Linguistic and Non-linguistic Factors Affecting OVS Processing of Accusative and Dative Case Pronouns by Advanced L2 Learners of Spanish

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We agree with those who propose that input and input processing are the beginning points of the acquisition process (Carroll, 2007; N. Ellis, 2007; VanPatten, 2007). The relationship between input and L2 knowledge begins with the noticing of forms in the input and associating them with meaning (Schmidt, 1990; 2001; VanPatten 1996; 2004). Perceptual salience leads some forms to be noticed before others (Slobin, 1973; 1985; VanPatten, 1996; 2004). Some forms have but one function, and likewise have a more salient and transparent form-function association, whereas other forms have many functions, resulting in a less salient, less transparent form-function association (Andersen, 1990; Bardovi-Harlig, 2007). Clitic pronouns in Spanish are not salient for a variety of reasons. As clitics, they inherently lack phonological stress in the input. As forms with multiple functions, they do not all have a distinct form-function association, thus making some connections less salient than others (Malovrh, 2008). Furthermore, their placement in a string or sentence relative to the verb varies. As input is the beginning of the acquisition process, the relationship between input and L2 knowledge is governed psycholinguistically.

The First Noun Strategy, also known as SVO processing, describes the situation in which language learners tend to assign the grammatical role of subject or semantic role of agent to the first noun or pronoun in an utterance even if its grammatical role is that of an object. SVO processing has furthermore been documented for children acquiring their first language (Bever 1970, Slobin 1973), children acquiring a second language (Nam 1975), and adults acquiring a second language (Lee 1987, LoCoco 1987, VanPatten 1984). The use of the first noun strategy has been documented in a variety of languages: English (Slobin 1973, Gass 1989), French (MacDonald and Heilenman 1992, VanPatten and Wong 2004), German (LoCoco 1987), Hungarian (Pléh 1989), Italian (Gass 1989), and Spanish (Lee 1987, VanPatten 1984), leading VanPatten to incorporate the First Noun Principle into his theory of input processing (VanPatten 1996, 2004).

This processing strategy affects a variety of linguistic structures such as passives in English and French, causative constructions in French, and object pronouns in Spanish. We focus on the acquisition of object pronouns by second language learners of Spanish. Pronouns in Spanish are case-marked. The nominative pronoun forms are completely different from the accusative and dative forms, whereas there is some overlap across accusative and dative forms. Accusative and dative pronouns are obligatorily placed in preverbal position with a finite verb. Because Spanish inflects the verb for person/number (as well as tense and aspect), it has flexible word order regarding the placement of the subject so that both (1) and (2) are possible. These sentence patterns are SOV and OVS, respectively.

(1) *Julio me ayudará.*
Julio-SUBJ me-OBJ will help
'Julio will help me.'

 Selected Proceedings of the 11th Hispanic Linguistics Symposium, ed. Joseph Collentine et al., 105-116. Somerville, MA: Cascadilla Proceedings Project.

(2) *Me ayudará Julio.*
Me-OBJ will help Julio-SUBJ
'Julio will help me.'

González (1997) found that adult second language learners of Spanish, enrolled in first- and second-year language courses, were less than 30% accurate in interpreting correctly the agent/subject of the OVS sentence pattern. She also reports that children acquiring Spanish as their first language, ages 5-10 years, were only 68% accurate in interpreting correctly the agent/subject of OVS sentences (Echevarría 1978). For both groups, this sentence pattern is the last one acquired and is the focus of our investigation. By applying the first noun strategy to assign agent/object roles learners obviously misinterpret the meaning of the sentence. They misinterpret who did what to whom and for the sentence in (2) they state that Julio receives rather than gives help, thus incorporating incorrect form-meaning associations in their L2 developing system. We cannot emphasize the importance to acquisition of this latter point. The linguistic intake is faulty.

In the present study, we examine acquisition not as an end state but as a process. Specifically, we examine the emergence of OVS processing as the correct processing strategy to use in OVS contexts. In order to acquire object pronouns in Spanish learners must move away from SVO toward OVS processing, which happens only when the target forms are assigned their correct accusative/dative functions.

