Negative Evidence in Instructed Heritage Language Acquisition: A Preliminary Study of Differential Object Marking

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1. Introduction

Several studies have documented the loss and/or incomplete acquisition of grammatical features in adult Spanish heritage speakers, including gender agreement in noun phrases (Lipski 1993, Montrul, Foote & Perpiñán, 2008) tense, aspect and mood (Lynch 1999, Montrul 2002, 2007, Silva-Corvalán 1994), and null subject pronouns (Montrul 2004a, Silva-Corvalán 1994). Incomplete acquisition is likely due to reduced input (including lack of formal schooling) in the heritage language (Montrul, 2008). Although heritage speakers received exposure to the language in childhood and have been shown to have some advantages or to "know more," so to speak, than proficiency-matched L2 learners (Montrul 2005, 2006), many low to intermediate proficiency heritage speakers appear to have difficulties that are similar to those experienced by adult L2 learners of Spanish in many of the same grammatical areas (Lipski 1993, Montrul 2004b). However, many heritage language learners also have less experience with the language in an instructed setting than typical L2 learners because most heritage speakers are schooled in English, the majority language in the United States, and often do not receive formal instruction in the heritage language until high school or college.

If, like L2 learners, heritage language (HL) learners have gaps in their linguistic knowledge, but unlike L2 learners, HL learners have less experience with formal instruction, the question that arises is whether instruction in a formal setting in adulthood is beneficial to bring about knowledge of language that was either never developed or was lost some time in childhood. Specifically, can focused instruction with negative evidence help heritage language learners (re)acquire that knowledge rapidly? How responsive will heritage language learners be to specific instruction? Except for Song, O'Grady, Cho and Lee's (1997) study with Korean HL learners and Potowski, Jegerski and Morgan-Short's (2008) study of Spanish college-level HL learners and L2 learners, there is virtually no systematic research on the role of negative evidence in HL instruction.

The small-scale study reported here is the first step in a larger, ongoing research program investigating the role of explicit instruction in classroom-based L2 and HL acquisition. This preliminary study was designed to assess the effects of instruction on Differential Object Marking (DOM or *a-personal*) in heritage language learners. A similar study with a larger group of L2 learners of intermediate proficiency in Spanish is reported in Bowles and Montrul (in press).

Differential Object Marking refers to the obligatory use of the dative preposition *a* with animate, specific direct objects in Spanish (*Juan conoce a María* "Juan knows Maria."). We focused on this grammatical phenomenon because recent work has shown that, like L2 learners, Spanish heritage speakers, ranging from low to advanced proficiency in the language, produce and incorrectly accept high rates of omission of DOM in oral and written modes (Montrul 2004a, Montrul & Bowles, in press a). The study used a classic pre-posttest design. The instructional treatment consisted of an explicit grammatical explanation of the uses of the preposition *a* followed by three practice exercises, for which participants received immediate, explicit feedback (including negative evidence). Results of the pre-test confirmed that HL learners' recognition and production of DOM was probabilistic (i.e., random). But post-test results revealed highly significant gains, suggesting that negative evidence facilitates classroom HL acquisition, as it does L2 acquisition.

2. Theoretical Issues in Instructed L2 Acquisition Research

A main goal of instruction in L2 acquisition is to make sure that linguistic goals are met, and that L2 learners move forward in their interlanguage development. A key question in instructed second language acquisition is how exactly teaching helps learners restructure their grammars throughout the learning process. One central issue in SLA theory-building is determining what types of linguistic input are most beneficial for second language learners. One main difference between acquisition by very young children—both monolingual and bilingual—and L2 acquisition by adults is that child acquisition takes place primarily in a naturalistic setting. The child is exposed to naturally occurring exemplars of language in the input, and does not typically receive explicit instruction or explicit information about grammaticality. Many researchers argue that negative evidence—information regarding the impossibility of certain linguistic structures in the language being acquired—is not necessary (and perhaps not even consistently available) for bilingual and first language acquisition. However, research on L2 acquisition (especially in immersion contexts) has suggested that positive evidence alone may not be sufficient for the acquisition of certain L1-L2 contrasts or structures that are not present in the L1 (Trahey & White 1993, White 1989, 1991); for discussion, see Lightbown (1998) and Long (1996). That is, L2 learners may benefit from form-focused instruction.

