scores between 29 and 39 on this test are generally considered to be at the intermediate level of proficiency, and initially, learners of intermediate proficiency on this test were sought in the current study. However, as described above, proficiency level on this test was not found to relate strongly to the amount of DOM knowledge, as shown by the pretest scores. Although some individual learners were at a level lower than what is typically considered intermediate on this particular proficiency test, the learners in this study are nevertheless labeled as intermediate. This is because they were enrolled in Spanish courses at the fifth semester or above at the time of testing.

The range of scores for the L2 participants included in the study was 14-42. Individual proficiency level, then, was somewhat disregarded in the results, or at least not used by itself as a method of determining which L2 participants to allow to complete the study. Table 4.2, below, shows that although proficiency scores were not specifically used to separate participants into groups on the posttest, the two groups with prior knowledge had similar proficiency score averages (29 and 28.25), and the two groups without prior knowledge had similar, slightly lower, proficiency score averages (23.13 and 21.67).

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43 For more information, see http://www.dele.org.
Table 4.2: Proficiency scores by group

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exp Prior</td>
<td>16</td>
<td>29.00</td>
<td>20-42</td>
</tr>
<tr>
<td>Exp None</td>
<td>15</td>
<td>23.13</td>
<td>14-32</td>
</tr>
<tr>
<td>Comp Prior</td>
<td>15</td>
<td>28.25</td>
<td>20-34</td>
</tr>
<tr>
<td>Comp None</td>
<td>12</td>
<td>21.67</td>
<td>18-27</td>
</tr>
<tr>
<td>Native Speakers</td>
<td>12</td>
<td>46.50</td>
<td>43-48</td>
</tr>
</tbody>
</table>

4.2.2.4 Oral picture description task

The oral picture description task consisted of 15 pictures on the pretest and delayed posttest, and 17 pictures on the posttest. This task was included in the study in part because of the previous research on DOM in L2 Spanish. That is, whereas the studies by Bowles and Montrul (2008, 2009a) found that learners improved significantly after instruction on written measures, Farley and McCollam (2004) and McCollam Wiebe (2003) found that not all individual instructed learners improved significantly on oral production measures. As such, both types of task were included in the present study, in order to test whether there are differences between these two types of tasks.44

Each picture in this task included one or two verbs in the infinitive written above it. Figure 4.2, below, provides an example of one such picture (see Appendix C for the entire task). Participants were asked to describe the actions in the pictures to the researcher, using the verb or verbs written above the pictures. They were audio recorded during this task.

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44 Additionally, in general, oral measures are considered to be more difficult than written measures in SLA (Lightbown, 2000; Paradis, 2007), and this was another motivation for utilizing both types of task here.
The pictures for the pretest and delayed posttest contained 13 verbs with animate direct objects and 12 verbs with inanimate direct objects, and the pictures for the posttest included 12 verbs for both the animate and inanimate direct objects.\(^{45}\) This is shown in Table 4.3, below. The pretest and posttest pictures differed, but the pretest task was repeated in the delayed posttest. Since at least four weeks passed between the pretest and the delayed posttest, it was assumed that participants would not have been able to memorize or remember the pictures over this time period.

The pretest and delayed posttest pictures included a boy and girl, whereas the posttest pictures were of a girl and her mother. The pretest/delayed posttest and posttest together had thirty-two different verbs, such that sixteen verbs overlapped between the two tasks. If for the pretest/delayed posttest a particular verb was given an animate direct object, it was given an inanimate direct object on the posttest, or vice versa, where possible. As participants did not tend

\(^{45}\) In the scoring procedures, described in section 4.3 below, percentages were used for this task rather than raw scores, so it is not problematic that the pretest and delayed posttest contained one more item than the posttest.
to produce different word orders, the only independent variable here was the animacy of the direct object— animate or inanimate— and the dependent variable was accuracy.

<table>
<thead>
<tr>
<th>Table 4.3: Division of objects in oral description task</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objects</td>
</tr>
<tr>
<td>Pretest/delayed posttest</td>
</tr>
<tr>
<td>Posttest</td>
</tr>
</tbody>
</table>

4.2.2.5 Grammaticality judgment task

The untimed written grammaticality judgment task consisted of 80 sentences. Of these 80 sentences, 40 were grammatical and 40 ungrammatical, 48 were distracters and 32 were DOM items. As mentioned above in section 4.2.2.4 regarding the picture description task, the GJT was included in the current study, similar to previous research on DOM in L2 Spanish (Bowles & Montrul, 2008, 2009a), in order to examine the comprehension of L2 learners of the structure. Including both an oral production and written comprehension measure allows us to more directly compare results on these two types of measures, something which has not been previously examined in L2 DOM research in Spanish. Again, this previous research did indicate that there may be a difference between these two types of tasks, in terms of accuracy and improvement of learners after instruction.

In this task, participants were asked to decide whether each sentence was completely ungrammatical, somewhat ungrammatical, somewhat grammatical or perfectly grammatical. Then, for the sentences that were completely ungrammatical, somewhat ungrammatical or somewhat grammatical, participants were asked to correct only the part of the sentence that was

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46 A few L2 participants utilized OVS word order on the production task immediately after instruction. The instruction did not mention this word order specifically, although some of the examples in Spanish contained varying word orders. Additionally, some items in the practice activities completed immediately after instruction utilized this word order, so that the participants would have positive evidence that it is a possible word order in Spanish. Given that only a few participants used OVS word order, however, the differences in word order were not analyzed separately in this task.
incorrect, to make it grammatical. For those sentences that were perfectly grammatical, participants were asked to simply put an X or write YES in the space provided. There were three example sentences below the instructions, with the correct answers provided (see Appendix D).

The items in the task were divided as follows: of the 32 DOM sentences, 16 were animate, with a human subject and a human (definite) direct object. (1), below, provides an example of these sentences. Then, the other 16 sentences were inanimate, with a human subject and an inanimate (definite) direct object, as in (2), below.

(1) El hombre acuesta a la niña
    the man puts to bed DOM the girl
    ‘The man puts the girl to bed.’

(2) Sara tira la pelota
    Sara throws the ball
    ‘Sara throws the ball.’

Of these 16 animate and 16 inanimate items, half (or 8 each) had postverbal (V-O) word order, as in (1) and (2), above, and half (8 each) had preverbal (O-V) word order, as demonstrated in (3) and (4), below. Then, of the 8 preverbal and postverbal word order items, 4 items were grammatical, as in (1) – (4), and 4 were ungrammatical, as shown in (5) - (8), below.

(3) A la niña la acuesta el hombre
    DOM the girl CL puts to bed the man
    ‘The man puts the girl to bed.’

(4) La pelota la tira Sara
    the ball CL throws Sara
    ‘Sara throws the ball.’

(5) *El hombre acuesta la niña
    the man puts to bed the girl
    ‘The man puts the girl to bed.’

Some participants, both native speakers and non-native speakers, did choose to re-write the entire sentence for some items, despite the instructions and examples.
(6) *Sara tira a la pelota
   Sara throws DOM the ball
   ‘Sara throws the ball.’

(7) *La niña la acuesta el hombre
    the girl CL puts to bed the man
    ‘The man puts the girl to bed.’

(8) *A la pelota la tira Sara
    DOM the ball CL throws Sara
    ‘Sara throws the ball.’

Below, Table 4.4 depicts the distribution of the DOM items in this task (see also Appendix D).

<table>
<thead>
<tr>
<th>Type of object</th>
<th>Animate</th>
<th>Inanimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Object position</td>
<td>Grammatical</td>
<td>Ungrammatical</td>
</tr>
<tr>
<td>Postverbal V-O</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Preverbal O-V</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

The 48 distracter sentences in this task contained errors in number agreement of the subject and verb, errors of gender agreement between a noun and an adjective, and errors in the use of *ser* and *estar*, verbs meaning “to be” in Spanish. Half of these distracter sentences were grammatical and half were ungrammatical. The independent variables in the grammaticality judgment task included the animacy of the direct object and the position of the direct object as compared to the verb.

As in the picture description task, the test items differed from pretest to posttest to delayed posttest in this task as well. For example, if an item on the pretest had postverbal word order, that same item was written in preverbal word order on the posttest (and vice versa), as in (9) and (10), respectively, below. As can be seen in examples (9) and (10), the subject and direct object of each sentence did not switch from pretest to posttest, but the order in which they
appeared in the sentence did change. In other words, the sentences both had the same meaning, but different word orders.

(9) La mujer besa a la niña.
the woman kisses DOM the girl
‘The woman kisses the girl.’

(10) A la niña la besa la mujer.
DOM the girl CL kisses the woman
‘The woman kisses the girl.’

The delayed posttest contained half of the test items from the pretest and half of the items from the posttest. The distracter items for the pretest and posttest were also different, and the delayed posttest took half of the distracter items from the pretest, and half from the posttest.

Then, for each of the grammaticality judgment pretest, posttest and delayed posttests, two lists were made, with six different versions in total of the task. Each list consisted of the same sentences presented in different orders. In this way, the order in which the sentences were presented was semi-randomized by the researcher, so that there was a pretest version 1, a pretest version 2, a posttest version 1 and 2, and so on. These lists were made to ensure that the order in which the sentences were presented did not affect the participants’ responses.

4.2.2.6 Think-aloud protocols

In addition to completing the above tasks, a subset of the L2 participants also carried out concurrent verbal protocols, or think-alouds, while working on the grammaticality judgment pretest, posttest and delayed posttest. This subset consisted of 11 participants in the Exp Prior group, 10 in the Exp None group, 11 in the Comp Prior group, and 10 in the Comp None group. The think-alouds were used to determine participants’ levels of awareness of DOM.

The instructions for these concurrent protocols asked participants only to keep talking during the task, and requested that they not explain the reasoning behind their thoughts. The
participants who carried out a think-aloud protocol were given a short description to read explaining how to “think-aloud,” as well as a warm-up math question before beginning (see Appendix E). However, despite the warm-up activity and written and verbal instructions not to do so, some participants still did explain their answers in the think-alouds.

4.2.2.7 Instruction and feedback

Instruction and feedback were provided on the posttest only. The explicit instruction given to participants in the instructed groups consisted of a lesson on the computer that included positive evidence on direct objects and differential object marking with human direct objects. This instruction also included examples with both the SVO and OVS word orders, demonstrating that both word orders are possible in Spanish. The last section of the instruction contained negative evidence regarding the obligatory lack of differential object marking with inanimate direct objects (see Appendix F for the instructional treatment).

Explicit feedback was given by the computer during two practice activities of 10 questions each. The first practice activity asked participants to identify which element in each sentence was the direct object, which they selected from a multiple choice list of the words in the sentence. The second practice activity consisted of sentences with a blank where the personal a would occur if one were needed. Participants were asked to decide whether each sentence required DOM or not and to type “A” or “0” in the space provided. During both activities, explicit feedback was provided by the computer following each question. This feedback included metalinguistic information about DOM as well as negative evidence regarding the accuracy of participants’ answers. Additionally, the correct answer was provided in the event that the answer they chose was incorrect.
For example, in the first practice activity, one of the sentences was *Marco le da la foto a Ana* (‘Marco CL gives the photo to Ana’). Feedback for correct and incorrect answers is shown in Tables 4.5 and 4.6, below.

**Table 4.5: Example of feedback for a correct answer**

Marco le da la foto a Ana. - What is the direct object?

<table>
<thead>
<tr>
<th>Student Response</th>
<th>Value</th>
<th>Correct Answer</th>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Marco</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. le</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. da</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. la foto</td>
<td>100%</td>
<td>✓</td>
<td>Right! What does Marco give to Ana? La foto.</td>
</tr>
<tr>
<td>5. Ana</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Score:** 100%

**Table 4.6: Example of feedback for an incorrect answer**

Marco le da la foto a Ana. - What is the direct object?

<table>
<thead>
<tr>
<th>Student Response</th>
<th>Value</th>
<th>Correct Answer</th>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Marco</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. le</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. da</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. la foto</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>5. Ana</td>
<td>0%</td>
<td></td>
<td>No, this is the Indirect Object. Remember to ask: What does Marco give? He doesn't give Ana, he gives TO Ana.</td>
</tr>
</tbody>
</table>

**Score:** 0%

4.2.3 Procedure

4.2.3.1 Pretest

For the pretest, participants arrived at the laboratory, where they first read and signed the consent form and were offered a copy. The L2 groups only were then given the paper and pencil vocabulary test immediately prior to carrying out the background questionnaire. This task, again, consisted of pictures of the 28 verbs tested in the study, and participants were asked to write the
English definition of each word next to the word in Spanish. Once the participants had finished translating the words they knew, the researcher asked them to point to any words they did not know the meaning of, or were unsure of in any way. The researcher then translated these words for the participants, and circled these items. Again, the purpose of this task was to exclude any items that were incorrect or left blank from the analysis of the grammaticality judgment task data, as discussed further below. This task lasted about 5 minutes.

All participants then carried out, on the computer, the background questionnaire, the written proficiency test and the two tasks: the written grammaticality judgment task (GJT) and the oral picture description task. For both the background questionnaire and the written proficiency test, participants read the instructions and were told that they could ask the researcher any questions they might have while working on the tasks. The background questionnaire took participants about 5 minutes to complete, and the written proficiency test about 10-20 minutes.

Based on results from the pilot study, the oral picture description task was presented to participants first, followed by the GJT. The order in the pilot study had been the opposite, which meant that participants had seen many examples of DOM in the GJT by the time they began the picture description task. By changing the order of the two tasks, the items in the GJT could not affect the production task results, at least on the pretest.

Prior to beginning the picture description task, participants were told that they could ask questions if they were uncertain about the meaning of the verbs, about any vocabulary in the pictures, or about the events occurring in the pictures. As such, they tended to freely ask questions during this task. If participants asked which tense to use, they were told that it did not
matter if they used present or past tense, and some used gerunds as well. However, most participants chose to use the present tense to describe the pictures.

Participants were also asked to say a separate sentence for each verb. While most non-native participants produced two separate sentences naturally, creating obligatory contexts for DOM for each verb, some did not. In these cases, participants were directed to produce two separate sentences, rather than one sentence, using the two verbs. This was a particular problem for some native speakers, as the most natural way to explain the pictures with two verbs is to either produce one sentence using both verbs, or to refer back to the first sentence in the second, eliminating the obligatory context for DOM in the second sentence. The lack of individual pictures for each verb is a limitation of the study, and this issue will be discussed below under the scoring procedures for this task. This task lasted about 2-5 minutes, and was audio recorded.

After completing the picture description task, those L2 participants who carried out a think-aloud protocol were given instructions for the think-aloud before starting the GJT. After reading the instructions, they were given the practice math problem, a piece of paper and a pencil, and practiced thinking-aloud by completing the math problem. Participants then read the instructions and the three practice items on the grammaticality judgment task. They were given the opportunity to ask questions both before beginning the GJT as well as during the task, as needed.

Many non-native speaker participants and some native speaker participants as well were confused by the somewhat ungrammatical and somewhat grammatical options. As such, the researcher verbally explained to all L2 participants, and to those native speaker participants who expressed confusion, that they could choose to use only the completely ungrammatical and
perfectly grammatical options if they felt they did not understand the meaning of the middle two options.

The researcher then started the audio recorder for those participants who carried out a think-aloud protocol. If they did not carry out a think-aloud, participants continued directly from the picture description task to the instructions of the GJT. The GJT was untimed; however, many L2 participants carried out think-aloud protocols during this task. As such, it was noted by the researcher that most participants took from 20-27 minutes on the pretest to complete this task. For the posttest and delayed posttest, times decreased to about 10-15 minutes, with some participants finishing the task in as quickly as 7 minutes. Most participants also demonstrated through their think-alouds that they believed it was not acceptable to go back to correct previous answers, though this was not stated in the instructions. This first session lasted from 40 minutes to an hour in total for L2 participants. L2 participants who only completed the pretest were paid $5.

The procedure for native speakers mirrored that for the L2 learners in the pretest, except that they did not complete the vocabulary task. These participants also began by reading and signing the consent form, then took the background questionnaire and proficiency test. Finally, they carried out the oral picture description task and the grammaticality judgment task. Native speakers did not complete think-aloud protocols during the grammaticality judgment task. These participants completed the study in around 30-45 minutes, and they were paid $10.

4.2.3.2 Posttest and delayed posttest

In the second session, one week after the pretest, participants in the Exp Prior and Exp None groups began the study by carrying out a treatment phase that consisted of explicit instruction on the computer followed by two practice quizzes that included explicit feedback,
also completed on the computer. Those participants who were in the think-aloud group for the pretest completed the two practice quizzes while thinking aloud. The instruction section was untimed, and participants were told that they could return to previous sections if they wanted to, while reading the instruction. They were also given as long as they needed to complete the two practice quizzes. Most participants took between 5 and 10 minutes to read the instruction, which was in English with examples in Spanish, and about 2-3 minutes for each of the two practice quizzes.

Following the instruction and feedback, the instructed groups immediately began the oral picture description posttest, followed by the written grammaticality judgment posttest. The two comparison groups, Comp Prior and Comp None, completed only the two tasks during this session.\(^{48}\) For all four groups, those participants in the think-aloud group again thought aloud during the grammaticality judgment task. This session lasted about 30-40 minutes for the instructed participants and about 20-30 minutes for participants in the comparison group.

Finally, in the third session, all participants carried out the delayed posttest versions of the picture description task and the written grammaticality judgment task. The third session took about 20-30 minutes for all participants to complete. At the end of all three sessions, L2 participants were paid $15.

4.3 Scoring procedures

4.3.1 Proficiency test

The proficiency test was scored as 1 point for each correct answer, and zero points for each incorrect answer, with a total of 50 possible points. Only one possible correct answer was accepted for each question.