1. Review of Literature

That second language learners of Spanish use the first noun strategy to misassign the grammatical role of object pronouns as subjects is well established in previous literature. The focus of such work has been twofold. First, it sought to establish the fact that SVO processing took place in a second language context and the extent to which it took place. Second, it sought to identify factors that attenuated or decreased learners' use of the first noun strategy. As our review of literature demonstrates, this research has focused on learners in the first two years of language study and primarily on third person accusative pronouns. The present study will address these limitations by examining advanced learners as well as first, second, and third person pronouns in dative and accusative cases.

VanPatten (1984) established that first- and second-semester learners of Spanish use the first noun strategy to process OVS sentences that were presented aurally. He focused on third person, singular and plural, accusative and dative case pronouns. The subjects were shown four pictures, heard a target sentence, and then chose the picture that matched their interpretation of the sentence. The pictures varied as to who performed the action and who received or benefitted from the action. Overall, his results showed that learners interpreted OVS sentences as SVO sentences between 35% and 70% of the time indicating a robust use of the first noun strategy during input processing. VanPatten found no significant difference between first and second semester learners in terms of their use of the first noun strategy to process OVS sentences. He also found that the learners misinterpreted the first noun as a subject significantly more often when the pronoun referred to a direct object (accusative case) than when it referred to an indirect object (dative case). Case is an attenuating factor in learners' misinterpretation of third person object pronouns. He attributed the difference between cases as one of multiple functionality; *lo*, *los*, *la*, and *las* encode clitics as well as definite articles, whereas *le* and *les* are always clitics.

Lee (1987) established that first year learners of Spanish use the first noun strategy to process OV strings that appeared in the second half of co-joined sentences that were presented in written form. He focused on third person accusative case pronouns. The grammatical subject of the two verbs was the same and was not realized in the surface string of the second part of the sentence. He systematically varied the gender and number of the nouns and pronouns in the strings such that masculine and feminine subjects occurred with masculine objects as well as with feminine objects. Subjects were presented the sentences individually in written form with the direct object pronoun underlined. They were given ten seconds to read each one, and respond to the question, "What does *lo/la/las/los* refer to?" (The form of the pronoun in the question matched the form in the input sentence.) Results revealed that the direct object pronouns were misinterpreted as subjects between

27% and 73% of the time. Statistical analyses indicated that plural object pronouns were misinterpreted as subjects significantly more often than singular pronouns (66% versus 38%, respectively). Number is an attenuating factor in learners' use of the first noun strategy. There was no significant difference in performance between sentences in which the genders of the nouns were the same and those in which they were different (58% versus 46%, respectively). There was a significant interaction between gender and number such that within singular sentences, the object pronouns in the gender-same sentences were misinterpreted as subjects significantly more often than those in the gender-different sentences (46% versus 30%, respectively). No such difference was found between the plural sentences; 70% SVO processing for the gender-same sentences versus 61% for the gender-different sentences. Gender morphology is an attenuating factor for singular objects and subjects. These results demonstrate the influence that morphological factors have on attenuating the use of the first noun strategy. When the gender marker was obscured by a number marker, learners did not process the gender marker. We might say, then, that the plural marker promoted SVO processing.

Houston (1997) examined the role of background knowledge as an attenuating factor in fourth semester learners' of Spanish use of the first noun strategy. All of his subjects were enrolled in courses that utilized the *Destinos* video series. He created two matching sets of ten sentences, all with $OO_{pro}VS$ word order (e.g. *A Raquel la contrata Don Pedro*). In one set, the target sentences all referred to events in the *Destinos* series (+background knowledge) whereas in the other set, random names were used for the same actions (-background knowledge). Prior to listening to the target sentences, all subjects performed a task on the characters from *Destino*s. The task not only insured that subjects possessed appropriate background knowledge but that it was activated for the sentence interpretation task. Subjects were given ten seconds in which they heard a sentence and then had to interpret it. The interpretation task consisted of a verb, in English, with two blank lines on each side of it that subjects were to fill in with names. All subjects heard both the *Destinos*-based sentences as well as the random names sentences. Results revealed a significant effect for background knowledge that showed that background knowledge attenuated learners' use of the first noun strategy, although not completely. Only 28% of the background knowledge sentences were misinterpreted whereas 48% of the random-names sentences were misinterpreted. Whereas previous research had examined first year learners, Houston demonstrated the pervasiveness of the first noun strategy among second year learners. He also demonstrated the variability of learners' use of word order-based processing strategies on structurally identical sentences.