Form-focused instruction can involve providing learners with explicit information before or during exposure to L2 input, by means of either grammatical explanation or negative evidence in the form of corrective feedback (Sanz & Morgan-Short 2004). Much research has investigated the role of explicit grammatical explanation or rule presentation in second language acquisition, generally finding it beneficial (Alanen 1995, Carroll & Swain 1993, de Graaf 1997, DeKeyser 1995, N. Ellis 1993, Nagata 1993, Nagata & Swisher 1995, Robinson 1996, 1997, Rosa & Leow 2004a, 2004b). As far as corrective feedback is concerned, in both cognitive psychology and second language acquisition, feedback has been directly linked to the process of hypothesis formation and testing, which has been shown to facilitate restructuring and system learning (Rosa & Leow 2004b, Rosa & O'Neill 1999). Furthermore, Russell and Spada's (2006) meta-analysis synthesizes the research on corrective feedback to date, showing overall support for the effectiveness of explicit corrective feedback for L2 acquisition of morphosyntax, as does R. Ellis, Loewen, and Erlam's (2006) review of studies. This finding suggests that even if negative evidence is not *crucial* for acquisition of some features of L2 grammar, it does *facilitate* grammatical restructuring by speeding up the process of acquisition.

In this small-scale study, we extend these theoretical issues to the heritage language acquisition situation. Our goal is to measure the impact of learning of DOM after providing negative evidence through explicit rule presentation, practice and feedback.

3. Differential Object Marking (*a-personal*)

A distinctive feature of Spanish grammar is that some direct objects are complements of the dative preposition *a*. In general, objects that are both specific and animate are obligatorily marked with this preposition (also known as *a-personal*), as shown in (1), while other objects are unmarked, as shown in (2) and (3):

(1)   a. Juan llamó **a** María/ella.   [+ animate, + specific]
            Juan called prep Maria/her
            'Juan called María.'
         b.*Juan llamó María/ella.

(2)   a. El gobierno destruyó la economía.   [- animate, + specific]
           'The government destroyed the economy.'
         b. *El gobierno destruyó **a** la economía.

(3)   a. El ejército destruyó una/la ciudad.   [- animate, - specific]
           'The army destroyed a/the city.'
        b.*El ejército destruyó **a** una/la ciudad.

In some contexts, grammatical sentences are possible with either a marked or an unmarked animate object, and the use of the dative preposition *a* determines whether a specific or nonspecific reading is possible, as shown in (4) below.

(4)   a. María necesita un abogado.   [+ animate, -specific]
            'Maria needs a lawyer.' (any lawyer)

        b. María necesita **a** un abogado.   [+animate, +specific]
           Maria needs prep a lawyer
           'Maria needs a lawyer.' (a particular lawyer)

Sentence (4a), with an unmarked object, provides the [-specific] interpretation that Maria needs any lawyer she can find, not one particular lawyer. However, the preposition *a* must be used if a [+specific] interpretation, that Maria needs a *particular* lawyer, is intended, as in the case of (4b).

The exact semantic and syntactic conditions regulating when accusative objects should be marked with the dative preposition *a* are not entirely clear in the linguistic literature (Aissen 2003, Leonetti 2004, Torrego 1998, Zagona 2002). While both animacy and specificity seem to play a role in this phenomenon, Leonetti (2004) claims that animacy is the crucial semantic factor involved. However, there are several counterexamples to the generalization that only specific and animate objects are marked with the preposition *a*. First, nonspecific negative quantifiers like *nadie* 'nobody' always mark objects with *a* (*No vi a nadie.* "I didn't see anybody."). Second, inanimate objects can be marked with the preposition *a* if the subject is also inanimate (*La calma precede a la tormenta.* "The calm precedes the storm."). Third, with animal direct objects, use of the preposition *a* is optional (*Mató a la/ la mosca.* "He/she killed the fly.").

While the facts of Differential Object Marking in Spanish are quite complex, current analyses maintain that semantic notions like animacy, specificity, agentivity, telicity, and topicality seem to play a role in explaining the optionality of the preposition *a* with animate and inanimate objects. To capture these facts in structural terms, Torrego (1998) proposed that Differential Object Marking is an instance of marked or inherent accusative case. Marked and unmarked direct objects occupy different positions in the syntax. Leaving aside specific details of Torrego's proposal, what is crucial for our purposes is that Differential Object Marking does not exist in English, the majority language in contact with the heritage language.