\(^{48}\) Most participants returned on the same day and time for all three sessions, but one week and then two weeks later. However, due to scheduling conflicts, some participants returned up to four days early or late to complete the delayed posttest.
4.3.2 Oral picture description task

This task was audio recorded, and the data transcribed. Then, a score for the percent use of DOM was calculated for each participant, rather than a raw total score. This scoring was necessary due to the nature of the pictures in the task. As explained above, some participants used the clitic rather than the direct object when describing the second sentence of a picture. This was a possible correct response that led to a lower number of obligatory contexts for possible DOM use than initially expected, often for both animate direct object items and for inanimate direct object items.

As such, calculating a percent rather than a raw total score more clearly demonstrates the use of the structure by all participants in the study. These items are not ungrammatical, and in fact are more natural for the native speakers, given the way the pictures in the task were presented. Some examples provided by the native speakers are given in (11) and (12), below. A total of 2% of L2 learner data was excluded from the analysis for this reason, and 10% of native speaker data.

(11) *El niño visita a la niña y la niña le saluda*  
*The boy visits the girl and the girl greets him.*

(12) *Eh la niña e, e abraza a su muñeca, el niño le ve*  
*Uh the girl uh uh hugs her doll, the boy sees her.*

4.3.3 Grammaticality judgment task

Despite four initial options for participants to choose from in this task, most participants did not use the *somewhat grammatical* and *somewhat ungrammatical* options very often, even the native speakers. As a result, it was not possible to score the task using all four options. Instead, it was decided that the *perfectly grammatical* option would be considered a YES answer,
while all other responses (*somewhat grammatical, somewhat ungrammatical, and completely ungrammatical*) were considered NO answers. Since participants were also told to correct the incorrect responses, any responses that were not identified as *perfectly grammatical* but were also not corrected, in writing or in the think-alouds, were awarded no points. Therefore, one point was only given for each response of NO if the participant response accurately corrected the error in the sentence.

However, since OVS word order is uncommon in Spanish, switching the order of items in the DOM sentences was accepted as long as the differential object marker was added or omitted as needed. Indirect object pronouns (le/les) were ignored in terms of considering sentences correct or not, as these were not part of the study, as long as they did not make the sentence ungrammatical. Direct object pronouns (lo/la/los/las) were taken into account when giving points to participants, however, as adding/deleting or changing them tended to change the grammaticality of the sentence.

For the GJT, the items on the vocabulary task were also taken into consideration. Those items that L2 participants did not know or did not correctly translate on the vocabulary task at the beginning of the study were deleted from the final analysis for those participants. As such, a percentage was calculated for the scores in this task as well. A total of 14% of the data was removed from the total because the L2 learners did not know the associated vocabulary items.49

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49 Ideally, vocabulary items initially unknown to participants would have also been deleted in the oral picture description task. However, given the small number of items on this task after deleting those items in which participants did not provide a context for DOM, this was not possible. Yet, this task was also different from the grammaticality judgment task, in that for the picture description task, participants were able to ask questions if they were uncertain of the vocabulary, and they often did so. For these reasons, vocabulary items were not deleted from the picture description task.
4.3.4 Think-alouds

Only the think-alouds for the grammaticality judgment task were coded for this study. These think-alouds were coded for the level of Noticing, Understanding, or neither (No Report), as in Rosa (1999), Rosa and Leow (2004a), and Rosa and O’Neill (1999). For the purposes of this study, those think-alouds coded as No Report (NR) were those in which participants either only deleted the a (and did not add it), or only added the a (and never deleted it), or those in which participants did not ever add or delete the a. Those in which adding and deleting occurred but was incorrect all or almost all of the time were also coded as No Report. Excerpts from think-alouds coded as No Report are shown in examples (13) – (15) below.

(13) El hombre visita al chico, nooo, El hombre visita visita el chico (deleted the a incorrectly with an animate direct object)
(14) Al helado lo llame, lame, Roberto, Roberto licked, that’s fine, the ice, he licked the ice-cream, that’s weird (left the a in for an inanimate sentence)
(15) La mesa la empuja la maestra, la empuja um empujar la mesa empuja, um al, al mesa, A la mesa la empuja la maestra (Added a incorrectly with an inanimate direct object)

Those think-alouds coded for Noticing (N) were those in which participants both added and deleted the a, and were right at least some of the time when adding/deleting. This group also included those participants who thought that a meant to, at or by, as well as those who mentioned the a and/or considered adding and deleting it, even if they did not add or delete often. These participants, then, were noticing that the a was present in the sentences, even if they could not correctly identify its function. Finally, those participants who mentioned personal a, but who were still not adding and deleting it correctly, were included in this group. The reason for this is that many participants mentioned personal a, but either had formed incorrect hypotheses regarding its use or simply did not understand what it meant, despite knowing the term. (16) and (17) below give examples of excerpts from think-alouds coded as Noticing.
The workers hear the noise, um that’s ungrammatical it should just be el ruido not al (thought a meant at, deleted it)

El piano lo toca el pianista, it should be by the pianist, al pianista (thought a meant BY, added it incorrectly)

The participants coded as Understanding (U) the structure were those who mentioned personal a, or who mentioned that the a is needed with humans, or is not needed with objects or non-humans. This had to occur along with correct adding and deleting of the a, over 50% of the time. Generally those in this group only added or deleted the a incorrectly a few times, if at all.

Those participants who mentioned one of the above statements, such as personal a, or the a being needed with humans, but still thought that a meant to or at, were included in this group, as long as they added/deleted the a correctly in general. These participants were included in this group because they did understand that a is used for animate direct objects and not with inanimate direct objects, despite believing that a meant to or at. Examples (18) – (20) below show excerpts from think-alouds coded for Understanding.

(18)  La madre la pinta el niño, Um this is incorrect because it needs to s be El niño la pinta a la madre, need the personal a to distinguish who is doing the action (Said need personal a and why, and added it correctly-if not in the correct place)

(19)  A la pelota la tira Sara, the girl, Sara throws a la peleta, it should just be la pelota because obviously the ball can’t throw Sara (Didn’t say personal a but gave a reason why it needed to be deleted, and deleted it, correctly)

(20)  El piano toca, l, lo toca el pianista, oh oh, al piano, sí that’s good, uh al piano you can’t have a personal a with piano er h El pianista uh toca el piano (Said personal a can’t be used with piano, and deleted it, correctly)

One point, then, was given to each participant who carried out think-aloud protocols, either in the category of No Report, Noticing or Understanding, for the pretest, posttest, and delayed posttest. The awareness group to which each individual participant was assigned often changed from pretest to posttest to delayed posttest, since awareness level of participants tended to fluctuate over time.
4.4 Conclusion

This chapter has presented the five research questions of the current study and predictions for these research questions, based on previous research in SLA in general as well as on differential object marking in L2 Spanish. In this chapter, the design of the study was discussed as well, including a description of the participants, all tasks carried out by participants, the procedure of the study, and analysis of the tasks and think-aloud protocols. Chapter 5 discusses the results of the study in terms of the research questions presented in this chapter, and analyzes in general whether predictions for each question were confirmed based on these data.
CHAPTER 5: RESULTS

5.0 Introduction

This chapter provides learner scores from the picture description task and the grammaticality judgment task on the pretest, posttest and delayed posttest, as well as the quantitative results of the think-aloud protocols. These scores are discussed in terms of the research questions presented in Chapter 4.

In the first section, the descriptive and inferential statistics for both tasks are provided, comparing the instructed to the uninstructed groups on the pretest, posttest and delayed posttest. Section 2 analyzes the same data, this time comparing the four L2 groups to the Native Speaker group, to determine whether any of the groups were statistically similar to the native speakers on the two tasks. Then, the third section compares the two instructed groups, with and without prior knowledge of DOM in Spanish, on the pretest, posttest and delayed posttest, to answer the question of whether one group better maintained score gains from pretest to posttest on the delayed posttest. Finally, the fourth section presents the quantitative results of the think-alouds in terms of their relationship to participant scores on the two tasks. This section concludes with a comparison of the groups in terms of the three levels of awareness found, by instruction and prior knowledge of the structure.

5.1 Research question 1: Instructed compared to uninstructed groups

Research question 1, repeated here, asked: Does explicit instruction with explicit feedback significantly improve the posttest and delayed posttest scores of intermediate learners on two tasks as compared to those learners who complete only the tasks? Specifically, do instructed learners with no prior knowledge of DOM, as measured by the pretest, significantly improve, as compared to the comparison group with no prior knowledge that completes only the
tasks? Do instructed learners with prior knowledge of DOM, as measured by the pretest, significantly improve, as compared to the comparison group with prior knowledge that completes only the tasks? To answer these questions, the descriptive results for each group on each task will be presented, followed by the inferential statistics. First, the scoring procedures for each task are reviewed.

5.1.1 Picture description task, instructed compared to uninstructed

As detailed in Chapter 4, the picture description task consisted of 12-13 verbs with animate direct objects, and 12 verbs with inanimate direct objects. However, as many participants did not use the full direct object in each sentence, but instead (correctly) used a clitic pronoun in some of the sentences, a percentage was calculated for each participant for accuracy on this task. As such, the units below refer to the percent accuracy of participants on the use of animate direct objects on this task. As described in Chapter 4, a total of 2% of L2 learner data was excluded from the analysis for this reason, and 10% of native speaker data. Again, the use of the clitic was not grammatically inaccurate, and for the native speakers in particular was often more natural than the use of the full direct object.50

For the picture description task, descriptive results indicated that the instructed groups did improve more than the uninstructed groups over time. The descriptive statistics for animate and inanimate items on the picture description pretest, posttest and delayed posttest are provided in Tables G.1, G.2 and G.3 in Appendix G. For ease of presentation, I will only present and

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50 (i) and (ii) below repeat the examples from Chapter 4, of these items.
(i) El niño visita a la niña y la niña le saluda
   the boy visits DOM the girl and the girl CL greets
   ‘The boy visits the girl and the girl greets him.’

(ii) Eh la niña e, e abraza a su muñeca, el niño le ve
    eh the girl e e hugs DOM her doll, the boy CL sees
    ‘Uh the girl uh uh hugs her doll, the boy sees her.’
discuss the results of animate objects. (Results from inanimate objects were not in general problematic in that participants did not tend to use the *a* incorrectly with inanimate direct objects).

Figure 5.1 below includes the percent correct use of *a* with animates on the picture description task by the four L2 groups. Scores from the pretest, posttest and delayed posttest are included. This figure shows that the two groups with prior knowledge of DOM, Experimental Prior (Exp Prior) and Comparison Prior (Comp Prior) began the study with approximately 40% production of the *a* with animate (human) direct objects on the pretest, whereas both groups without prior knowledge of DOM, Experimental None (Exp None) and Comparison None (Comp None) began the study with under 10% production of the *a*.

On the posttest, immediately after instruction, both instructed groups improved, to around 90% and 70% accuracy (Exp Prior and Exp None, respectively), whereas the uninstructed groups improved but much less (about 10% improvement each).

Then, on the delayed posttest, all groups decreased in score as compared to the posttest. The instructed group with prior knowledge (Exp Prior) decreased about 10%, to 80% use of *a* with human direct objects, whereas the instructed group with no prior knowledge (Exp None) decreased much more, to 41% (a 30% decrease in score). Both of the uninstructed groups decreased slightly as well, about 7% each, from posttest to delayed posttest.
For the inferential statistics for the picture description task, a one-way repeated-measures ANOVA was run on the scores of participants in all four groups over time on animate items. This ANOVA indicated a significant main effect for Time, $F(2, 108) = 45.933, p < .001$, a significant main effect for Group, $F(3, 54) = 48.567, p < .001$, and a significant interaction between Time and Group, $F(6, 108) = 7.836, p < .001$. Figure 5.1 demonstrates that the interaction between Time and Group was significant because each of the groups changed over time to a different extent. Contrasts revealed significant differences between pretest and posttest, between pretest and delayed posttest, but not between posttest and delayed posttest, for the groups, such that posttest and delayed posttest scores were significantly higher than pretest.
scores. For the between subjects measure, post-hoc Gabriel’s procedure tests\textsuperscript{51} indicated significant differences among all groups, except between Exp None and Comp Prior.

In order to answer the first research question more clearly in light of these repeated-measures ANOVA results, a one-way ANOVA was carried out to specifically compare the instructed and their respective uninstructed groups on each of the pretest, posttest and delayed posttests, for both the animate and inanimate items. Scores for inanimate items, however, are not included in Figure 5.1 or discussed here. The reason for this is that only the posttest scores indicated a statistically significant difference among groups for inanimate items on this task, and these differences were not between the instructed and their respective comparison groups.

For animate items on the pretest, there was a significant difference among groups, $F(3, 54) = 34.347, p < .001$. Post-hoc Gabriel’s procedure tests found a significant difference between the Exp Prior and Exp None groups, and between the Comp Prior and Comp None groups. However, there was not a significant difference at the outset between the two groups with prior knowledge (Exp Prior and Comp Prior) and the two groups without prior knowledge (Exp None and Comp None) on this task, which is the most relevant comparison here, since these groups were directly compared for this research question. Any differences that are found on the posttest and delayed posttest, then, will be indicative of an effect of the treatment, not of initial differences between these groups.

There was also a significant difference among groups for animate items on the posttest, $F(3, 54) = 28.317, p < .001$. Post-hoc Gabriel’s procedure tests indicated that there was a significant difference between the two groups with prior knowledge (Exp Prior and Comp Prior), and between the two groups without prior knowledge (Exp None and Comp None). Both

\textsuperscript{51} Gabriel’s procedure tests were used here because of the slight difference in sample size among groups. When sample sizes differ slightly, this test has greater power than other, more commonly used post-hoc tests.
instructed groups, then, significantly outperformed their respective comparison groups immediately after instruction.

For the animate items on the delayed posttest, there was a significant difference among groups, $F(3, 54) = 21.311, p < .001$. Again, the two groups with prior knowledge (Exp Prior and Comp Prior) were significantly different here, as well as the two groups without prior knowledge (Exp None and Comp None), using post-hoc Gabriel’s procedure tests. The differences that appeared on the posttest, then, between instructed and uninstructed groups, were maintained on the delayed posttest.

Within-group analyses were also conducted, using repeated-measures ANOVAs for each group on this task. The two instructed groups will be discussed further below, but both were found to have a significant main effect for Time, Exp Prior, $F(2, 28) = 34.658, p < .001$, and Exp None, $F(2, 28) = 26.989, p < .001$. With respect to the uninstructed groups, Comp Prior did not have a significant main effect for Time. Comp None, however, did have a significant main effect for Time, $F(1.2, 13.5) = 4.626, p = .044$. Contrasts indicated a difference between pretest and posttest for this group. Percentages indicated that this group increased from 1% accuracy on the pretest to around 10% accuracy on the posttest.

To summarize the results for the picture description task, the pretest showed the Exp Prior and Comp Prior groups, and the Exp None and Comp None groups, not to be significantly different. Yet, on both the posttest and the delayed posttest, for animate items, these groups scored significantly differently, with the experimental groups outperforming the comparison groups in all cases. In the within-subjects analysis, both instructed groups had a main effect for Time on a repeated-measures ANOVA, but for the uninstructed groups, only the Comp None group was found to have a significant difference, between pretest and posttest, for this task.
5.1.2 Grammaticality judgment task, instructed compared to uninstructed

The grammaticality judgment task was coded in terms of whether participants responded with *somewhat grammatical, somewhat ungrammatical, and completely ungrammatical* (considered NO answers) or *perfectly grammatical* (considered a YES answer). Each participant received one point on each correct item, as explained further in Chapter 4. However, because participants were not all familiar with all verbs in this task, items on the vocabulary task with which L2 participants were not familiar were removed from the total for each person on the GJT. As such, this task, like the picture description task, was coded in terms of percentages of the total of correct answers for each participant, taking out the unknown vocabulary items. As mentioned in Chapter 4, for this task, 14% of the data was removed from the total because the L2 learners did not know the vocabulary items.

Descriptive results for the grammaticality judgment task showed that the instructed groups improved more than the uninstructed groups over time, although all four groups started at around the same accuracy on this task. Descriptive statistics for the grammaticality judgment pretest, posttest and delayed posttest are provided in Appendix G, in Tables G.4, G.5 and G.6.

Figure 5.2 illustrates these results graphically. Specifically, descriptive results for the grammaticality judgment task indicate that all four groups started at around 50% accuracy for the pretest. Then, on the posttest, the two instructed groups scored around 80%, whereas the uninstructed group with prior knowledge (Comp Prior) scored about 60%, and the uninstructed group with no prior knowledge (Comp None) scored again at around 50%.

On the delayed posttest, the instructed group with prior knowledge (Exp Prior) stayed at around 80% accuracy, while the instructed group without prior knowledge (Exp None) decreased

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52 In fact, these scores were all statistically similar.
to about 70%; the two uninstructed groups maintained about the same scores as on the posttest, both increasing slightly in percent.

Figure 5.2: Grammaticality judgment task percent correct over time

For the inferential statistics for the grammaticality judgment task, a one-way repeated-measures ANOVA was run on the scores of participants in all four groups over time. This ANOVA indicated a significant main effect for Time, $F(2, 108) = 54.590, p < .001$, a significant main effect for Group, $F(3, 54) = 12.714, p < .001$, and a significant interaction between Time and Group, $F(6, 108) = 9.439, p < .001$. Figure 5.2, again, illustrates that the interaction between Time and Group was significant because each of the groups changed over time, but to a different extent. Contrasts indicated that, like with the picture description task, there was a significant difference between pretest and posttest, between pretest and delayed posttest, but not between posttest and delayed posttest on this task. The groups, then, increased significantly in score from
pretest to posttest, and from pretest to delayed posttest, but did not change in score from posttest to delayed posttest. Post-hoc Gabriel’s procedure tests showed differences among groups, except for between Comp Prior and Exp None, and between Exp Prior and Exp None.

Again, in order to more clearly answer the first research question in light of the above results, a one-way ANOVA was carried out to specifically compare the instructed and uninstructed groups on the pretest, posttest and delayed posttest.