Given the semantic complexity and ambiguity with respect to its use, how do children manage to acquire Differential Object Marking in Spanish? There is virtually no research on the first language acquisition of these prepositional direct objects, with the exception of a recent study by Rodríguez-Mondoñedo (2006). Rodríguez-Mondoñedo conducted an analysis of the spontaneous production of 4 Spanish-speaking children (between the ages of 0;9 and 2;11) from the CHILDES data base (López Ornat, Linaza, Montes, and Vila corpora). All sentences containing V-O structures were analyzed. From a total of 991 examples, the children made a total of 17 errors (8 cases of *a* present but not required, and 9 cases of *a* omitted when required with animate, specific objects). This amounts to a 98.38% accuracy rate with Differential Object Marking before age 3. Therefore, this study suggests that Spanish-speaking children acquire the semantic constraints on the distribution of this preposition with direct objects with canonical, clear cases, easily and quickly and have an adult grammar very early.

The situation for L2 acquisition is different, however, especially when the learners' native language does not mark direct objects overtly as Spanish does. Research findings indicate that Differential Object Marking (or *a-personal*) is a difficult structure for English-speaking L2 learners of Spanish to master despite its frequency in the L2 input (Bowles & Montrul, in press; Farley & McCollam 2004, Johnston 1995, VanPatten & Cadierno 1993). The few empirical studies available from adult Spanish heritage speakers suggest that HL learners pattern with L2 learners in this respect and not with L1 learners. Probably due to influence from English (Montrul 2004a, Montrul & Bowles, in press b) or a process of simplification common in language contact situations (McWhorter 2007), adult heritage language speakers appear to have incomplete knowledge of *a*-marking, as revealed by their linguistic performance on both production and grammaticality judgment tasks. Montrul and Bowles (in press a) tested a group of 69 heritage speakers and showed that in oral production, omission rates of *a*-marking averaged 29%, ranging from 10% in advanced proficiency speakers to 50% in low proficiency speakers. At the same time, these heritage speakers were found to rate ungrammatical

sentences like *Juan conoce mi hermana* as acceptable, with mean ratings ranging from 3.5-4 on a 5-point scale (where 1 = totally unacceptable and 5 = perfectly unacceptable). Thus, it appears that DOM represents a significant gap in heritage language learners' knowledge, even for those with advanced proficiency in the language.

4. Experiment
4.1 Research Question

Given that heritage speakers do not seem to master Differential Object Marking in Spanish in their spontaneous use of the language and in written tasks, does explicit instruction and practice (with explicit feedback and negative evidence) help instructed heritage language learners of Spanish to distinguish between grammatical and ungrammatical sentences with Differential Object Marking?

4.2. Participants

Thirteen heritage language learners enrolled in a Spanish for heritage speakers course at the University of Illinois, Chicago participated in the study.[1] All of the learners were second- generation immigrants, born to Mexican parents in the United States. They were all schooled primarily in English and had started reacquisition of Spanish in high school or college. Their mean age was 21.89 (range 18-26). A baseline comparison group consisting of 12 Spanish native speakers from a variety of Spanish-speaking countries was also included to ascertain the degree of incomplete acquisition of DOM in Spanish heritage speakers.

4.3. Task

Before and during the period of this study, the *a-personal* (DOM) had not been formally presented in class, and related coursework did not focus on that structure. Written grammaticality judgment tests (GJTs) and written production tasks were used to elicit participants' knowledge of DOM. Due to subject attrition between pre-test and post-test, the results of the written production task will not be reported in this paper. Two versions of the GJT were prepared, one for the pre-test and one for the post-test, differing only in the order of the sentences. Each GJT contained 75 sentences, 20 of which targeted the *a-personal*. Of those sentences, 10 were grammatical and 10 were ungrammatical, and there were an equal number of sentences with animate and inanimate objects (Table 1). The remaining 55 sentences in the GJT targeted the preposition *a* with ditransitive verbs and psych verbs, thereby functioning as fillers and simultaneously providing more information about participants' knowledge of the uses of *a* with other verbs requiring structural and inherent dative case. However, due to scope limitations, only the results of sentences targeting DOM will be presented here. (The complete results of this preliminary study, including all the structures tested and the written production task, are reported in Montrul & Bowles in press b). Participants were instructed to rate each sentence on a scale of 1 (incorrect) to 5 (correct) and to mark 3 (unsure) only when they were unable to make a firm judgment about a given sentence.

TABLE 1
Sample sentences in the GJTs

Object type	Grammaticality	Example
Animate	grammatical	Mi hermana vio a Carmen ayer.
	ungrammatical	*Mi padre vio mi hermano.
Inanimate	ungrammatical	*Joaquín vio a la última película de Batman.
	grammatical	Cecilia vio la exposición de arte contemporáneo.

4.4 Instructional intervention

The instructional intervention consisted of an explicit grammatical explanation of the *a-personal*, followed by a practice exercise in which immediate, explicit corrective feedback was provided. The intervention contained both positive and negative evidence. Specifically, the grammatical explanation provided learners with positive evidence about *a-personal* in the form of grammatical sentences with animate and inanimate objects in Spanish. In addition, it provided negative evidence, as it alerted learners to the contrast between Spanish, which requires the animacy marker *a*, and English, which does not differentially mark objects on the basis of animacy. Below is an excerpt of the explicit information provided to learners:

> From the perspective of an English speaker, the "a" appears to be an "extra" word. From the perspective of a Spanish speaker, the "a" is required, and to not use it is an error. So you could never say "Conozco María" in Spanish.

After reading the grammatical explanation, learners completed a 20-item practice exercise online. Each item consisted of one sentence with a drop-down menu immediately preceding the object, from which the learners chose either *a* or --. Of the 20 items, 10 had animate objects and 10 had inanimate objects. Following each response, participants received immediate, explicit feedback that (a) indicated whether or not their response was correct and (b) provided a metalinguistic explanation, as shown in Figure 1. Participants were allowed to review the explanation and complete the practice task as many times as necessary to achieve 90% accuracy, following the standard procedure and accuracy criterion already established for all on-line assignments in the course. Therefore, the participants were already familiar with the presentation format of the explanation and practice activities.

FIGURE 1
Examples of explicit feedback provided during instruction

(1) Veo ⓐ / ∅ Carolina.

Correct! You need to put an "a" before *Carolina* because *Carolina* is a person (animate).

(2) Busco ⓐ / ∅ el libro de Pablo.

Sorry! You do not need to put an "a" before *el libro de Pablo* because *book* is inanimate. Try again!

In week one, both native speakers and heritage language learners completed a language background questionnaire and GJT pre-test. Then, in week 2, the heritage language learners completed the instructional module online, followed immediately by the GJT post-test.

4.5. Results

To answer the research question, mean grammaticality judgment scores from the native speaker baseline group were examined first. Native speakers performed as predicted, accepting grammatical DOM sentences (with the *a*-personal) (4.95, SD=.09) and rejecting ungrammatical ones (without the *a*-personal) (1.1, SD=.35), as shown in Figure 2 below.
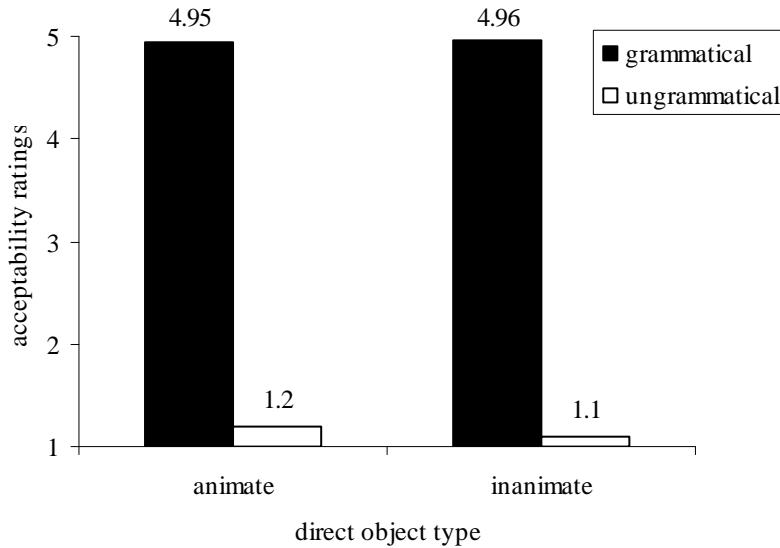
FIGURE 2
Spanish native speakers' GJT ratings for grammatical and ungrammatical DOM sentences