On the pretest, there was not a significant difference among groups. Therefore, any differences found among groups on the posttest or delayed posttest will be an effect of the treatment, and not attributable to initial differences in groups.

However, a significant difference was found among groups on the posttest, $F(3, 54) = 22.61, p < .001$. Post-hoc Gabriel’s procedure tests found a significant difference between the Exp Prior and Comp Prior groups, as well as between the Exp None and Comp None groups. So again, the instructed groups were able to significantly outperform the uninstructed groups immediately after instruction.

On the delayed posttest, a significant difference was also found among groups, $F(3, 54) = 8.51, p < .001$. Post-hoc Gabriel’s procedure tests indicated a significant difference again between the two prior knowledge groups (Exp Prior and Comp Prior), and between the two no prior knowledge groups (Exp None and Comp None), with the instructed scoring higher than uninstructed groups.

Again, within-subjects analyses were run for this task on each group, using repeated-measures ANOVAs. The instructed groups will be discussed further below, with respect to research question 3. However, there was a significant main effect for Time for both instructed groups, Exp Prior, $F(2, 28) = 68.984, p < .001$, and Exp None, $F(2, 28) = 18.051, p < .001$. For
one of the comparison groups, the uninstructed group with prior knowledge (Comp Prior), results also indicated a main effect for Time, $F(2,30) = 5.135$, $p = .012$. For this group, contrasts revealed a difference between pretest and posttest, as well as between pretest and delayed posttest. The results of the repeated-measures ANOVA for the Comp None group were not statistically significant.

Similarly to the picture description task, on the grammaticality judgment task, inferential statistics revealed that learners in the experimental (instructed) groups scored significantly differently, as compared to those learners in their respective comparison (uninstructed) groups, on both the posttest and delayed posttest. These results were due to significantly higher scores by the instructed groups than by the uninstructed groups, despite group results that were all statistically similar on the pretest for this task.

The within-subjects results indicated that both instructed groups had a main effect for Time on a repeated-measures ANOVA, and that one of the uninstructed groups, the Comp Prior group, also had a main effect for Time. Comp Prior, in fact, improved from pretest to posttest, and from pretest to delayed posttest. This group increased in accuracy about 8% from pretest to posttest on this task, and about 10% from pretest to delayed posttest.

This research question, then, can be answered affirmatively for both tasks. For the picture description task and grammaticality judgment tasks, descriptive and inferential results demonstrate that those learners who were instructed outperformed those who were not instructed on both the posttest and delayed posttest. These differences occurred despite a lack of initial differences between these two sets of groups on the pretest for either task. However, within-subjects improvements for the Comp None group on the picture description task, and for the Comp Prior group on the GJT, also occurred, and will be explained further in Chapter 6.
5.2 Research question 2: Learners compared to native speakers

Research question 2, repeated here, was: Do the scores of any of the groups of intermediate level learners who are tested demonstrate acquisition of the structure, as shown by statistically similar scores to the Native Speaker group on both tasks? Brief descriptive results followed by the inferential statistics for the learners and the Native Speaker group on both tasks will be described in detail below.

5.2.1 Picture description task with native speakers

Descriptive results for the relevant groups\textsuperscript{53} for the pretest, posttest and delayed posttest for this task are presented in Tables G.7-G.9 in Appendix G. Figure 5.3, below, illustrates this data in graph form, with native speaker scores included.

Figure 5.3: Picture description task percent correct use of animates over time, with native speakers

\textsuperscript{53} The Comp None group scores are not included for this research question, since this group had very low scores on this task on the pretest, posttest and delayed posttest.
With respect to the inferential statistics for this task, a one-way ANOVA was carried out to compare group scores on the pretest, posttest and delayed posttest. As in research question 1, only animate items are mentioned here, as all groups were statistically similar to the Native Speaker group on the pretest, posttest and delayed posttest for this task for inanimate items.

On the pretest, a significant difference was found among groups on animate items, $F(5, 82) = 92.658, p < .001$. Post-hoc Gabriel’s procedure tests indicated that all L2 groups were significantly different from the Native Speaker group on the pretest.

A significant difference among groups was found on animate items for the picture description posttest and delayed posttest as well, $F(4, 65) = 34.866, p < .001$ and $F(4, 65) = 33.256, p < .001$, respectively. Post-hoc Gabriel’s procedure tests for both the posttest and delayed posttest demonstrated that the Exp Prior group was the only learner group to score statistically similarly to the Native Speaker group on animate items.\(^{54}\)

For the picture description task, then, the instructed group with prior knowledge of DOM (Exp Prior) was the only L2 group to score statistically similarly to the Native Speaker group on either the posttest or delayed posttest, and in fact scored similarly to the Native Speakers on both the posttest and delayed posttest. This similarity to the Native Speaker group on both the picture description posttest and delayed posttest occurred despite significant differences on the pretest between these two groups.

\(^{54}\) Although statistical similarities for this task should be taken with some caution, given that the Native Speaker group scored 100% on this task, with no variability.
5.2.2 Grammaticality judgment task with native speakers

Tables G.10-G.12 in Appendix G present the descriptive statistics for the relevant groups\textsuperscript{55} for the pretest, posttest and delayed posttest for this task, and Figure 5.4 below demonstrates this data graphically.

Figure 5.4: Grammaticality judgment task percent correct over time, with native speakers

![Grammaticality judgment task percent correct over time](image)

The one-way ANOVA used on the grammaticality judgment pretest was significant, $F(5, 82) = 27.262, p < .001$. As on the picture description pretest, all L2 groups were significantly different from the Native Speaker group for the grammaticality judgment pretest, as shown by post-hoc Gabriel’s procedure tests.

On the grammaticality judgment posttest and delayed posttest, the ANOVAs were also significant, $F(4, 65) = 22.502, p < .001$, and $F(4, 65) = 10.307, p < .001$, respectively. Post-hoc

\textsuperscript{55} Again, the Comp None group was not included here, since their scores were very low on the pretest, posttest, and delayed posttest for this task.
Gabriel’s procedure tests for the posttest and delayed posttest indicated that the two instructed groups, Exp Prior and Exp None, were statistically similar to the Native Speaker group.⁵⁶

Both instructed groups, then, were statistically similar to the Native Speaker group on the grammaticality judgment posttest and the grammaticality judgment delayed posttest. These results occurred despite the result that on the grammaticality judgment pretest both groups’ scores were significantly different from NS scores.

Taken together, the results for both the picture description task and grammaticality judgment task show that this research question can be answered strongly in the affirmative. The instructed group with prior knowledge of DOM (Exp Prior) was able to maintain similarities with the Native Speaker group on both the picture description and grammaticality judgment tasks on the posttest and delayed posttest, despite initial statistical differences from the Native Speaker group on both tasks on the pretest. Additionally, one other group, the instructed group without prior knowledge of DOM (Exp None), was statistically similar to the Native Speaker group on the grammaticality judgment posttest and delayed posttest.

5.3 Research question 3: Instructed learners with and without prior knowledge

Research question 3, repeated here, was: Do the instructed intermediate learners with prior knowledge of DOM retain the structure on the delayed posttest two weeks later better than the instructed learners with no prior knowledge? In order to answer this question, descriptive

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⁵⁶ Native speakers scored only 85.9% on the GJT. This score was so low, mainly because these participants often added the a to inanimate items, as in i) and ii), below. Company Company (2002), similarly, has found this use of a with inanimates in monolingual varieties of Spanish. In the current study, this use of a with inanimates tended to occur with SVO word order items and OVS items equally- only one native speaker participant utilized the a with inanimates more with OVS word order than with SVO word order. When these items were not included in the final percentages, the native speaker percentage increased to 94.1%. Interestingly, when the ANOVAs were re-run for the pretest, posttest and delayed posttest with this new percentage, only the Exp Prior group was statistically similar to the Native Speaker group on both the posttest and delayed posttest, despite significant differences on the pretest. The Exp None group was never statistically similar to the Native Speaker group with this new data.

i) El niño ve a la pelota
   ‘the boy sees DOM the ball’

ii) El niño abraza al juguete
    ‘the boy hugs DOM the toy’
results will be discussed below, followed by the inferential statistics for the two instructed groups, for both tasks.

5.3.1 Picture description task with the two instructed groups

The descriptive statistics for these two groups on the picture description task are shown in Tables G.13-G.14 in Appendix G, and in Figure 5.5 below. Briefly, these results indicate that the Exp None group decreased more than the Exp Prior group from posttest to delayed posttest. The Exp Prior group decreased about 10% from posttest to delayed posttest, from 90% accuracy to 80% accuracy. The Exp None group decreased as well from posttest to delayed posttest, but much more, from 70% accuracy on the posttest to 42% accuracy on the delayed posttest, a decrease of about 30% in accuracy.

Figure 5.5: Picture description task accuracy scores of instructed groups

An independent samples t-test did not find the two groups to be statistically similar on the picture description task (for animate items) for either the posttest, $t(28) = 2.596, p = .018$ or the
delayed posttest $t(28) = 3.644, p = .002$. The lack of similarity between the two instructed groups on the posttest makes it difficult to compare the two groups to each other using inferential statistics to determine whether one of the two groups decreased more than the other from posttest to delayed posttest.

To clarify this uncertainty, individual repeated-measures ANOVAs were run for both groups on this task. Results for the repeated-measures ANOVA for the Exp Prior group did indicate a significant main effect for Time, $F(2, 28) = 34.658, p < .001$. Contrasts revealed a significant difference between pretest and delayed posttest, and between pretest and posttest, but not a difference between posttest and delayed posttest for this group. This group, then, increased in score significantly from pretest to posttest, and maintained these gains on the delayed posttest.

Results for the repeated-measures ANOVA for the Exp None group also showed a significant main effect for Time, $F(2, 28) = 26.989, p < .001$. Contrasts revealed a significant difference between pretest and posttest, between pretest and delayed posttest, and also between posttest and delayed posttest. This group, then, like the Exp Prior group, improved significantly from pretest to posttest, and maintained these gains on the delayed posttest. However, unlike the Exp Prior group, this group also significantly decreased in score from posttest to delayed posttest on the picture description task.

Together, these results indicate that for this task, while both groups were able to improve significantly from pretest to posttest and maintain these gains from the pretest on the delayed posttest, the Exp Prior group was better at maintaining scores from the posttest on the delayed posttest than the Exp None group.

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$^{57}$ Again, research question 1 found that the scores of these two groups were not similar on the pretest either for this task.
5.3.2 Grammaticality judgment task with the two instructed groups

For the grammaticality judgment task, descriptive results are shown in Table G.15 in Appendix G, and in Figure 5.6 below. Again, descriptive results indicated that the Exp None group decreased from posttest to delayed posttest more than the Exp Prior group. On this task, the Exp Prior group decreased only about 3% from posttest to delayed posttest, from about 86% accuracy on the posttest to about 83% accuracy on the delayed posttest. The Exp None group, however, decreased from about 82% on the GJT posttest to about 73% on the delayed posttest, a decrease of about 11%.

Figure 5.6: Grammaticality judgment task accuracy scores of instructed groups

An independent samples t-test for the grammaticality judgment posttest did not find the two groups to be significantly different from each other.\(^{58}\) On the GJT delayed posttest, the difference between the two groups is not significant either, but approaches significance, \(t(28) = 1.795, p = .084\). Again, this is due to the Exp None group decreasing in score more than the Exp Prior group, from posttest to delayed posttest.

\(^{58}\) Research question 1, above, found all four groups to be statistically similar on the pretest for this task.
On this task as well then, it was not clear from the t-tests whether one group decreased significantly more than the other from posttest to delayed posttest. As such, a repeated-measures ANOVA was run for each group on this task as well. Results for the repeated-measures ANOVA for both the Exp Prior and Exp None groups showed a significant main effect for Time, $F(2, 28) = 68.984, p < .001$, and $F(2, 28) = 18.051, p < .001$, respectively. Contrasts for both groups on this task indicated a difference between pretest and posttest, between pretest and delayed posttest, but not between posttest and delayed posttest. For the grammaticality judgment task, then, the Exp Prior and Exp None groups improved significantly from pretest to posttest and maintained these improvements on the delayed posttest, with no decrease in score from posttest to delayed posttest.

This research question, then, can be answered partially in the affirmative, because of the advantages of the Exp Prior group over the Exp None group. The results of the t-tests for this research question were somewhat unclear for both tasks. On the picture description task, the groups were significantly different for both the posttest and the delayed posttest. On the grammaticality judgment task, inferential results were only approaching significance for the delayed posttest.

Further testing of each group using repeated-measures ANOVAs for both tasks indicated more clearly that both groups maintained increases from the pretest on both the posttest and the delayed posttest on the two tasks. On the grammaticality judgment task, neither group decreased significantly from posttest to delayed posttest either. However, on the picture description task, the Exp None group did significantly decrease in score from posttest to delayed posttest, while the Exp Prior group did not change in score from posttest to delayed posttest. The Exp Prior
group, then, was slightly better at maintaining score increases from pretest to posttest to delayed posttest, at least for the picture description task.

5.4 Research question 4: Awareness reports

Research question 4, repeated here, was: Is level of awareness as shown in concurrent verbal reports (think-alouds) related to the accuracy of learners on the tasks? Is there a relationship between level of awareness of differential object marking and participant group? Specifically, do those learners who received instruction tend to have different levels of awareness than those who did not receive instruction? Do those learners who had prior knowledge of the structure tend to have different levels of awareness than those learners who did not have prior knowledge of the structure?

Descriptive and inferential statistics will be discussed below for each of these questions. First, in order to answer this research question, frequency counts of the participants at each level of awareness (No Report, Noticing and Understanding) were recorded.

5.4.1 Level of awareness and accuracy

A subset of the participants\(^{59}\) carried out think-aloud protocols during the grammaticality judgment task, and these think-alouds were coded as follows. As detailed in Chapter 4, level of awareness in this study was determined based on various factors, including whether participants added and deleted the \(a\) correctly or incorrectly, and whether they mentioned personal \(a\) with examples demonstrating their understanding of the structure.

For example, think-alouds coded as No Report included those in which participants either only deleted the \(a\) or only added the \(a\), or those who made no changes to existing sentences in the grammaticality judgment task. Think-alouds coded for Noticing included those in which

\(^{59}\) Again, 11 participants in the Exp Prior group carried out think-alouds protocols, 10 in the Exp None group, 11 in the Comp Prior group, and 10 in the Comp None group.
participants added and deleted the *a*, at least sometimes correctly, and those who thought *a* meant *to* or *at*. Finally, think-alouds coded for Understanding included those in which participants mentioned that the *a* is needed with animate direct objects or is not needed with inanimate direct objects, along with correct adding or deleting of the *a* over 50% of the time. One point was given to each participant who carried out the think-alouds, then, in the category of No Report, Noticing or Understanding, for each of the pretest, posttest and delayed posttests. These numbers were entered into the analysis of data explained below.

To determine whether level of awareness was related to the accuracy of participants on the tasks, three separate ANOVAs, one for the pretest, one for the posttest, and one for the delayed posttest, were then run on each task. For these ANOVAs, the independent variable was awareness level rather than learner group. This meant that each learner, regardless of original group (Exp Prior, Exp None, Comp Prior, Comp None), was re-assigned to the No Report group, the Noticing group or the Understanding group, for the pretest, posttest, and delayed posttest. The awareness group each learner was assigned to was often different from pretest to posttest to delayed posttest, as their level of awareness tended to change over time.

5.4.1.1 Picture description task accuracy by awareness level

Descriptive scores by awareness level for the picture description task are shown below in Table G.16 in Appendix G, for the pretest, posttest and delayed posttest. Table G.16 includes scores for the four L2 groups only for animate items, for the reasons detailed above.

The ANOVA was not significant for different awareness levels of the four learner groups on the picture description pretest.

Results for the ANOVAs on both the posttest and delayed posttest were statistically significant, $F(2, 41) = 16.478, p < .001$, and $F(2, 41) = 4.861, p = .013$, respectively. Games-
Howell post-hoc tests for both the posttest and delayed posttest\textsuperscript{60} indicated a difference between No Report and Noticing and between No Report and Understanding, but not between Noticing and Understanding. Thus, the scores of learners in the Noticing group were equal to those in the Understanding group on this task for both the posttest and delayed posttest, but the scores of those in the No Report group were lower than those in both the Noticing group and the Understanding group.

Results for the picture description task, therefore, indicated differences in score by awareness level for the posttest and delayed posttest, for the four learner groups, at least between No Report and Noticing, and between No Report and Understanding.

5.4.1.2 Grammaticality judgment task accuracy by awareness level

Descriptive scores by awareness level for the grammaticality judgment task are presented below in Table G.17 for the pretest, posttest and delayed posttest, for the four L2 groups.

For the grammaticality judgment pretest, inferential statistics were not significant. The ANOVAs were significant, however, for both the grammaticality judgment posttest and delayed posttest, $F(2, 39) = 21.420, p < .001$ and $F(2, 39) = 9.289, p = .001$, respectively. Post-hoc Games-Howell tests showed a difference between No Report and Noticing, No Report and Understanding, and Noticing and Understanding for both the posttest and delayed posttest. For these tasks, then, those participants who demonstrated Understanding scored higher than those who showed Noticing of the structure, who in turn scored higher than those with No Report of noticing.

\textsuperscript{60} The Games-Howell post-hoc test is best when sample sizes are very unequal, in which case Gabriel’s procedure tests are generally considered to be too liberal. Sample sizes here were very different here in each group, as shown in Table G.16 and G.17 in Appendix G, for this part of the research question.
As in the picture description task, results for the grammaticality judgment task indicated differences in score by awareness level for the posttest and delayed posttest, for the four learner groups. Here also, the pretest ANOVA did not show a significant difference among groups.

Considering accuracy scores by awareness for both tasks, on the pretest there was not a significant difference among groups for either the picture description task or the GJT. The picture description posttest and delayed posttest indicated a difference between No Report and Noticing, and between No Report and Understanding. Similarly, both the posttest and delayed posttest for the GJT indicated that those participants who demonstrated Understanding of DOM scored the highest, followed by those who demonstrated Noticing of the structure, followed by the No Report group. These results suggest that this part of research question 4 can be answered in the affirmative, at least for the posttest and delayed posttests for both tasks.

5.4.2 Awareness and learner group, instruction and prior knowledge

The last part of the fourth research question answered the questions regarding whether learners who received instruction tended to have different levels of awareness than those who did not receive instruction, and whether learners who had prior knowledge of the structure tended to have different levels of awareness than learners who did not have prior knowledge.

As mentioned above, frequency counts of the participants at each level of awareness (No Report, Noticing and Understanding) were recorded for this research question. Due to the fact that the frequency counts for each individual group of participants led to expected frequencies below 5 for each cell, the groups had to be collapsed in the Chi-square analyses. As such, two separate Chi-square analyses were carried out, collapsing the participant groups in different ways. Appendix G includes Tables G.18-G.21, which illustrate awareness scores by individual

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61 Note: Over time scores were collapsed as well, due to low frequency counts in each cell when separated.
group, followed by awareness scores by individual group on each of the pretest, posttest and
delayed posttests.

The first Chi-square test collapsed the two instructed (experimental) groups and the two
uninstructed (comparison) groups, and compared them at all three levels of awareness (coded as
NR, N, and U). This test found a significant association between group and awareness level, $\chi^2$
(2) = 20.499, $p < .001$. Table 5.1 below shows the Chi-square analysis for instruction by
awareness.

In terms of the observed and expected frequencies, the observed frequency was high for
the instructed groups for Understanding as compared to the expected frequency (observed 26,
expected 19), slightly high for Noticing (observed 46, expected 44) and low for No Report
(observed 3, expected 12). Conversely, for the uninstructed groups, the observed frequency for
Understanding was low as compared to the expected frequency (observed 9, expected 16),
slightly low for Noticing (observed 35, expected 37), and high for No Report (observed 19,
expected 10).

Table 5.1: Chi-square analysis for instruction by awareness

<table>
<thead>
<tr>
<th>Awareness</th>
<th>Group</th>
<th>Comparison</th>
<th>Experimental</th>
</tr>
</thead>
<tbody>
<tr>
<td>NR</td>
<td>Observed</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Expected</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>N</td>
<td>Observed</td>
<td>35</td>
<td>46</td>
</tr>
<tr>
<td></td>
<td>Expected</td>
<td>37</td>
<td>44</td>
</tr>
<tr>
<td>U</td>
<td>Observed</td>
<td>9</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>Expected</td>
<td>16</td>
<td>19</td>
</tr>
</tbody>
</table>

The second Chi-square test collapsed the two groups with no prior knowledge and the
two groups with prior knowledge of the structure, and compared them again at all three levels of

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62 These values of observed and expected frequencies refer to statistical values expected and observed in each cell
when performing the Chi-square test, not to the values expected by the predictions of the hypotheses for this study.
awareness (NR, N and U). This test also showed a significant association between group and awareness level, $\chi^2 (2) = 21.163, p = .002$. Table 5.2 below presents the Chi-square analysis for prior knowledge by awareness.

Comparing the observed to the expected values, for the groups with prior knowledge the observed was slightly more than the expected for Understanding (observed 22, expected 19.8), higher than expected for Noticing (observed 51, expected 45.8), and lower than expected for No Report (observed 5, expected 12.4). For the groups without prior knowledge, the observed frequency was slightly lower than expected for Understanding (observed 13, expected 15.2), lower than expected for Noticing (observed 30, expected 35.2), but higher than expected for No Report (observed 17, expected 9.6).

Table 5.2: Chi-square analysis for prior knowledge by awareness

<table>
<thead>
<tr>
<th>Awareness Report</th>
<th>Group</th>
<th>No Prior Knowledge</th>
<th>Prior Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>NR</td>
<td>Observed</td>
<td>17</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Expected</td>
<td>9.6</td>
<td>12.4</td>
</tr>
<tr>
<td>N</td>
<td>Observed</td>
<td>30</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Expected</td>
<td>35.2</td>
<td>45.8</td>
</tr>
<tr>
<td>U</td>
<td>Observed</td>
<td>13</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Expected</td>
<td>15.2</td>
<td>19.8</td>
</tr>
</tbody>
</table>

The second part of this research question, then, can be answered in the affirmative as well. The results from the Chi-square tests demonstrate that both instruction and prior knowledge were associated with higher levels of awareness (at the level of Noticing and Understanding), and lack of instruction and prior knowledge were associated with lower levels of awareness (at the level of No Report).
The results of this research question overall indicated that the level of awareness of the learners in this study was related to both their accuracy scores, at least on the posttest and delayed posttest for both tasks, as well as to the instruction the learners received, and their prior knowledge of the structure.

In summary, all research questions were either completely or partially answered in the affirmative. The first research question was answered in the affirmative for both tasks, in that the instructed groups outperformed their respective uninstructed groups on both the posttest and delayed posttest, for both the picture description task and the grammaticality judgment task. Research question 2 was also answered in the affirmative, since the Exp Prior group was able to score significantly similarly to the Native Speaker group on both tasks on both the posttest and delayed posttest, despite an initial difference in score on the pretest on both tasks. The third research question was tentatively answered positively as well. Despite the finding that both instructed groups maintained the structure on the posttest and delayed posttest as compared to the pretest on both tasks, the Exp Prior group maintained their scores from posttest to delayed posttest better on the picture description task than the Exp None group, who decreased significantly in score. Finally, for research question 4, awareness was found to be related to accuracy, prior knowledge and instruction on DOM in Spanish, such that those with higher accuracy, prior knowledge and instruction tended to have higher levels of awareness of the structure. As such, this research question was also answered in the affirmative.

The above results are analyzed in Chapter 6, in terms of previous research on instruction in SLA, DOM in L2 Spanish in particular, the relevance of prior knowledge to the current study, and awareness, again as it relates to previous research in SLA. The analysis for the last research question on the FT/FA is examined, as well as implications of this study for both research and
pedagogy. This last chapter also discusses the limitations for the current study, as well as directions for future research.
CHAPTER 6: DISCUSSION AND CONCLUSION

6.0 Introduction

The first part of this chapter analyzes the results of the research questions presented in Chapter 5. It begins with a discussion of the effects of instruction and feedback on the acquisition of DOM in Spanish, which was the topic of the first research question. This was measured by the scores of participants on the grammaticality judgment task and picture description task, on the pretest, as compared to the posttest and delayed posttest. Results of the within-subjects data for the uninstructed groups are examined further here as well. The following section discusses the relevance of prior knowledge of DOM and its relation to instruction (research question 3).

Next, the comparison of all L2 groups to the Native Speaker group is considered in terms of previous research (research question 2). Section 6.4 analyzes learner awareness of DOM in Spanish with respect to its association with accuracy scores of participants, as well as instruction and prior knowledge of the structure (research question 4). Section 6.5 discusses the implications of the current study in terms of the Full Transfer Full Access Hypothesis. Then, section 6.6 provides conclusions of this research, while the last section considers the limitations of the current study as well as possible future research in this area.

6.1 Effects of instruction and feedback

The research conducted here is beneficial to the field of SLA in that its main objective was to contribute to perhaps one of the most general questions of SLA: how to facilitate learner acquisition of a second language. In particular, the goal of this dissertation was to discuss acquisition of structures not acquired early in the acquisition process, in terms of how to improve learner acquisition of these difficult structures. One such structure is differential object marking,
which as described in Chapter 2, is for various reasons not acquired early in the L2 acquisition of Spanish by L1 English speakers. There are a number of methods by which we can improve learner acquisition of difficult structures of the L2, one of which is through explicit instruction and feedback on these structures.

More specifically, then, this dissertation sought to add to the previous research on the effects of explicit instruction and feedback on second language acquisition by analyzing the accuracy of second language learners both before and after instruction on an oral and comprehension task. As such, to answer the first research question, we compared the two instructed groups to the two uninstructed groups. In the first part of the research question, instruction and prior knowledge were examined, in particular whether instructed learners with no prior knowledge of DOM would outperform uninstructed learners with no prior knowledge. In the second part of this research question, which will be discussed below in section 6.2, we investigated whether instructed learners with prior knowledge would outperform uninstructed learners with prior knowledge.

As predicted, there was a main effect for instruction, both for the groups without prior knowledge of DOM as well as for the groups with prior knowledge of the structure. Briefly, this meant that the instructed groups scored significantly higher than their respective uninstructed groups on the posttest and delayed posttest for both the picture description task and the grammaticality judgment task (GJT). These significant differences occurred despite the fact that the Experimental Prior Knowledge (Exp Prior) and Comparison Prior Knowledge (Comp Prior) groups, as well as the Experimental No Prior Knowledge (Exp None) and Comparison No Prior Knowledge (Comp None) groups, did not score significantly differently from each other on
either pretest task. The second part of this research question will be discussed further in section 6.2, below.

Yet, although the Exp None group scored significantly higher than the Comp None group on the posttest and delayed posttest, repeated-measures ANOVAs indicated that both Exp None and Comp None did have a significant main effect for Time on the picture description task. Contrasts for Exp None indicated a difference between pretest and posttest, between pretest and delayed posttest, and between posttest and delayed posttest, which will be discussed further below. However, contrasts for Comp None also revealed a difference, between pretest and posttest.

So, within-group results indicated that both groups without prior knowledge increased significantly between pretest and posttest. Yet, the percentages for each group indicated large differences between the instructed and uninstructed groups, despite the finding that both increases were statistically significant. Exp None increased from 6% accuracy on the pretest to 70% accuracy on the posttest, whereas Comp None increased from 1% accuracy on the pretest to around 10% accuracy on the posttest. So, despite the significant increase in both groups’ score from pretest to posttest, the instructed group clearly improved much more than the uninstructed group.

In fact, the Comp Prior group increased slightly (though not statistically significantly) on this task from pretest to posttest as well. In analyzing the picture description task itself, it is likely that two posttest verbs led to this increase in score for both comparison groups. One item, *buscar*, means ‘to look for’ in Spanish; however, many participants added the *a* here, perhaps thinking it meant ‘to look’ and adding the *a* to mean *for* instead of as a ‘personal a.’ Another item, *mirar*, similarly, means ‘to look at.’ Again, participants could have added the *a*, thinking it
meant *at*. These two items alone can certainly account for the slightly higher use of *a* among both uninstructed groups on the posttest. Both verbs were on the pretest/delayed posttest task; however, both of the items had inanimate direct objects on the pretest/delayed posttest, but animate direct objects on the posttest. Both uninstructed groups decreased in score again for the delayed posttest.

Overall, the results for learners without prior knowledge strengthen previous research on instruction and feedback in second language acquisition research, as well as prior L2 studies on the acquisition of DOM in Spanish. They also provide evidence that learners can benefit from explicit instruction and feedback on both a more explicit and a more implicit task.

6.1.1 Previous research on L2 instruction and feedback

The results for the first part of the first research question, regarding those participants without prior knowledge of DOM in Spanish, support and strengthen the existing L2 research on the usefulness of instruction, particularly explicit instruction, which had previously been shown by the meta analyses of Norris and Ortega (2001), and more recently, Spada and Tomita (2010). Additionally, they provide support for the somewhat less clear research on the effectiveness of (explicit) feedback (Li, 2010; Russell & Spada, 2006), which has in general indicated that feedback is useful to SLA, and that explicit feedback is at least as useful as implicit feedback. These researchers did not explain whether the learners in the studies that they examined had prior knowledge of the structures tested, however, so it is unclear whether the

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63 On the think-alouds, some participants did in fact think that the *a* meant *to, for* or *at*, and used it in this way in the grammaticality judgment task.

64 The current study did not compare explicit and implicit instruction and feedback, however, so while it adds to the growing body of research on the usefulness of explicit instruction and feedback as compared to a control/comparison group, it does not contribute to the debate regarding which type of instruction and feedback is more effective. It also did not tease apart the effects of instruction from those of feedback. These are limitations of this study, which will be discussed below.
second part of this research question, regarding learners with prior knowledge of DOM in Spanish, relates to this previous research.

6.1.2 Explicit and implicit knowledge

In addition to supporting previous research on the efficacy of instruction and feedback, the results of this dissertation provide some evidence that explicit instruction and feedback can contribute to improved performance on tasks that tap both explicit and implicit knowledge. A brief discussion of the two tasks is necessary at this point.

Again, the tasks in this study were an untimed written grammaticality judgment task and an oral picture description task. Although both tasks were untimed, they differed in terms of explicitness. The GJT was a very metalinguistic task, not only because it asked learners to judge the grammaticality of the items (in terms of *completely ungrammatical, somewhat ungrammatical, somewhat grammatical, and perfectly grammatical*), but also in that participants were told to correct the incorrect items in the task. Contrarily, the oral picture description task asked participants to produce sentences based on the contents of the pictures that they saw, and gave no indication that the focus was on any particular structure or even on grammatical structures in general. In this way, the GJT can be considered a more explicit task and the oral picture description task at least more implicit than the GJT (see R. Ellis, 2005 for a more detailed explanation of differences between explicit and implicit tasks).

Despite the above differences between the two tasks, participants (both with and without prior knowledge of DOM in Spanish) improved on both tasks after receiving explicit instruction and explicit feedback, such that they were significantly higher in score as compared to those learners who did not receive the instruction and feedback.\(^{65}\) Consequently, based on the results of this research question, it is possible to at least tentatively suggest that explicit instruction and feedback ...

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\(^{65}\) The two instructed groups did not improve equally on both tasks, however, as will be discussed further below.
feedback can contribute to improved performance not only on explicit tasks, but on more implicit tasks as well.

6.1.3 Previous L2 DOM studies

Our results are also in line with results from previous research on the acquisition of differential object marking in L2 Spanish. The learners in the two previous instructed DOM studies by Bowles and Montrul (2008, 2009a), and those participants in the studies by Farley and McCollam (2004) and McCollam Wiebe (2003), who productively used DOM after instruction, all improved on the structure after instruction and explicit or implicit feedback. In those studies that included a control group, the learners who received instruction scored significantly higher after instruction than those learners in the control group, except for in McCollam Wiebe (2003), where some learners in each group improved.

Similarly, participants in the current study without prior knowledge of the structure were still able to improve significantly after the instructional intervention as compared to the comparison group, which completed only the tasks on the pretest, posttest and delayed posttest. As mentioned in Chapter 2, the learners in previous DOM studies had little prior knowledge of DOM in Spanish before carrying out the studies, and prior knowledge was not investigated as an independent variable in this previous research. Therefore, only the part of the first research question concerning learners without prior knowledge is relevant to the earlier L2 DOM research. The results for instructed learners with prior knowledge as compared to uninstructed learners with prior knowledge (research question 1), as well as results of the third research question, which compared the two instructed groups, will be examined below in section 6.2.
6.2 Prior knowledge

The second part of the first research question as well as the third research question, described directly above, examined an area of second language acquisition that had not been analyzed previously as an independent variable — that of learners with some prior knowledge of a specific structure, and their ability to benefit from instruction and feedback on that structure. One previous study, Ellis, Loewen and Erlam (2006), had tested learners with some prior knowledge of past tense –ed in English, finding that they were able to benefit from explicit feedback in the form of metalinguistic explanation provided to the learners more than from implicit feedback given in the form of recasts. However, this previous research did not consider prior knowledge of past tense –ed in English as an independent variable. The current study specifically compared groups with prior knowledge as well as groups without prior knowledge of DOM in Spanish, which were divided based on their pretest scores.66

Results of the second part of the first research question, regarding instructed learners with prior knowledge as compared to uninstructed learners with prior knowledge, revealed, similarly to the Ellis et al. study, that the instructed learners with prior knowledge were able to benefit from the explicit instruction and feedback. Learners in this group improved significantly more after instruction than their respective comparison group, which also had prior knowledge of the structure, on both tasks. Again, these two groups were statistically similar on both pretest tasks.

These results indicate that instruction, at least on DOM in Spanish, is useful not only for learners without prior knowledge of a structure, who are most often tested in instructional research, but for learners who have already begun to acquire the structure as well. Although

66 As mentioned in Chapter 4, those participants categorized as having no prior knowledge of the structure were those who produced DOM on the picture description task zero, one or two times (out of a total of 12 possible times) with animate direct objects. Those who were placed in the group with prior knowledge were those who used DOM at least three or four times on the picture description pretest with animate direct objects.
these results may appear unsurprising, previous empirical research had not analyzed the performance of learners with some prior knowledge of a particular grammatical structure as compared to learners without prior knowledge of the structure.

Additionally, within-group measures (repeated-measures ANOVAs) for the groups on the GJT found a main effect for Time on this task for both prior knowledge groups. Contrasts revealed that the both the Exp Prior group and the Comp Prior group increased from pretest to posttest, from pretest to delayed posttest, and did not change from posttest to delayed posttest. Percent accuracy on this task showed that the instructed group increased by 30% from pretest to posttest, maintaining this increase on the delayed posttest, whereas the uninstructed group increased only 8% from pretest to posttest, and 10% from pretest to delayed posttest. A similar increase in score over time on a GJT by an uninstructed group also occurred in Bowles and Montrul (2008), which tested intermediate level L2 learners of Spanish with little or no prior knowledge of DOM before beginning the study.