Figure 3 shows the heritage speakers' mean GJT ratings on the pre-test.
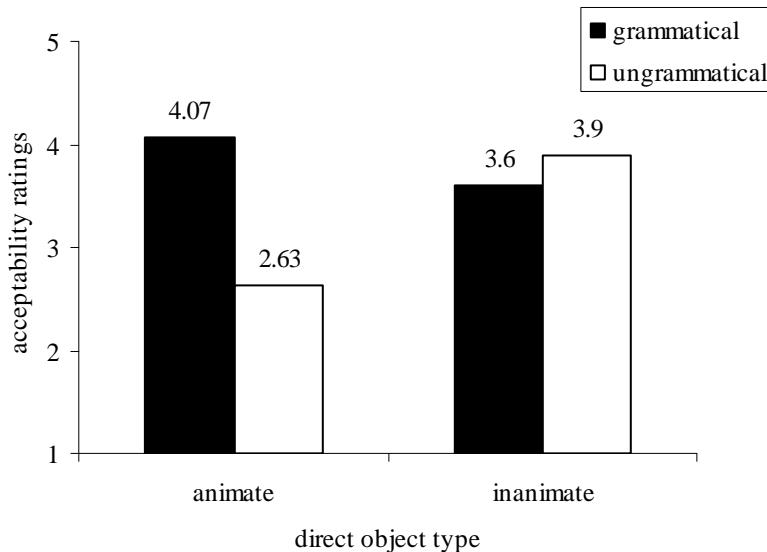

FIGURE 3
Heritage language learners' pre-test GJT ratings for grammatical and ungrammatical DOM sentences

As Figure 3 shows, the pattern of results for heritage speakers is very different from that of the native speaker baseline group, confirming that heritage language learners do not have clear judgments on the use of DOM (*a*-personal). HL learners were more accepting of ungrammatical sentences with animate direct objects than fully fluent native speakers were, as indicated by the HL learners' higher scores on those sentences ($M = 3.6$, $SD = 1.87$, $t(23) = -7.357$, $p < 0.0001$, Cohen's $d = -1.82$). The HL learners'

ratings on grammatical and ungrammatical sentences with inanimate objects were nearly identical ($t(12) = -1.586$, $p < 0.124$), showing that their intuitions on these sentences are indeed rather murky.

But was the instruction effective for the heritage language learners? Did it produce any change in their grammars with respect to the distribution of DOM with animate and inanimate objects? To assess the magnitude of the change after the instructional treatment, we compared the results of the pre-test and the post-test GJTs. We first conducted a factorial ANOVA with repeated measures with 3 within-subject variables: grammaticality (grammatical, ungrammatical), object type (animate, inanimate) and time (pre-test, post-test). Results showed a main effect for grammaticality ($F(1,12) = 51.522$, $p < 0.0001$, $\eta_p^2 = .850$) (indicating that grammatical sentences received overall higher ratings than ungrammatical sentences), and the following significant interactions of interest to our research questions: grammaticality by time ($F(1,12) = 46.953$, $p < 0.0001$, $\eta_p^2 = .796$), and object type by time ($F(1,12) = 13.248$, $p < 0.003$, $\eta_p^2 = .525$). These interactions indicate that there were significant changes (i.e., improvements) on the different sentence types in the two tests from pre- to post-test. Furthermore, the measures of association (partial eta squared or η_p^2) were above .500, indicating that the changes were relatively large. Taken as a whole, these results suggest that the instructional treatment was overall effective.