Nevertheless, given that this increase over time only happened among the learners with prior knowledge in the current study, these results may strengthen the likelihood that prior knowledge itself is useful to the acquisition of a structure, assuming that structure continues to be seen over time. The discussion of prior knowledge below by Van Patten, Williams and Rott (2004), is also relevant to the prior knowledge uninstructed group.⁶⁷

Results for the groups with prior knowledge are particularly relevant to SLA research in terms of the discussion on the usefulness of strengthening previous connections, as well as their

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⁶⁷ There is a small possibility that the differences in proficiency between the no prior knowledge and prior knowledge groups led to a better performance on the GJT by the two prior knowledge groups than by the two no prior knowledge groups. The means for proficiency for the prior knowledge groups were about 7% higher than for the no prior knowledge groups. While sentences with unknown verbs were deleted from the final analysis of the GJT, other unknown nouns in the sentences could have contributed to difficulty on the task by the (slightly) lower proficiency level learners.
relevance to Pienemann’s Processability Theory. This section will also discuss differences 
between instructed learners with prior knowledge and instructed learners without prior 
knowledge, as well as the similarities between these two groups.

6.2.1 Strengthening connections

Pedagogically, the current results demonstrate that it is useful to continue instruction with 
learners who have begun to acquire DOM, as these learners will benefit from instruction even 
later in the acquisition process. Researchers such as Van Patten, Williams and Rott (2004), who 
have discussed the relevance of prior knowledge as a general factor, have reached a similar 
conclusion regarding the acquisition process. Van Patten et al. (2004) maintain that if an initial 
encounter with a form is weak, later encounters with the form in the input may add to the 
completeness, robustness, and proximity of the form to the target form, whereas a lack of 
subsequent input may lead to the form meaning connection disappearing entirely from memory 
(p. 8). While this does not provide evidence for instruction in particular, it does support 
continued input on structures, particularly difficult structures, even in learners who may already 
have knowledge of these forms.

6.2.2 Learners with prior knowledge and learners without prior knowledge

As explained above, results of the first research question, which compared instructed to 
uninstructed learners, found that the learners with and those without prior knowledge benefitted 
from instruction, as compared to their respective comparison groups. Yet, this research question, 
in which each instructed group was compared to its respective comparison group, did not directly 
compare the instructed prior knowledge group with the instructed no prior knowledge group.

Therefore, to determine the differences (or lack thereof) between these two groups with 
respect to accuracy, we were interested in the third research question in whether the instructed
learners with prior knowledge of DOM would maintain gains on the tasks over time better than
the instructed learners without prior knowledge of DOM. It was hypothesized that the prior
knowledge instructed group would outperform the no prior knowledge instructed group, based
on Pienemann’s Processability Theory, explained further below.

This hypothesis was partially confirmed, although the inferential statistics comparing the
two groups were initially unclear here. The t-test for the picture description task indicated that
the two instructed groups were significantly different from each other in score for both the
posttest and the delayed posttest, with the Exp Prior group scoring significantly higher than the
Exp None group. Individual repeated-measures ANOVAs for each group for the picture
description task indicated that the Exp Prior group improved from pretest to posttest and was not
significantly different from posttest to delayed posttest. The Exp None group, contrarily,
improved significantly from pretest to posttest but then decreased again from posttest to delayed
posttest on this task; however, this group still maintained gains from the pretest to the delayed
posttest.

For the grammaticality judgment task, the t-test indicated that the two groups were not
significantly different on the posttest, and were only approaching significance on the delayed
posttest. Again, individual repeated-measures ANOVAs were run for each group, and for this
task, both found the same result; that is, both groups improved from pretest to posttest and from
pretest to delayed posttest, and then did not change in score significantly from posttest to delayed
posttest. The Exp Prior group, then, was better at maintaining pretest to posttest gains on the
delayed posttest two weeks later, but for the picture description task only.

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68 The two instructed groups were significantly different on the pretest for this task as well.
69 These groups were statistically similar on the GJT pretest as well.
The significant decrease in score from posttest to delayed posttest on the part of the Exp None group on the picture description task, though not predicted specifically for this task only, is not unexpected. As mentioned in Chapter 4, a similar decrease in score over time has been found in general in previous studies of instruction, in groups without prior knowledge of structures (Norris & Ortega, 2001). In their meta-analysis, only 22 unique studies of the 49 total studies included enough data to calculate effect sizes for both an immediate and delayed posttest. From these 22 unique studies, Norris and Ortega found a decrease in observed effect of one fifth of a standard deviation unit, from immediate posttest to delayed posttest (p. 189). Yet, the Exp None group in the current study did tend to maintain score increases, and still had significantly different scores between the pretest and the posttest and between the pretest and the delayed posttest on both tasks. Results overall for the Exp None group, then, indicate that instruction was useful for this group.

It also fits with previous research that the task in which these learners decreased significantly in score from posttest to delayed posttest was the oral task. For example, Farley and McCollam (2004) and McCollam Wiebe (2003), who were interested in oral production, found that only some learners in each group were able to use Spanish DOM productively (defined by the researchers as two or three separate uses of the structure on different tasks), even after various types of instructional treatment. Moreover, in SLA research in general, oral production is believed to be more difficult than comprehension (Lightbown, 2000; see also Paradis, 2007, with respect to the activation threshold hypothesis). Based on previous research on the acquisition of DOM in Spanish and in SLA in general, then, it is unsurprising that the task in which the learners without prior knowledge decreased in score was the oral production task.
6.2.2.1 Processability Theory

Returning to the learners with prior knowledge, it was predicted that the Exp Prior group would perform better than the Exp None group on the tasks over time. Although there is no previous research that has directly compared these two types of learners with regard to knowledge of a particular grammatical structure, as discussed briefly in Chapter 4, the results are relevant, though not directly, to Pienemann’s Processability Theory.

Pienemann’s Processability Theory (Pienemann, 1989, 1998a, 1998b, 2005, among others) specifies that processing mechanisms shape language acquisition by allowing learners to comprehend and produce only those structures for which the learners have reached the appropriate developmental stage (Pienemann, 2005). His theory also assumes an implicational hierarchy, based on the processing complexity of structures, whereby the processing operation of each stage is a prerequisite for that of the next stage. Structures are learnable, then, when the learners have the processing capabilities for structures at the level below that of the structure in question on the implicational hierarchy. This hierarchy is only applicable to structures that are developmentally constrained, not to variational features, which are defined as features that can be acquired at any time in the acquisition process (Pienemann, 1989).

According to Johnston (1995), who works within the framework of Processability Theory, DOM is developmentally constrained, and part of the seven stages of acquisition order in Spanish—stage 4, to be precise. Similar to Processability Theory, other researchers, such as Peters (1998, as cited in Schmidt, 2001) have suggested that there is a cognitive overload for L2 learners early on in the acquisition process, such that they are not able to pay attention to

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70 These stages generally relate to word order, but include other developmentally constrained features. For example, stage 1 of Johnston (1995) is use of words or formulae only, stage 2 is use of canonical SVO word order, and stage 3 includes VOS word order and adverb fronting. Stage 4 includes emergence of DOM, VSO word order and question inversion, stage 5, use of “free” word order and object clitics, stage 6 includes clitic sequencing, and stage 7, relative pronoun marking (p. 22).
everything in the input. However, as they begin to learn simple processing routines, they can pay attention to more details.

Within Processability Theory, instruction is considered to be useful, but only in certain circumstances, which are described by the concept of *teachability*. Pienemann (1989) states that, “…the teachability of language is constrained by what the learner is ready to acquire” (p. 52). The *Teachability Hypothesis* “…predicts that instruction can only promote language acquisition if the interlanguage is close to the point when the structure to be taught is acquired in the natural setting” (p. 60). So, for developmental features, instruction is useful, but only when given on those features at the ‘next stage’ in the implicational hierarchy from the stage at which the learners are currently.

Although the learners in the current study were not tested with this theory in mind, it is possible that the Exp Prior group contained more learners for whom this structure was learnable than the participants in the Exp None group. The two L2 DOM studies on Processability Theory in Spanish, Farley and McCollam (2004) and McCollam Wiebe (2003), did not find much evidence supporting Processability Theory. Yet, it is possible that, for a structure like DOM in Spanish that is not acquired quickly by L2 learners, acquisition is facilitated when learners are not only “ready” to acquire the structure, but have some prior knowledge of it before receiving instruction. Although both groups were able to benefit from instruction, the group with prior knowledge benefitted somewhat more than the group without prior knowledge, perhaps because they were able to process the structure better due to their prior knowledge and consequent lack of cognitive overload.
6.2.2.2 Similarity between instructed groups

In addition to the potential applicability of a theory of processability or learnability here to explain the differences between the instructed group with prior knowledge and the instructed group without prior knowledge, another important issue to address is the general lack of difference between the two instructed groups, in terms of maintaining gains after instruction. In spite of the apparent initial difference in knowledge of DOM on the part of the two groups, results of the third research question (which compared the two prior knowledge groups to each other) indicated that the Exp Prior group only maintained gains better than the Exp None group on the oral production measure, and only from posttest to delayed posttest.

The similarity between the two instructed groups in terms of maintaining the gains made from pretest to posttest may simply provide strong evidence for the efficacy of instruction. Those learners with no prior knowledge of the structure were able to improve significantly in score and to generally maintain improvements over time, like the learners with prior knowledge. Both instructed groups were significantly different from their respective comparison groups after instruction, despite similar levels of prior knowledge initially on both tasks. Nevertheless, no L2 groups were significantly different in score on the pretest for the GJT. So, despite that only one group was labeled as having prior knowledge of the structure before beginning the study, both groups were actually similar in score for this pretest task. Starting with similar pretest scores, both groups were able to benefit equally from the instructional treatment, at least for the comprehension-based task.

A possible reason for why these two groups were similar even in score on the GJT pretest requires an examination of previous L2 DOM research in Spanish. In Bowles and Montrul (2008, 2009a), the low-intermediate level participants were not found to be true beginners with the
structure, but on the contrary, had differing pretest scores. In fact, given the frequency with
which the structure occurs in Spanish, it is unlikely that the learners in any group in any study of
L2 Spanish would not have received some previous input containing DOM, though of course it is
unknown whether they would have noticed the structure in the input provided or determined its
function.

Consequently, it is possible that there was a lack of difference between the two instructed
groups in the current study because both groups in reality had some prior knowledge of the
structure before carrying out the study. As mentioned above, production tends to be more
difficult than comprehension, and even those learners in the current study who were not able to
produce ‘personal a’ at all on the pretest picture description task usually added or deleted it
correctly at least sometimes on the pretest GJT. Therefore, the two instructed groups could have
performed similarly on the tasks simply because they both had at least some prior knowledge of
the structure and brought this knowledge to the completion of the tasks and the instructional
treatment.

In addition to instruction and prior knowledge, there was a final factor here that could
help to explain why the two instructed groups were so similar— awareness of DOM. It is
possible that the instructional treatment simply allowed both groups of learners to become more
aware of the structure. In fact, in research question four, we discussed awareness as it relates to
instruction and prior knowledge, finding that both factors were related to awareness of the
structure. The role of awareness in this study will be examined in section 6.4, below, in more
detail.
6.3 Comparison with native speakers

As discussed above, in the first research question, we compared the four learner groups, determining that those who received instruction outperformed those who did not receive instruction. Then, in research question 3, we compared the learners without prior knowledge to those with prior knowledge, finding that the instructed group without prior knowledge maintained their scores as well as the instructed group with prior knowledge on the GJT, but not on the picture description task.

As explained in Chapter 2, previous research on DOM in the acquisition of L2 Spanish has found that, although instructed learners improved significantly compared to those learners who did not receive instruction, they were still significantly different from native speakers in terms of accuracy on the structure. As such, in the second research question, we compared the scores of the four learner groups to those of the native speaker participants on both tasks. This research question was answered in the affirmative, contrary to predictions for the L2 participants based on previous research.

Results for this research question found that one learner group, the Exp Prior group, was statistically similar to the native speakers on the two tasks on both the posttest and delayed posttest. Additionally, the Exp None group was statistically similar to the Native Speaker group on the grammaticality judgment posttest and delayed posttest (see footnote 56 for more information on the scores of Exp None on this task with respect to the Native Speaker group, however). Again, this lack of significant difference from the Native Speaker group on the grammaticality judgment posttest and delayed posttest for the Exp Prior and Exp None groups occurred even though on the pretest for this task both groups were significantly different in score.
from the Native Speaker group. Similarly, on the picture description pretest, the Exp Prior group was significantly different from the Native Speaker group as well.

In this section, the lack of difference between the Native Speaker group and the instructed learner groups will be discussed in terms of previous research as well as with respect to possible proficiency differences, task differences, and the role of instruction, prior knowledge and awareness of the structure.

6.3.1 Lack of difference between native speakers and learner groups

The results of this research question were unexpected, given that they differ from those of previous SLA research on DOM in intermediate learners of Spanish. While no previous research on DOM in Spanish had specifically tested intermediate learners with prior knowledge of DOM, all previous research that compared L2 learners to native speakers on this structure found significant differences between the two (Bowles & Montrul, 2008, 2009a; Guijarro-Fuentes & Marinis, 2007).

Two previous studies testing intermediate learners without prior knowledge of DOM (Bowles & Montrul, 2008, 2009a) found that these participants remained statistically different from native speakers even after instruction on the most prototypical use of DOM in Spanish (the same use tested in the current study), despite a significant improvement from before instruction. Yet in the current study, instructed learners without prior knowledge of the structure were found to be statistically similar in score to the Native Speaker group on both the GJT posttest and delayed posttest. The statistical similarity between the Native Speaker group and the Exp None group on the GJT in the current study could in part be due to a difference in proficiency level between learners in the current study and learners in this previous research. In Bowles and Montrul (2008, 2009a), learners were in their fourth semester of Spanish.
Conversely, in the current study, learners were tested from a variety of courses at the intermediate level, many of which were well above the fourth semester. This was because, initially at least, learners who scored at the intermediate level on the DELE were sought, and many learners at the fourth semester level did not score at the intermediate level on this proficiency test. It was also difficult to find learners at the fourth semester that had prior knowledge of DOM. Therefore, despite a similar lack of prior knowledge between learners in the previous studies as compared to this study, the learners’ higher general proficiency level in this study could have led to better acquisition of the structure.

However, proficiency differences cannot entirely explain the divergence in results, since Guijarro-Fuentes and Marinis (2007) utilized the DELE as well in their research, and still found differences between native speakers and nonnative speakers. Although in their study the researchers did not instruct the learners on DOM in Spanish, they found that the intermediate and even the advanced learners, who had been able to acquire the least complex, most prototypical use of DOM in Spanish (the same use tested in this study, with animate direct objects), were still significantly different in score from the native speaker participants tested, in all cases. Yet, in the current study, learners at the intermediate level, again using the same proficiency test as that of Guijarro-Fuentes and Marinis, who had prior knowledge of DOM in Spanish, were found to be statistically similar to the native speakers on the two tasks, on both the posttest and the delayed posttest two weeks later. These similarities occurred, again, despite initial differences between this group and the native speaker group on both tasks on the pretest.

6.3.1.1 Prior knowledge

One possible reason for these unexpected similarities is that the prior knowledge these learners had of the structure, along with the instructional intervention and feedback, enabled the
Exp Prior group to improve to the level of the native speakers. Again, none of the previous research had considered learners with some prior knowledge of DOM before instruction, using prior knowledge of the structure as an independent variable. Certainly, the only learner group to consistently show similar results to the native speakers was the group with prior knowledge of DOM that received instruction on the structure.

These results support the idea that learners with some prior knowledge of a structure can benefit from instruction, and may benefit more from this instruction than those learners without prior knowledge of the structure. Therefore it is possible that the difference in results between the current study and previous research on DOM in Spanish is at least partly due to the prior knowledge of the learners in this study. However, the learners without prior knowledge of the structure who received instruction also improved enough to be similar to native speakers on the GJT posttest and delayed posttest.71

6.3.1.2 Task demands

Another possibility, at least for the differences between the current study and that of Guijarro-Fuentes and Marinis (2007), is that there were differences in task demands between these two studies. Task demands is a term used by Schmidt (1990), whereby a task itself can force a learner to pay attention to certain information, in order to carry out that task. This is very similar to Loschky and Bley-Vroman’s (1993) concept of task-essentialness, which is when the task cannot be performed successfully, “unless the grammatical structure is attended to” (p. 138). Perhaps the tasks73 in the current study forced learners to notice the structures more than the

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71 See section 6.2.2.2 above for possible reasons why these groups were similar.
72 It is less likely that there were differences in task demands between the current study and those of Bowles and Montrul (2008, 2009a), since these researchers used a GJT and then a GJT and written production task, respectively, which were similar in format to the GJT and oral production task in the current study.
73 Based on the terminology of tasks from Loschky and Bley Vroman (1993, p. 124), tasks must have a purpose other than only the use of grammar. Here, the word task, then, is used as a general term only, to refer to activities or
acceptability judgment task from Guijarro-Fuentes and Marinis (2007), which asked participants to determine whether sentences were acceptable or not.

In the current study, the picture description task had task-essentialness, since learners could not carry out this task without using the differential object marker in at least some of the sentences. For the GJT, it is less clear that it was necessary to pay attention to the marker. However, perhaps due to the word order differences in this task, the differential object marker was at least more salient due to its position as the first item in the sentence in some of the sentences of this task. Van Patten’s principle that learners process elements in sentence initial position first (Van Patten, 2002, 2004) supports the salience of this sentence position.

6.3.1.3 One further possibility

Since task demands, proficiency and prior knowledge cannot independently explain all differences in results between the current study and previous research in this area, there is another explanation for the lack of difference between native speakers and nonnative speakers in this study. That is, the learners in both the prior knowledge and no prior knowledge groups in this study were able to notice and even show understanding of the structure after instruction. In previous research, awareness has been linked with higher accuracy on structures (Alanen, 1995; Camps, 2003; Jourdenais et al., 1995; Leow, 1998a; Rosa, 1999, among others). The previous research on Spanish DOM had not examined the noticing or understanding of the learners regarding this structure, which is very common in the learner input. Therefore, the previous research alone cannot be directly compared with the results of the current study. This will be

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74 tests carried out by the participants, since in the current study only the oral picture description task would be considered a task using this definition.