To further investigate the magnitude of the changes occurred in the 4 sentence types, we conducted paired-samples t-tests. If the treatment had a positive effect, we expect the ratings of grammatical sentences to increase and the ratings of ungrammatical sentences to decrease on the acceptability scale. Figure 4 shows the contrast between the pre-test and post-test GJT ratings for grammatical and ungrammatical sentences with animate direct objects.
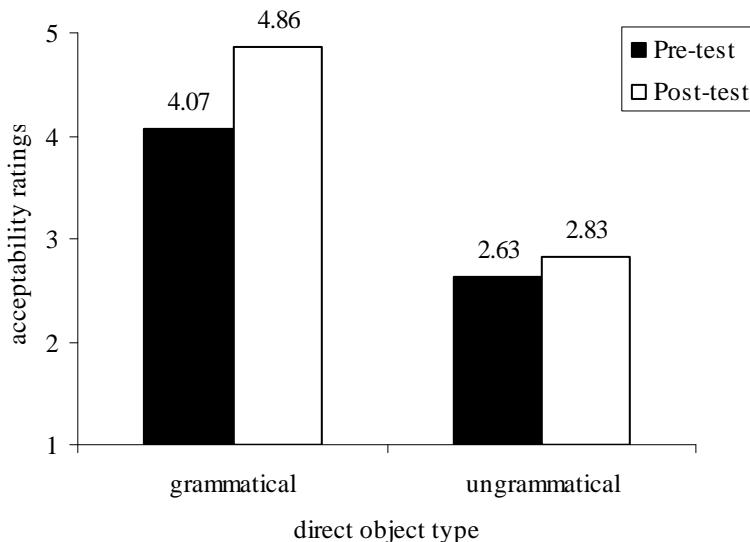

FIGURE 4
Spanish heritage learners' pre-test and post-test GJT ratings for grammatical and ungrammatical DOM sentences with animate, specific direct objects

For the grammatical sentences marked with DOM (*a-personal*) the instructional treatment was effective, since there were significant changes in acceptability between the mean pre-test and post-test ratings ($t(12) = -4.282$, $p < 0.001$). In fact, the increase in acceptability from pre- to post-test was .79, and the effect size was very large (Cohen's $d = 1.93$). However, the instruction was less effective for the ungrammatical sentences (those missing *a-personal*). Although the HL learners assigned slightly higher acceptability ratings to these sentences on the post-test than on the pre-test, the .23 point increase in ratings was not significant ($t(12) = -.778$, $p < 0.452$).

Figure 5 shows the contrast between grammatical and ungrammatical sentences with inanimate objects, and for these sentences, the treatment was very effective. The acceptability ratings for

grammatical sentences (without *a-personal*) increased significantly from pre- to post-test by 1.1 points ($t(12) = -5.588$, $p < 0.0001$, $d = 2.01$). At the same time, they also decreased significantly for the ungrammatical sentences (with *a-personal*) (by 1.64 points) ($t(12) = 5.209$, $p < 0.0001$, $d = 1.91$). Recall that on the pre-test, the statistical difference between ratings for grammatical and ungrammatical sentences with inanimate objects was not significant. After the treatment, however, the heritage language learners discriminated between the two sentence types, and the difference was significant ($t(12) = 5.832$, $p < 0.0001$, $d = 1.79$).
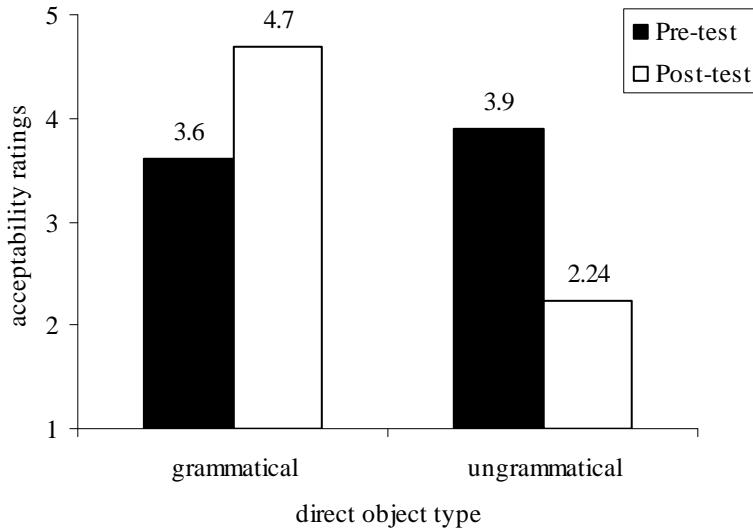

FIGURE 5
Heritage language learners' pre-test and post-test GJT ratings for grammatical and ungrammatical DOM sentences with inanimate, specific direct objects

In general, these group results show that the heritage language learners' ability to rate three of the four sentence types improved markedly after the instruction, as indicated by the large effect sizes. This indicates that the instruction was effective on the intended target. We will now see whether these trends also hold at the individual level.

We examined the ratings of each subject and subtracted post-test means from pre-test means on each sentence type. Positive increases for grammatical sentences and negative decreases for ungrammatical sentences were counted as instances of positive changes. The opposite situation (negative decreases for grammatical sentences and positive increases for ungrammatical sentence) were counted as negative changes. Table 2 illustrates the number of HL learners showing some sort of change by sentence type.

TABLE 2
Number of heritage language learners (n =13) who showed changes after instruction

| | Animate object | | | | Inanimate object | | | |
| | grammatical (with *a*) | | ungrammatical (no *a*) | | grammatical (no *a*) | | ungrammatical (with *a*) | |
	count	%	count	%	count	%	count	%
Positive change	11	77	5	38	12	92	12	92
Negative change	1	11.5	--	--	--	--	--	--
No change	1	11.5	8	62	1	8	1	8

As Table 2 shows, after the instruction most of the learners made changes with all sentence types. Furthermore, negative changes were almost negligible, whereas positive changes were more numerous than negative changes in all but ungrammatical sentences with animate objects. Even after the instruction, 8 of the learners (62%) still accepted sentences with animate, specific direct objects missing *a-personal*.

5. Discussion and Conclusion

Recent research on the linguistic abilities of Spanish heritage speakers has revealed that very often these bilinguals fail to mark animate, specific direct objects with the preposition *a* to the same extent that native speakers with full command of the language do. The purpose of our study was to see whether explicit instruction on Differential Object Marking (DOM) would help instructed heritage language learners notice this gap in their linguistic knowledge. The learners completed a pre-test GJT and then one week later, they worked through an online instructional module that included explicit rule presentation, practice and feedback on the uses of the preposition *a* in Spanish. Immediately after the instruction, they completed a GJT post-test to determine whether instruction had affected their knowledge of DOM.

Both group and individual results from our study indicate that after the instruction, heritage language learners' sensitivity to DOM in Spanish improved overall. There were significant gains in most of the sentence types for most subjects, especially in the case of sentences with inanimate direct objects, where 92% of the subjects made a positive change, recognizing that *a*-marking is not required with those objects. If this overall improvement is directly or indirectly related to the instruction, then where the instruction was apparently less effective was precisely with the target sentences with animate, specific direct objects. Even after the instruction, some heritage speakers continued to accept ungrammatical sentences without the dative preposition with animate objects, as seen from the non-significant results between the pre-test and post-test and the individual subjects' analysis for animate ungrammatical sentences. This suggests that, at least for this particular sentence type, more focused instruction and practice may be necessary. In general, our results suggest that claims about efficacy of negative evidence and explicit corrective feedback on L2 morphosyntax may hold true for heritage language reacquisition as well.

Given the small scale nature of this study, and the fact that we did not include a control group of uninstructed heritage language learners in this study, it is impossible for us to ascertain directly whether the changes observed are the result of the instruction alone. Other factors, such as maturation, could have produced some of the increases seen. Nevertheless, the size of the gains and the dispersion of the gains across nearly all of the subjects lend support to the argument that the instruction, rather than some individual maturation, caused the observed changes. Neither can we ascertain at this point whether heritage language learners retain gains with regard to DOM, since we were unable to include a delayed post-test. Because the post-test followed the treatment immediately, as an anonymous reviewer pointed out, we cannot determine whether the learners' implicit grammatical system changed, or whether the improvements observed resulted from new, metalinguistic information (temporarily) stored in short-term memory. Our next step in this project is to replicate this study with a larger sample size of heritage language learners, a greater variety of test types (oral and written), and a delayed post-test. We would also like to compare the magnitude of gains made by L2 learners and HL learners who are at the same level of morpho-syntactic proficiency in Spanish.

In conclusion, although the post-test results of the heritage language learners are still far from nativelike, it seems that these learners do benefit from explicit instruction, including negative evidence, in the classroom. Therefore, unlike in L1 and bilingual child acquisition, negative evidence plays a role in L2 acquisition and it also seems to play a role in heritage language reacquisition in a classroom setting.

Since the instruction in our study contained a variety of sources of information about the targeted structure, including positive and negative evidence, explicit rule presentation, and explicit metalinguistic feedback, it is not possible to determine the individual contributions of each to the

learners' gains. Future studies investigating the separate effects of each component could help to determine which, if any, are essential for HLA, and what similarities there are with SLA.

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