74 (i) below repeats the example from Chapter 4, of an OVS word order item with DOM.

(i) A la niña la acuesta el hombre

DOM the girl CL puts to bed the man

‘The man puts the girl to bed.’
discussed in the next section, with regard to research question 4, in which awareness was investigated.

6.4 Awareness

In the fourth research question, we examined the effects of level of awareness on accuracy of participants on the tasks as well as instruction and prior knowledge of DOM in Spanish. This research question was answered partially in the affirmative. Overall, the results indicated that those learners who were found to be aware of the structure were also those who tended to have higher accuracy, and to be in the instructed and prior knowledge groups.

Awareness by accuracy for the two tasks was found to be significant, at least for the posttest and delayed posttest, for both tasks. The GJT posttest and delayed posttest found that participants in the Understanding group scored the highest, followed by participants in the Noticing group, followed by those in the No Report group. The posttest and delayed posttest for the picture description task found that both the Understanding group and the Noticing groups were higher scoring than the No Report group.

Chi-square analyses of awareness by instruction and prior knowledge indicated that both factors were associated with higher levels of awareness (Understanding, Noticing), and that lack of instruction and no prior knowledge were both related to lower levels of awareness (No Report).

While results for the accuracy by awareness part of this research question were contrary to predictions based on previous research, they are explained below by analyzing the picture description task and GJT and their pretest results in this study. The results of instruction by awareness were similar to previous research on awareness and the Noticing hypothesis. The prior
knowledge by awareness results are explained below as well, along with their relevance to pedagogy.

6.4.1 Awareness by accuracy

The first part of these results, that awareness did not relate to accuracy on the GJT or oral picture description pretests but did relate to accuracy on the posttest and delayed posttest for both tasks, was unexpected, given that based on previous studies, predictions were that level of awareness would relate to accuracy, regardless of task. Briefly, in previous awareness research testing the Noticing hypothesis, Alanen (1995), Camps (2003) and Leow (2001b) examined reading tasks, Jourdenais et al. (1995) looked at written production, and Leow (1998a) and Rosa (1999) utilized problem-solving tasks. Nevertheless, each of these studies found evidence for the Noticing hypothesis, as discussed in Chapter 3.

Looking at learner scores on both pretest tasks, it seems very likely that lack of differences in mean score among learner groups on the two tasks led to the lack of significant difference on the pretest for both tasks, in terms of accuracy by awareness.

That is, the reason the ANOVAs for the GJT and picture description pretests were not significant for any of the three awareness groups (No Report, Noticing or Understanding) was because the mean scores for each of these groups were extremely similar on both of these tasks. Scores were in general very low for the picture description pretest— the mean score for the No Report group was 16%, for the Noticing group, 29%, and for the Understanding group, 26% accuracy. This was because many participants scored very low on this task, either not producing the personal ‘a’ at all, only producing it one or two times, or, even in the case of the prior knowledge groups, producing it only about four or five times, out of a total of twelve.
Similarly, on the GJT pretest, all groups were found to be statistically similar in score and, again, had very low scores initially (for a comprehension task). The No Report group started at 47%, the Noticing group at 52% and the Understanding group at 65%. In fact, previous research on awareness in SLA had not examined group scores over time, so it is likely that these low scores and lack of pretest differences (on the GJT) led to a lack of significant difference among groups on the pretest for either task.

Therefore, despite previous research that found differences in awareness on all types of tasks, the difference in these results, as compared to previous research on the Noticing hypothesis, could be due to the use of pretest data. Previous research on awareness in SLA (to my knowledge) had not utilized a pretest, posttest, delayed posttest design, so the researchers were not necessarily looking for improvement over time among learners. Therefore, it was not typical for these previous studies to have learners with such low initial scores on the tasks.

6.4.2 Awareness by instruction

Results for the next part of the research question, concerning awareness by instruction, were expected based on the previous research on instruction as well as awareness. For example, studies carried out by Rosa (1999), Rosa and Leow (2004a), and Rosa and O’Neill (1999) indicated that participants who were given more explicit information regarding the structure (contrary-to-fact conditionals in Spanish) tended to report higher levels of awareness than those who received less explicit information (more implicit information) regarding the structure. Again, the current study did not compare explicit to implicit conditions, since it had only an explicit instructional and feedback condition and a comparison group, which only completed the tasks. Yet, because the comparison group did not receive this explicit feedback, but did receive
input containing the structure, it can be considered a more implicit learning group, rendering these results at least somewhat comparable to those of the above studies.

6.4.3 Awareness by prior knowledge

In terms of the third part of the research question, concerning awareness by prior knowledge, the null hypothesis was predicted, simply because no previous research has examined prior knowledge as an independent variable. Yet, the fact that the learners with prior knowledge of this structure also tended to be more aware of the structure helps to strengthen the argument presented in this dissertation, that learners with prior knowledge of a structure can and should be considered in second language acquisition research. It also provides evidence that, despite the similarity in this study between the instructed groups with and without prior knowledge, prior knowledge itself can make learners learn a difficult structure in a way that is perhaps even more effective than learners without prior knowledge of that structure.

This again relates to Van Patten et al. (2004), who, as discussed above, maintained that form-meaning connections can be strengthened when encountered repeatedly in the input. The results of this research question in general also provide evidence for instruction, since both prior knowledge and instruction were related to the increased awareness of learners in the present study. This study provides more support for Schmidt’s Noticing Hypothesis, though in a more general sense, as there were not clear differences in accuracy by awareness at all three levels of awareness on both tasks. Yet, as in previous awareness research, awareness in general was related with higher accuracy, except on the picture description and GJT pretest.

The learners who received instruction and those who had prior knowledge of the structure tended to be more aware of it. Those who were more aware also tended to have higher accuracy,
as shown by the first part of the research question, so indirectly at least, both instruction and prior knowledge related to higher accuracy as well.

Finally, in the last research question, we wanted to know whether the results would support the Full Transfer Full Access Hypothesis in terms of continued restructuring of the target language based on noticing of the structure. This last research question is examined below, with respect to both the accuracy by awareness part of this research question, as well as the second research question, regarding participant scores as compared to native speaker scores.

6.5 Full Transfer Full Access Hypothesis

Again, in the last research question, we were interested in determining whether the results would support the Full Transfer Full Access Hypothesis in terms of continued restructuring of the target language based on noticing of the structure. To answer this last research question, it is necessary to reexamine the analysis of accuracy by awareness, described above. The results of the second research question, in which we compared all L2 groups to the Native Speaker group, also indirectly help provide an answer to the last part of this research question.

In this research question, we asked whether those learners who demonstrated awareness of the structure at least at the level of Noticing would be able to show restructuring of their interlanguages. This part of the research question was generally answered in the affirmative. The ANOVA for awareness by accuracy generally indicated that Noticing alone was enough for the accuracy of learners to be significantly different from the accuracy of learners who did not demonstrate Noticing.75 In terms of restructuring then, those learners with awareness at least at the level of Noticing were able to show significantly higher accuracy than those learners with No Report of awareness. The one exception, the lack of a significant difference between accuracy

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75 Those learners who demonstrated awareness at the level of Understanding also generally had higher scores on DOM items at least than those who showed no report of awareness.
and awareness on the picture description task and GJT on the pretest, was explained above in terms of low mean scores overall on these tasks on the pretest, and a lack of significant difference among groups at all on the pretest GJT.

Research question 2, in which we compared the native speakers to the nonnative speakers, did not directly relate to awareness; however, it demonstrates that the participants with instruction and/or prior knowledge improved to native speaker levels on the posttest and delayed posttest for one or both tasks. The high scores by these learners, therefore, provide support for the hypothesis that these nonnative speaker participants were beginning or continuing to restructure their interlanguages, crucially, after instruction.

Again, all L2 groups were significantly different from the native speakers on the picture description and GJT pretest. Yet, both groups that received instruction were able to improve to levels statistically similar to those of the native speakers. For the Exp Prior group, this similarity occurred on both posttest and delayed posttest tasks, and the Exp None group was statistically similar to the Native Speaker group on the GJT posttest and delayed posttest. Both the similarities between the native speakers and both instructed L2 groups, as well as the evidence of accuracy by awareness in general, provide support for the hypothesis that learners in this study were able to begin or continue to restructure their interlanguages in terms of differential object marking.

6.6 Conclusions

The current study adds to the previous research on instruction, feedback, and awareness, generally supporting past studies in this area that show that these three factors aid in fostering grammatical development in second language acquisition. It also contributes to an area of second language research that has not been previously investigated in detail: the role of prior knowledge
of a particular structure in the acquisition process. Although the instructed learners with prior knowledge were generally similar to those without prior knowledge, in some ways they were better, and more native-like than the instructed no prior knowledge group. In the sphere of pedagogy, the results of this research are relevant as well, as they support continued exposure to and instruction on structures that are not learned quickly by L2 learners, such as differential object marking.

Results regarding prior knowledge demonstrate that the learners with prior knowledge were different in some ways from the learners without prior knowledge, in terms of acquisition of DOM after the instructional intervention. Taking together the results regarding the learners with prior knowledge as compared to those without prior knowledge, the groups given instruction performed similarly on the grammaticality judgment task, but not on the picture description task. On research question 3, we compared the two instructed groups, finding that they both were able to increase significantly in score from pretest to posttest and maintain these gains on the delayed posttest, for the grammaticality judgment task. For the picture description task, while the Exp Prior group performed the same as on the GJT, the Exp None group was able to increase from pretest to posttest, but maintained the differences from the pretest only on the delayed posttest, decreasing significantly in score from posttest to delayed posttest on this task.

Similarly, on research question 2, in which we compared all learner groups to the Native Speaker group, we found that the Exp Prior and Exp None groups were similar to the Native Speaker group on the GJT posttest and delayed posttest. Only the Exp Prior group was also statistically similar to the Native Speaker group on the picture description posttest and delayed posttest. As discussed above, these results could be due to a variety of factors, including the
difference in task, prior knowledge and its relation to the learnability of a structure, and pretest scores of the groups.

This study contributes to and supports instructional research as well. Despite initial differences on the picture description task, both instructed groups benefitted from instruction, as shown by research question 2. On this research question, we found that the two instructed groups had significantly higher scores than their respective comparison groups on both tasks, on both the posttest and delayed posttest. As explained above, it could be considered that the learners with prior knowledge benefitted from the instruction more than those without prior knowledge, as they were able to maintain their own score gains from pretest to posttest to delayed posttest on both tasks. Although the research on instruction strongly suggests that instruction, and in particular explicit instruction (and feedback) is at least useful to learners, this topic is still debated in SLA research. This research confirms the usefulness of instruction, both for learners first learning even a difficult structure, and for learners who have partially learned a structure but still make errors on it.

These results, regarding both prior knowledge and instruction, also have pedagogical implications. Since both groups of learners were able to benefit from instruction, this research supports instruction at intermediate levels for learners both without prior knowledge and with prior knowledge of DOM in Spanish. Although more research is required in the area of prior knowledge of a particular structure, if this research finds that learners with prior knowledge benefit from continued instruction on difficult structures, intermediate course syllabi could and should be edited to include this instruction. Second language acquisition research has tended to be interested in learners with or without prior knowledge of a language in general, or in beginning as compared to intermediate and advanced learners, but not in comparing learners with
or without prior knowledge of a particular structure in a language. This study indicates that while learners with and without prior knowledge are similar in terms of benefitting from an instructional treatment, they may have differences as well (as shown in the differing results on the picture description task) that merit further consideration in SLA research.

The results of the fourth research question contribute to awareness research as well, providing evidence for the Noticing hypothesis, at least in terms of the benefits of Noticing and Understanding as compared to a lack of awareness. This study, similarly to previous awareness research, found in general that awareness of differential object marking related to greater accuracy on the structure. In addition to accuracy though, this study examined whether the factors of instruction and prior knowledge related to awareness of DOM, finding that they both were associated with awareness of the structure, whereas no instruction and no prior knowledge tended to be associated with a lack of awareness (No Report). This research question, then, contributes to previous awareness research and supports the Noticing Hypothesis. It also demonstrates that other factors are related to awareness of a structure—in this case, instruction and prior knowledge.

6.7 Limitations and future research

Various limitations of this study are described in more detail below, along with possible directions for future research in this area. One limitation, mentioned above, was that this study did not tease apart the effects of instruction from those of feedback. The focus in the current study was on the learners with prior knowledge as compared to those without prior knowledge, which is why the instructional intervention and feedback were combined here.

However, without separating the instruction from the feedback given to participants, it is difficult to determine whether the effects of the treatment were primarily due to the instruction,
primarily due to the feedback, or equally affected by both. Future research that examines learners with prior knowledge of a structure as compared to those with no prior knowledge of the structure would greatly benefit from a separation of the instruction and feedback conditions. This is particularly important in light of the studies described in Chapter 3 that found clear evidence for the usefulness of explicit instruction, but less clear evidence for the effectiveness of explicit feedback. Given this previous research, it would be beneficial to separate these two aspects of pedagogy in future research in this area.

Also, taking into account previous research on instruction and feedback, future research would be more effective in this area if it included explicit and implicit instruction and feedback conditions. Again, previous research has found somewhat strong evidence that explicit instruction is more effective than implicit instruction, but the explicit versus implicit feedback conditions are less clear. As explained above, the no instruction condition can be considered somewhat more implicit, but explicit and implicit instruction cannot be directly compared here, since no implicit instruction was given.

Furthermore, although participants in the instruction and feedback group all read the instruction and completed the two activities practicing what they had read, it is not entirely clear whether these participants read the feedback that they received. A subset of these participants carried out think-aloud protocols during the feedback activities, and preliminary analysis of these results suggests that many of the learners may not have read the feedback when answering incorrectly, to allow them to understand their errors and correct their comprehension of the structure. However, many of the learners received 9 out of 10 possible points or 10 out of 10 possible points for each of the two practice activities. As such, it was also not clear whether these learners had read the feedback even when analyzing the think-alouds, since most participants did
not receive much feedback. This is a limitation of the study, as well as an area of possible future research.

Another potential limitation of the current study was that the uninstructed group simply proceeded directly to the tasks, and therefore received about 20 minutes less L2 input of any type than the instructed group. It is therefore possible, although it seems somewhat unlikely, that the instructed groups scored significantly higher than the uninstructed groups simply because they received more input in the L2 than the uninstructed groups. Instead, the uninstructed groups could have read an essay in Spanish on any topic for the same amount of time, or carried out another unrelated activity in Spanish during this time.

Finally, this study only considered prior knowledge of one structure, DOM in Spanish, and only by intermediate learners of the language, finding that these learners did benefit from instruction, and were able to retain the improvements made after instruction on the oral picture description task more than the group without prior knowledge. Future research would benefit from analyzing other structures that prove difficult for L2 learners to acquire, and as such are acquired over time, such as aspect or gender agreement.

In conclusion, this study contributes to previous research in instruction, feedback, and awareness of a structure. It provides evidence that prior knowledge of a difficult structure can make acquisition of that structure more effective, and that learners with prior knowledge do benefit from continued instruction, in some ways even more than learners without prior knowledge. Future research in this area could greatly benefit SLA theory as well as pedagogical practice, in considering learners with some prior knowledge of a structure as an independent variable.
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APPENDIX A: VOCABULARY TASK

Look at the pictures and the verbs-write the English definition of the verb next to it. If you are not sure, please ask the researcher.

Abrazar         Acariciar   Acostar       Amar

Asustar            Atacar   Besar       Buscar

Despertar          Empujar   Encontrar       Escuchar
Estudiar
Extrañar
Golpear
Lamer
Lavar
Levantar
Llamar
Mirar
Morder
Oír
Peinar
Pintar
APPENDIX B: BACKGROUND QUESTIONNAIRE

Background Questionnaire

Participant number __________

Name _________________________
Age __________________________
E-mail ________________________

1. At what age did you first learn English?

2. Where were you born? (city, country)

3. At what age did you first learn English?

4. At what age did you first learn Spanish?

5. How long (in years) have you been studying Spanish?

6. What Spanish courses have you taken at this university (or another location, such as Parkland)?

7. What Spanish courses (if any) did you take in high school?

8. What Spanish course(s) are you currently taking at UIUC?

9. On a scale from 1-5, rate your abilities in both English and Spanish (1= poor, 2= needs work, 3= good 4= very good 5= native speaker).

   English:     Reading ___  Speaking ___  Listening ___  Writing ___
   Spanish:     Reading ___  Speaking ___  Listening ___  Writing ___

10. Have you traveled to a Spanish speaking country? If so, where did you travel? (If not, skip to question 12) __________________________

11. For how long? __________________________________________

12. Have you lived/studied in a Spanish speaking country? (If not, skip to question 15)

13. Where did you live/study? _________________________________

14. For how long? __________________________________________

15. Do you have speaking/reading/listening skills in any other language? (If not, skip to question 19) If so, which language(s)? ______________________
16. At what level do you consider yourself in this language (beginner, intermediate, advanced) (circle one)?

17. Which of the following skills do you have in this language? On a scale from 1-5, rate your abilities (check all that apply) (1= poor, 2= needs work, 3= good 4= very good 5= native speaker).

   Reading ___ Speaking ___ Listening ___ Writing ___

18. At what age did you start learning this language? ______________

19. How many hours a week do you spend outside of class on Spanish?

   Speaking: 
   Listening to the radio/music: 
   Watching television: 
   Doing homework: 
   Reading: 
   Other (please specify):
APPENDIX C: PICTURE DESCRIPTION TASK

Pretest and Delayed Posttest

Boy and girl

Llamar (to call), Oír (to hear)  
Visitar (to visit), Saludar (to greet)

Seguir (to follow), Comer (to eat)  
Levantar (to lift), Morder (to bite)
Empujar (to push)  Buscar (to look for)

Abrazar (hug), Ver (see)  Estudiar (study) Asustar (scare)

Tirar (to throw)  Pintar (paint), Golpear (hit)
Escuchar (listen), Abrazar (hug)

Extrañar (to miss)

Amar (love)

Besar (to kiss), Acariciar (to caress)

Tocar (to play), Leer (to read)
Posttest

Girl and mom

Despertar (wake up)  Besar (kiss)

Empujar (push), Encontrar (find)  Cocinar (cook), Lamer (lick)
Abrazar (hug)  Morder (bite)

Ver (see)  Lavar (wash), Escuchar (listen to)

Tocar (play), Mirar (look at)  Peinar (brush), Leer (read)
Llamar (call), Tirar (throw)  
Acostar (put to bed)

Acariciar (caress)  
Mirar (to look at), Dormir (to sleep)

Estudiar (study)
APPENDIX D: GRAMMATICALITY JUDGMENT TASK

(* for grammatically incorrect, CL = direct object pronoun)

**Instructions:**
Below, there are 80 sentences, some of which are grammatical and some of which are not grammatical, for a variety of reasons. Read the sentences, and decide if each is grammatical or not, and to what degree. If you answer "completely ungrammatical," "somewhat ungrammatical" or "somewhat grammatical," re-write the part of the sentence that is ungrammatical to make it correct. If you answer "perfectly grammatical," write an X or YES in the space next to this answer.

You don’t have to re-write the whole sentence, just the part that is incorrect. Make sure to pay close attention, because some of the errors may be hard to notice! Here are a few examples:

**Practice**

1. La chica caminan en el parque.
the girl walk in the park

**completely ungrammatical- camina (she walks)**

somewhat ungrammatical

somewhat grammatical

**perfectly grammatical**

2. Pedro saca una buena nota.
Pedro gets a good grade

**completely ungrammatical**

somewhat ungrammatical

somewhat grammatical

**perfectly grammatical- X/ YES**

3. Los niños comen la helado.
the children eat the (feminine) ice-cream (masculine).

**completely ungrammatical- el helado (the (masculine) ice-cream (masculine))**

somewhat ungrammatical

somewhat grammatical

**perfectly grammatical**

**Pretest**

Human postverbal grammatical

1. La mujer besa a la niña. the woman kisses A the girl ‘The woman kisses the girl.’
2. El niño pinta a la madre. *the child paints A the mother ‘The child paints the mother.’
3. Clara peina a su hermana. *Clara brushes A her sister ‘Clara brushes her sister’s hair.’
4. El hombre acuesta a la niña. *the man puts to sleep A the girl ‘The man puts the girl to bed.’

Human postverbal ungrammatical
1. * La mujer besa la niña. *the woman kisses the girl ‘The woman kisses the girl.’
2. *El niño pinta la madre. *the child paints the mother ‘The child paints the mother.’
3. *Clara peina su hermana. *Clara brushes her sister ‘Clara brushes her sister’s hair.’
4. *El hombre acuesta a la niña. *the man puts to sleep the girl ‘The man puts the girl to bed.’

Human preverbal grammatical
1. A Felipe lo ataca el niño. A Felipe CL attacks the child ‘The child attacks Felipe.’
2. Al estudiante lo saluda el profesor. A the student CL greets the professor ‘The professor greets the student.’
3. Al niño lo extraña el padre. A the child CL misses the father ‘The father misses the child.’
4. Al chico lo visita el hombre. A the boy CL visits the man ‘The man visits the boy.’

Human preverbal ungrammatical
1. *Felipe lo ataca el niño. *Felipe CL attacks the child ‘The child attacks Felipe.’
2. *El estudiante lo saluda el profesor. *the student CL greets the professor ‘The professor greets the student.’
3. *El niño lo extraña el padre. *the child CL misses the father ‘The father misses the child.’
4. *El chico lo visita el hombre. *the boy CL visits the man ‘The man visits the boy.’

Inanimate postverbal grammatical
1. El niño abraza el juguete. the child hugs the toy ‘The child hugs the toy.’
2. El trabajador oye el ruido. the worker hears the noise ‘The worker hears the noise.’
3. Sara tira la pelota. Sara throws the ball ‘Sara throws the ball.’
4. Roberto lame el helado. Roberto licks the ice-cream ‘Roberto licks the ice-cream.’

Inanimate postverbal ungrammatical
1. *El niño abraza al juguete. *the child hugs A the toy ‘The child hugs the toy.’
2. *El trabajador oye al ruido. *the worker hears A the sound ‘The worker hears the sound.’
3. *Sara tira a la pelota. *Sara throws A the ball ‘Sara throws the ball.’
4. *Roberto lame al helado. *Roberto licks A the ice-cream ‘Roberto licks the ice-cream.’

Inanimate preverbal grammatical
1. La mesa la empuja la maestra. the table CL pushes the teacher ‘The teacher pushes the table.’
2. La pelota la ve el niño. the ball CL sees the child ‘The child sees the ball.’
3. El piano lo toca el pianista. the piano CL plays the pianist ‘The pianist plays the piano.’
4. La arquitectura la estudia el estudiante. the architecture CL studies the student ‘The student studies architecture.’

Inanimate preverbal ungrammatical
1. *A la mesa la empuja la maestra. *A the table CL pushes the teacher ‘The teacher pushes the table.’
2. *A la pelota la ve el niño. *A the ball CL sees the child ‘The child sees the ball.’
3. *Al piano lo toca el pianista. *A the piano CL plays the pianist ‘The pianist plays the piano.’
4. *A la arquitectura la estudia el estudiante. *A the architecture CL studies the student ‘The student studies architecture.’

**Posttest (Po)**

Human postverbal grammatical
1. El niño ataca a Felipe. the child attacks A Felipe ‘The child attacks Felipe.’
2. El profesor saluda al estudiante. the professor greets A the student ‘The professor greets the student.’
3. El padre extraña al niño. the father misses A the child ‘The father misses the child.’
4. El hombre visita al chico. the man visits A the boy ‘The man visits the boy.’

Human postverbal ungrammatical
1. *El niño ataca Felipe. *the child attacks Felipe ‘The child attacks Felipe.’
2. *El profesor saluda al estudiante. *the professor greets the student ‘The professor greets the student.’
3. *El padre extraña al niño. *the father misses the child ‘The father misses the child.’
4. *El hombre visita al chico. *the man visits the boy ‘The man visits the boy.’

Human preverbal grammatical
1. A la niña la besa la mujer. A the girl CL kisses the woman ‘The woman kisses the girl.’
2. A la madre la pinta el niño. A the mother CL paints the child ‘The child paints the mother.’
3. A su hermana la peina Clara. A her sister CL brushes Clara ‘Clara brushes her sister’s hair.’
4. A la niña la acuesta el hombre. A the girl CL puts to sleep the man ‘The man puts the girl to sleep.’

Human preverbal ungrammatical
1. *La niña la besa la mujer. *the girl CL kisses the woman ‘The woman kisses the girl.’
2. *La madre la pinta al niño. *the mother CL paints the child ‘The child paints the mother.’
3. *Su hermana la peina Clara. *her sister CL brushes Clara ‘Clara brushes her sister.’
4. *La niña la acuesta al hombre. *the girl CL puts to sleep the man ‘The man puts to sleep the girl.’

Inanimate postverbal grammatical
1. La maestra empuja la mesa. the teacher pushes the table ‘The teacher pushes the table.’
2. El niño ve la pelota. the child sees the ball ‘The child sees the ball.’
3. El pianista toca el piano. the pianist plays the piano ‘The pianist plays the piano.’
4. El estudiante estudia la arquitectura. the student studies the architecture ‘The student studies architecture.’

Inanimate postverbal ungrammatical
1. *La maestra empuja a la mesa. *the teacher pushes A the table ‘The teacher pushes the table.’
2. *El niño ve a la pelota. *the child sees A the ball ‘The child sees the ball.’
3. *El pianista toca al piano. *the pianist plays A the piano ‘The pianist plays the piano.’

Inanimate preverbal grammatical
1. El juguete lo abraza el niño. the toy CL hugs the child ‘The child hugs the toy.’
2. El ruido lo oye el trabajador. the noise CL hears the worker ‘The worker hears the noise.’
3. La pelota la tira Sara. the ball CL throws Sara ‘Sara throws the ball.’
4. El helado lo lame Roberto. the ice-cream CL licks Roberto. ‘Roberto licks the ice-cream.’

Inanimate preverbal ungrammatical
1. *Al juguete lo abraza el niño. *A the toy CL hugs the child ‘The child hugs the toy.’
2. *Al ruido lo oye el trabajador. *A the noise CL hears the worker ‘The worker hears the noise.’
3. *A la pelota la tira Sara. *A the ball CL throws Sara ‘Sara throws the ball.’
4. *Al helado lo lame Roberto. *A the ice-cream CL licks Roberto ‘Roberto licks the ice-cream.’

Delayed Posttest
Human postverbal grammatical
1. La mujer besa a la niña. the woman kisses A the girl ‘The woman kisses the girl.’
2. El profesor saluda a los estudiantes. the professor greets A the students ‘The professor greets the students.’
3. Clara peina a su hermana. Clara brushes A her sister ‘Clara brushes her sister’s hair.’
4. El hombre visita a los chicos. the man visits A the boys ‘The man visits the boys.’

Human postverbal ungrammatical
1. *La mujer besa la niña. *the woman kisses A the girl ‘The woman kisses the girl.’
2. *El profesor saluda los estudiantes. *the professor greets the students ‘The professor greets the students.’
3. *Clara peina su hermana. *Clara brushes her sister ‘Clara brushes her sister’s hair.’
4. *El hombre visita el chico. *the man visits the boy ‘The man visits the boy.’

Human preverbal grammatical
1. A Felipe lo ataca el niño. A Felipe CL attacks the child ‘The child attacks Felipe.’
2. A la madre la pinta el niño. A the mother CL paints the child ‘The child paints the mother.’
3. Al niño lo extraña el padre. A the child CL misses the father ‘The father misses the child.’
4. A la niña la acuesta el hombre. A the girl CL puts to sleep the man ‘The man puts the girl to sleep.’

Human preverbal ungrammatical
1. *Felipe lo ataca el niño. *Felipe CL attacks the child ‘The child attacks Felipe.’
2. *La madre la pinta el niño. *the mother CL paints the child ‘The child paints the mother.’
3. *El niño lo extraña el padre. *the child CL misses the father ‘The father misses the child.’
4. *La niña la acuesta el hombre. *the girl CL puts to sleep the man ‘The man puts the girl to sleep.’
Inanimate postverbal grammatical
1. El niño abraza el juguete. the child hugs the toy ‘The child hugs the toy.’
2. El niño ve la pelota. the child sees the ball ‘The child sees the ball.’
3. Sara tira la pelota. Sara throws the ball ‘Sara throws the ball.’
4. El estudiante estudia la arquitectura. the student studies the architecture ‘The student studies architecture.’

Inanimate postverbal ungrammatical
1. *El niño abraza al juguete. *the child hugs A the toy ‘The child hugs the toy.’
2. *El niño ve a la pelota. *the child sees A the ball ‘The child sees the ball.’
3. *Sara tira a la pelota. *Sara throws A the ball ‘Sara throws the ball.’
4. *El estudiante estudia a la arquitectura.*the student studies A the architecture ‘The student studies architecture.’

Inanimate preverbal grammatical
1. La mesa la empuja la maestra. the table CL pushes the teacher ‘The teacher pushes the table.’
2. El ruido lo oye el trabajador. the noise CL hears the worker ‘The worker hears the noise.’
3. El piano lo toca el pianista. the piano CL plays the pianist ‘The pianist plays the piano.’
4. El helado lo lame Roberto. the ice-cream CL licks Roberto ‘Roberto licks the ice-cream.’

Inanimate preverbal ungrammatical
1. *A la mesa la empuja la maestra. *A the table CL pushes the teacher ‘The teacher pushes the table.’
2. *Al ruido lo oye el trabajador. *A the noise CL hears the worker ‘The worker hears the noise.’
3. *Al piano lo toca el pianista. A the piano CL plays the pianist ‘The pianist plays the piano.’
4. *Al helado lo lame Roberto. *A the ice-cream CL licks Roberto ‘Roberto licks the ice-cream.’

Distracters Pretest
Verb Agreement
1. La chica es alta. the girl is tall ‘The girl is tall.’
2. *La chica son alta. *the girl are tall ‘The girl are tall.’
3. Marco tiene muchos libros. Marco has a lot of books ‘Marco has a lot of books.’
4. *Marco tienen muchos libros. *Marco have a lot of books ‘Marco have a lot of books.’
5. El hombre camina por el parque. the man walks through the park ‘The man walks through the park.’
6. *El hombre caminan por el parque. *the man walk through the park ‘The man walk through the park.’
7. Los caballos cenan. the horses eat dinner ‘The horses eat dinner.’
9. Mario toca la guitarra. Mario plays the guitar ‘Mario plays the guitar.’
10. *Mario tocan la guitarra. *Mario play the guitar ‘Mario play the guitar.’
11. La chica baila con las amigas. the girl dances with the friends ‘The girl dances with her friends.’
12. *La chica bailan con las amigas. *the girl dance with the friends ‘The girl dance with her friends.’
13. Elena nada en el río. Elena swims in the river ‘Elena swims in the river.’
15. Los estudiantes toman unas cervezas. the students drink some beer ‘The students drink some beer.’
16. *Los estudiantes toma unas cervezas. *the students drinks some beer ‘The students drinks some beer.’

Gender Agreement
1. La vaca no es muy inteligente. the cow is not very intelligent ‘The cow is not very intelligent.’
2. *El vaca no es muy inteligente. *the (masculine) cow (feminine) is not very intelligent ‘The cow is not very intelligent.’
3. El perro corre todos los días. the dog runs all the days ‘The dog runs every day.’
4. *La perro corre todos los días. *the (feminine) dog (masculine) runs all the days ‘The dog runs every day.’
5. La mujer escucha la música. the woman listens to the music ‘The woman listens to the music.’
6. *La mujer escucha el música. *the woman listens to the (masculine) music (feminine) ‘The woman listens to the music.’
7. Elena sale con los amigos. Elena goes out with the (masculine plural) friends (masculine plural) ‘Elena goes out with her friends.’
9. Los hermanos son enemigos. the brothers are enemies ‘The brothers are enemies.’
10. *Las hermanos son enemigos. *the (feminine, plural) brothers (masculine, plural) are enemies ‘The brothers are enemies.’
11. El león duerme muchas horas. the lion sleeps many hours ‘The lion sleeps many hours.’
12. *El león duerme muchos horas. *the lion sleeps many (masculine plural) hours (feminine plural) ‘The lion sleeps many hours.’
13. El chico cierra la puerta. the boy closes the door ‘The boy closes the door.’
14. *El chico cierra el puerta. *the boy closes the (masculine singular) door (feminine singular) ‘The boy closes the door.’
15. Las secretarias reciben el regalo. the secretaries receive the gift ‘The secretaries receive the gift.’
16. *Las secretarias reciben la regalo. *the secretaries receive the (feminine singular) gift (masculine singular) ‘The secretaries receive the gift.’

Ser correct/Estar Wrong
1. El coche es azul. the car is blue ‘The car is blue.’
2. *El coche está azul. *the car is (not permanently) blue ‘The car is blue.’
3. Pablo es médico. Pablo is a doctor ‘Pablo is a doctor.’
4. *Pablo está médico. *Pablo is (not permanently) a doctor ‘Pablo is a doctor.’
5. El suéter es amarillo. the sweater is yellow ‘The sweater is yellow.’
6. *El suéter está amarillo. *the sweater is (not permanently) yellow ‘The sweater is yellow.’
7. Alicia es profesora. Alicia is a profesor ‘Alicia is a professor.’
8. *Alicia está profesora. *Alicia is (not permanently) a professor ‘Alicia is a professor.’
Estar correct/Ser Wrong
1. La puerta está abierta. the door is (not permanently) open ‘The door is open.’
2. *La puerta es abierta. *the door is (permanently) open ‘The door is open.’
3. Las llaves están en la mesa. the keys are (not permanently) on the table ‘The keys are on the table.’
4. *Las llaves son en la mesa. *the keys are (permanently) on the table ‘The keys are on the table.’
5. El perro está cerca de la casa. the dog is (not permanently) near the house ‘The dog is near the house.’
6. *El perro es cerca de la casa. *the dog is (permanently) near the house ‘The dog is near the house.’
7. La farmacia está lejos de aquí. the pharmacy is far from here ‘The pharmacy is far from here.’
8. *La farmacia es lejos de aquí. *the pharmacy is far from here ‘The pharmacy is far from here.’

Distracters Posttest

Gender Agreement
1. La chica es alta. the girl is tall ‘The girl is tall.’
2. *El chica es alta. *the (masculine) girl (feminine) is tall ‘The girl is tall.’
3. Marco tiene muchos libros. Marco has many books ‘Marco has many books.’
4. *Marco tiene muchas libros. *Marco has many (plural feminine) books (plural masculine) ‘Marco has many books.’
5. El hombre camina por el parque. the man walks through the park ‘The man walks through the park.’
6. *La hombre camina por el parque. *the (feminine) man (masculine) walks through the park ‘The man walks through the park.’
7. Los caballos cenan. the horses eat dinner ‘The horses eat dinner.’
8. *Las caballos cenan. *the (plural feminine) horses (plural masculine) eat dinner ‘The horses eat dinner.’
9. Mario toca la guitarra. Mario plays the guitar ‘Mario plays the guitar.’
10. *Mario toca el guitarra. *Mario plays the (masculine) guitar (feminine) ‘Mario plays the guitar.’
11. La chica baila con las amigas. the girl dances with the friends ‘The girl dances with her friends.’
12. *La chica baila con los amigas. *the girl dances with the (plural masculine) friends (plural feminine) ‘The girl dances with her friends.’
13. Elena nada en el río. Elena swims in the river ‘Elena swims in the river.’
15. Los estudiantes toman unas cervezas. the students drink some beer ‘The students drink some beer.’
16. *Los estudiantes toman unos cervezas. *the students drink some (masculine plural) beer (feminine plural) ‘The students drink some beer.’

Verb Agreement
1. La vaca no es muy inteligente. the cow is not very intelligent ‘The cow is not very intelligent.’
2. *La vaca no son muy inteligente. *The cow are not very intelligent. ‘The cow are not very intelligent.’
3. El perro corre todos los días. The dog runs all the days. ‘The dog runs every day.’
4. *El perro corren todos los días. *The dog run all the days. ‘The dog run every day.’
5. La mujer escucha la música. The woman listens to the music. ‘The woman listens to the music.’
6. *La mujer escuchan la música. *The woman listen to the music. ‘The woman listen to the music.’
7. Elena sale con unos amigos. Elena goes out with some friends. ‘Elena goes out with some friends.’
8. *Elena salen con unos amigos. *Elena go out with some friends. ‘Elena go out with some friends.’
9. Los hermanos son enemigos. The brothers are enemies. ‘The brothers are enemies.’
10. *Los hermanos es enemigos. *The brothers is enemies. ‘The brothers is enemies.’
11. El león duerme muchas horas. The lion sleeps many hours. ‘The lion sleeps many hours.’
12. *El león duermen muchas horas. *The lion sleep many hours. ‘The lion sleep many hours.’
13. El chico cierra la puerta. The boy closes the door. ‘The boy closes the door.’
14. *El chico cierran la puerta. *The boy close the door. ‘The boy close the door.’
15. Las secretarias reciben el regalo. The secretaries receive the gift. ‘The secretaries receive the gift.’
16. *Las secretarias recibe el regalo. *The secretaries receives the gift. ‘The secretaries receives the gift.’

**Ser Right/Estar Wrong**

1. La casa es blanca. The house is white. ‘The house is white.’
2. *La casa está blanca. *The house is (not permanently) white. ‘The house is white.’
3. Miguel es arquitecto. Miguel is architect. ‘Miguel is an architect.’
4. *Miguel está arquitecto. *Miguel is (not permanently) architect. ‘Miguel is an architect.’
5. La camisa es negra. The shirt is black. ‘The shirt is black.’
6. *La camisa está negra. *The shirt is (not permanently) black. ‘The shirt is black.’
7. Paco es maestro. Paco is teacher. ‘Paco is a teacher.’
8. *Paco está maestro. *Paco is (not permanently) teacher. ‘Paco is a teacher.’

**Estar Right/Ser Wrong**

1. La ventana está cerrada. The window is (not permanently) closed. ‘The window is closed.’
2. *La ventana es cerrada. *The window is (permanently) closed. ‘The window is closed.’
3. El cuaderno está en la silla. The notebook is (not permanently) on the chair. ‘The notebook is on the chair.’
4. *El cuaderno es en la silla. *The notebook is (permanently) on the chair. ‘The notebook is on the chair.’
5. El gato está debajo de la cama. The cat is (not permanently) under the bed. ‘The cat is under the bed.’
6. *El gato es debajo de la cama. *The cat is (permanently) under the bed. ‘The cat is under the bed.’
7. El banco está cerca de aquí. The bank is (located) close to here. ‘The bank is close to here.’
8. *El banco es cerca de aquí. *The bank is close to here. ‘The bank is close to here.’
**Distracters Delayed Posttest**

**Gender Agreement**

1. El perro corre todos los días. The dog runs all the days ‘The dog runs every day.’
2. *La perro corre todos los días. *the (feminine) dog (masculine) runs all the days ‘The dog runs every day.’
3. Elena sale con los amigos. Elena goes out with the (masculine plural) friends (masculine plural) ‘Elena goes out with her friends.’
5. El león duerme muchas horas. The lion sleeps many hours ‘The lion sleeps many hours.’
7. Las secretarias reciben el regalo. The secretaries receive the gift ‘The secretaries receive the gift.’
8. *Las secretarias reciben la regalo. *The secretaries receive the (feminine singular) gift (masculine singular) ‘The secretaries receive the gift.’
9. Marco tiene muchos libros. Marco has many books ‘Marco has many books.’
10. *Marco tiene muchas libros. *Marco has many (plural feminine) books (plural masculine) ‘Marco has many books.’
11. Los caballos cenan. The horses eat dinner ‘The horses eat dinner.’
13. La chica baila con las amigas. The girl dances with the friends ‘The girl dances with her friends.’
15. Los estudiantes toman unas cervezas. The students drink some beer ‘The students drink some beer.’
16. *Los estudiantes toman unos cervezas. *The students drink some (masculine plural) beer (feminine plural) ‘The students drink some beer.’

**Verb Agreement**

1. La chica es alta. The girl is tall ‘The girl is tall.’
2. *La chica son alta. *The girl are tall ‘The girl are tall.’
3. La vaca no es muy inteligente. The cow is not very intelligent ‘The cow is not very intelligent.’
4. *La vaca no son muy inteligente. *The cow are not very intelligent ‘The cow are not very intelligent.’
5. El hombre camina por el parque. The man walks through the park ‘The man walks through the park.’
6. *El hombre caminan por el parque. *The man walk through the park ‘The man walk through the park.’
7. La mujer escucha la música. The woman listens to the music ‘The woman listens to the music.’
8. *La mujer escuchan la música. *The woman listen to the music ‘The woman listen to the music.’
9. Mario toca la guitarra. Mario plays the guitar ‘Mario plays the guitar.’
10. *Mario tocan la guitarra. *Mario play the guitar ‘Mario play the guitar.’
11. Los hermanos son enemigos. the brothers are enemies ‘The brothers are enemies.’
12. *Los hermanos es enemigos. *the brothers is enemies ‘The brothers is enemies.’
13. Elena nada en el río. Elena swims in the river ‘Elena swims in the river.’
15. El chico cierra la puerta. the boy closes the door ‘The boy closes the door.’
16. *El chico cierran la puerta. *the boy close the door ‘The boy close the door.’

Ser Right/Estar Wrong
1. El coche es azul. the car is blue ‘The car is blue.’
2. *El coche está azul. the car is (not permanently) blue ‘The car is blue.’
3. Miguel es arquitecto. Miguel is architect ‘Miguel is an architect.’
4. *Miguel está arquitecto. *Miguel is (not permanently) architect ‘Miguel is an architect.’
5. El suéter es amarillo. the sweater is yellow ‘The sweater is yellow.’
6. *El suéter está amarillo. *the sweater is (not permanently) yellow ‘The sweater is yellow.’
7. Paco es maestro. Paco is teacher ‘Paco is a teacher.’
8. *Paco está maestro. *Paco is (not permanently) teacher ‘Paco is a teacher.’

Estar Right/Ser Wrong
1. La puerta está abierta. the door is (not permanently) open ‘The door is open.’
2. *La puerta es abierta. *the door is (permanently) open ‘The door is open.’
3. El cuaderno está en la silla. the notebook is (not permanently) on the chair ‘The notebook is on the chair.’
4. *El cuaderno es en la silla. *the notebook is (permanently) on the chair ‘The notebook is on the chair.’
5. El perro está cerca de la casa. the dog is (not permanently) near the house ‘The dog is near the house.’
6. *El perro es cerca de la casa. *the dog is (permanently) near the house ‘The dog is near the house.’
7. El banco está cerca de aquí. the bank is close (located) to here ‘The bank is close to here.’
8. *El banco es cerca de aquí. *the bank is close to here ‘The bank is close to here.’
APPENDIX E: THINK-ALOUD INSTRUCTIONS

In this experiment I am interested in what you think about when you complete these tasks. In order to find out, I am going to ask you to THINK ALOUD as you work through the questionnaire. What I mean by “think aloud” is that I want you verbalize your thoughts the entire time you are working on the task. I would like you to talk CONSTANTLY. Do not plan out what you are saying or explain what you’re saying. Just act as if you are alone in the room talking to yourself while you complete the task. What is most important is that you keep talking throughout and talk clearly into the microphone. You may speak in English or Spanish, whichever you prefer. Just say whatever passes through your mind as you complete the tasks.

Warm-up addition problem:

2374
+
457
APPENDIX F: INSTRUCTION

What is a Direct Object?

The direct object receives the action of the verb, and answers the question of "what?" or "who?"
For example, in the sentence *Mary has a car*, car is the noun that answers the question of “What does Mary have?”
In the sentence *George loves Laura*, Laura is the answer to the question of "Who does George love?"
An example in Spanish is: *Mario come un sándwich*. If we ask "¿Qué come Mario?" the answer is un sándwich, so sándwich is the direct object.
Another is: *(Yo) veo a Susana*. ¿A quién veo? A Susana.

**Personal A and human objects**

In the last example above, *(Yo) veo a Susana*, the sentence has one “extra” word- ‘a’- which does NOT correspond to a word in English.

This ‘a’ is put in before the direct object in sentences where it is unclear which element is the subject and which is the object. For example, in the sentence above, *Mario come un sándwich*, it is clear that the sandwich is not eating Mario (at least, we hope it can’t!), but rather that Mario is the one who eats the sandwich. So this sentence does not have the ‘a.’ We will return to these types of sentences later.

However, in the example above, *(Yo) veo a Susana*, it is equally likely that I could be looking at Susana or that Susana could be looking at me. In this example, which uses the ‘a’, the direct object, Susana, is a person (and so is the subject, I). This is why this ‘a’ is often called ‘personal a’ in Spanish.

So why do we need this “extra” word in Spanish if we don’t need it in English? The ‘personal a’ seems like an extra word, but it really is important! In Spanish, the word order can change, unlike in English, so sometimes the first word in the sentence is the direct object, the verb, or something else.

For example:

1. Juana llama a su padre todos los días – Here, Juana is the first word, and the subject.
2. A mi madre, la quiero mucho – Here, the first word is A! This shows us that mi madre, the first person in this sentence, is the direct object. So, this sentence means I love my mother.
3. Lo llama Julia a Pablo– Here, the first word is lo (the direct object pronoun). Who is the subject and object here? Pablo has the ‘personal a’ before his name, so we know that he is the direct object, and that Julia must be the subject.
4. La casa la ve la chica – Here, we know the house cannot be seeing the girl, so the first word, la casa, must be the direct object, and the subject must be la chica. Remember, we know this even though there is no 'personal a' here, because we know the house cannot do the seeing. In fact, the 'personal a' here is not grammatical.

So you see, Spanish word order can change a lot!

**Personal A and inanimate objects**

Starting to get the idea? If you have noticed, all of the examples so far with ‘personal a’ have involved two people-Julia and Pablo, mi madre and yo, Juana and su padre, yo and Susana.

When there were inanimate objects in the sentence- the sandwich, the house- the ‘personal a’ was not used. This is because it is not possible for sandwiches or houses to perform actions, so we know the people, not the inanimate objects, have to be the ones performing the action of the verb (and so, the people have to be the subject). In fact, if we add the ‘personal a’ to these inanimate objects, the sentence is ungrammatical.

So, to sum up, leaving out the ‘personal a’ in sentences like those above, as in Veo a Susana, is ungrammatical. However, in sentences like Mario come un sándwich, it is actually ungrammatical to put in the ‘personal a.’ So make sure to pay attention to who or what is the direct object of a sentence so that you know if it needs ‘personal a’ or if it needs to not have ‘personal a.’

Are you ready to practice a little? Please ask the researcher what to do now!
APPENDIX G: DESCRIPTIVE RESULTS

Research Question 1

Table G.1: Picture description pretest, descriptive results

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Table G.4: Grammaticality judgment pretest, descriptive results

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Research Question 2

Table G.7: Picture description pretest, descriptive results with native speakers

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Table G.8: Picture description posttest, descriptive results with native speakers

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<td>69.90</td>
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<tr>
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</tbody>
</table>

*Note- since the Native Speaker group only completed each task once, their scores for each task are the pretest scores.
Table G.9: Picture description delayed posttest, descriptive results with native speakers

<table>
<thead>
<tr>
<th>Animacy</th>
<th>Group</th>
<th>N</th>
<th>Mean %</th>
<th>SD</th>
<th>Range</th>
</tr>
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<tbody>
<tr>
<td>Animate</td>
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<td>15</td>
<td>80.39</td>
<td>14.54</td>
<td>46.15-100</td>
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<td>Comp Prior</td>
<td>16</td>
<td>49.24</td>
<td>25.50</td>
<td>7.69-100</td>
</tr>
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<td>0.00</td>
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<td>5.56</td>
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<td>6.25</td>
<td>7.76</td>
<td>0-16.67</td>
</tr>
<tr>
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<td>12</td>
<td>4.86</td>
<td>8.30</td>
<td>0-25</td>
</tr>
</tbody>
</table>

*Note- since the Native Speaker group only completed each task once, their scores for each task are the pretest scores.

Table G.10: Grammaticality judgment pretest, descriptive results, with native speakers

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<th>Mean %</th>
<th>SD</th>
<th>Range</th>
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</thead>
<tbody>
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<td>49.89</td>
<td>11.10</td>
<td>34.62-67.86</td>
</tr>
<tr>
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<td>51.42</td>
<td>10.46</td>
<td>34.62-67.86</td>
</tr>
<tr>
<td>Comp Prior</td>
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<td>56.04</td>
<td>12.59</td>
<td>38.46-80</td>
</tr>
<tr>
<td>Native Speakers</td>
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<td>85.94</td>
<td>8.05</td>
<td>71.88-100</td>
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</tbody>
</table>

Table G.11: Grammaticality judgment posttest, descriptive results, with native speakers

<table>
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<th>Mean %</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
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<td>Exp Prior</td>
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<td>11.97</td>
<td>56.25-100</td>
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<tr>
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<td>81.89</td>
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<td>57.14-100</td>
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<td>63.98</td>
<td>14.69</td>
<td>42.31-87.5</td>
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<tr>
<td>*Native Speakers</td>
<td>12</td>
<td>85.94</td>
<td>8.05</td>
<td>71.88-100</td>
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</tbody>
</table>

*Note- since the Native Speaker group only completed each task once, their scores for each task are the pretest scores.

Table G.12: Grammaticality judgment delayed posttest, descriptive results, with native speakers

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<tr>
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<th>Mean %</th>
<th>SD</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
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<td>10.97</td>
<td>53.13-96.15</td>
</tr>
<tr>
<td>Exp None</td>
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<td>17.79</td>
<td>25-96.88</td>
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<td>Comp Prior</td>
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<td>66.43</td>
<td>19.06</td>
<td>40.63-100</td>
</tr>
<tr>
<td>*Native Speakers</td>
<td>12</td>
<td>85.94</td>
<td>8.05</td>
<td>71.88-100</td>
</tr>
</tbody>
</table>

*Note- since the Native Speaker group only completed each task once, their scores for each task are the pretest scores.
Research Question 3

Table G.13: Picture description posttest, descriptive results, instructed groups

<table>
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<th>Mean %</th>
<th>SD</th>
<th>Range</th>
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<td>Exp None</td>
<td>15</td>
<td>69.90</td>
<td>28.41</td>
<td>18.18-100</td>
</tr>
<tr>
<td>Inanimates</td>
<td>Exp Prior</td>
<td>15</td>
<td>7.22</td>
<td>10.38</td>
<td>0-25</td>
</tr>
<tr>
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<td>Exp None</td>
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<td>4.23</td>
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Table G.14: Picture description delayed posttest, descriptive results, instructed groups

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<th>Mean %</th>
<th>SD</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>Animates</td>
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<td>80.39</td>
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<td>46.15-100</td>
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<tr>
<td></td>
<td>Exp None</td>
<td>15</td>
<td>41.63</td>
<td>38.54</td>
<td>0-100</td>
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<tr>
<td>Inanimates</td>
<td>Exp Prior</td>
<td>15</td>
<td>9.44</td>
<td>8.25</td>
<td>0-16.67</td>
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<tr>
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<td>15</td>
<td>5.56</td>
<td>6.03</td>
<td>0-16.67</td>
</tr>
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</table>

Table G.15: Grammaticality judgment posttest and delayed posttest, descriptive results, instructed groups

<table>
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<th>Task</th>
<th>Group</th>
<th>N</th>
<th>Mean %</th>
<th>SD</th>
<th>Range</th>
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</thead>
<tbody>
<tr>
<td>Posttest</td>
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<td>Exp None</td>
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<td>57.14-100</td>
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<td>73.32</td>
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Research Question 4

Table G.16: Picture description task, descriptive results for animate items by awareness, groups 1-4

<table>
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<th>Mean %</th>
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<th>Range</th>
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<td>24.98</td>
<td>0-53.9</td>
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<td>0-27.27</td>
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<td></td>
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<td>18</td>
<td>78.24</td>
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<td>0-16.66</td>
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Table G.17: Grammaticality judgment task, descriptive results by awareness, groups 1-4

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<td>10.34</td>
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<td>14.77</td>
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<td>83.51</td>
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Table G.18: Awareness scores by participant group, totals

<table>
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<th>Understanding</th>
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<td>13</td>
<td></td>
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<tr>
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Table G.19: Awareness scores on pretest by group

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<th>Understanding</th>
</tr>
</thead>
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<td>Exp Prior</td>
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<td>13</td>
<td>0</td>
<td></td>
</tr>
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<td>1</td>
<td></td>
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<tr>
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Table G.20: Awareness scores on posttest by group

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<th>Understanding</th>
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</table>

Table G.21: Awareness scores on delayed posttest by group

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<th>Noticing</th>
<th>Understanding</th>
</tr>
</thead>
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<td>6</td>
<td></td>
</tr>
<tr>
<td>Exp None</td>
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</tr>
<tr>
<td>Comp Prior</td>
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<td>8</td>
<td>3</td>
<td></td>
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<tr>
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<td>5</td>
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</tr>
</tbody>
</table>