VanPatten and Houston (1998) examined the effects of sentence-internal context on fourth semester learners' use of the first noun strategy. They created twenty target sentences containing OVS word order in the second clause of a two clause sentence. The first clause either provided context for interpreting the object pronoun correctly or it did not. Subjects performed a sentence interpretation task in which they were given a verb, in English, with two blanks on each side of it, which they were to fill in with names. Who did what to whom? Results revealed that sentence-internal context significantly attenuated the use of the first noun strategy in misinterpreting sentences. In the context condition, only 59% of the sentences were misinterpreted whereas 84% were misinterpreted in the no context condition. They concluded that context is a factor that attenuates learners' use of the first noun strategy.

Malovrh (2006) built a study based on the findings and procedures used in the studies reviewed above. He examined whether four factors affected beginning-level learners' correct interpretation of third person accusative case pronouns in OVS constructions. The factors were number and gender as in Lee (1987), context location (before the target as in VanPatten and Houston [1998] or after), and topic familiarity (background knowledge as in Houston [1997]). He created two matching sets of eight sentences. One set referred to the characters from *The Simpsons* (+familiar) and the other contained made up names (-familiar). He then created an alternative set of sentences in order to manipulate the location of the context information. Context either preceded the target form or it followed it. Finally, he manipulated the number and gender of the agents and objects in the sentences. He found that the beginning learners misinterpreted the objects as subjects between 37% and 53% of the time. Of the four factors investigated only two proved to have a significant attenuating effect on learners' use of the first noun strategy: number and topic familiarity. As in Lee (1987) learners were more accurate in processing singular pronouns than plural ones. As in

Houston (1997) learners were more accurate in processing object pronouns when sentences referred to a familiar topic than an unfamiliar one.

The studies reviewed so far have examined sentence-level processing. Only one study, Lee (2000), has examined learners' processing of object pronouns presented in connected discourse among learners who had no formal knowledge of the target structure. Lee assessed comprehension of the relations encoded by object pronouns in a written narrative across two experimental conditions: form/meaning orientation (+/- attention to form) and gender (*lo* / *la*). Correct comprehension of the pronoun reflected appropriate OVS processing whereas incorrect comprehension reflected inappropriate SVO processing. With regard to comprehension, he found a significant effect for the gender of the pronoun. Comprehension of *lo* was significantly higher than that of *la* (75% versus 62%, respectively). He found a significant effect for orientation with learners who were oriented to form outperforming the others (77%). Given how high these percentages of nativelike processing are, we can say that discourse is an attenuating factor in learners' use of the first noun strategy.

2. The Present Study

The present study is motivated by the findings of the research reviewed in the previous section. Specifically, we extend the research of Lee (1987) and Malovrh (2006) on the effects of number and gender morphology on processing OVS strings. We extend the research of VanPatten and Houston (1998), Lee (2000) and Malovrh (2006) on the effects of contextual cues. We extend the research of VanPatten (1984) on the effects of accusative versus dative case pronouns on processing. More importantly, we address issues that have yet to be investigated. VanPatten (1984) suggested that learners' better performance on third person dative pronouns over third person accusative pronouns is that the latter are multifunctional. We will more closely examine this possibility with homophonous forms across accusative and dative contexts versus non-homophonous forms. To our knowledge, no study has investigated advanced learners in terms of processing OVS strings and this is a lacuna in the database that we will address in the present study. Secondly, the research base has adopted an extremely narrow focus on third person accusative pronouns. We will address this by examining first, second and third person accusative and dative pronouns. The present study is, then, guided by the following research questions:

1. How accurately do learners of different levels, including advanced, interpret OVS strings?
2. Does a contextual factor contribute to learners' accurately interpreting OVS strings?
3. Do morphological inflections for case, person, number and gender, as well as +/- homophonous structures, contribute to learners' accurately interpreting OVS strings?

3. Methods and Procedures

3.1. Participants

The participants for the present study (N = 52) were all enrolled in Spanish courses at a large, public university in the Midwestern United States. All were native speakers of English. One group was enrolled in a third semester Spanish language course (n = 12). Another was enrolled in a fifth semester grammar review course (n = 15). The third group was enrolled in an upper division course that provided an introduction to Hispanic linguistics (n = 14). Students usually take this course after the fifth-semester grammar review. The fourth group was enrolled in an upper division course that provided an introduction to applied linguistics with a focus on Spanish (n = 11). Students usually take this course amongst the last courses of the major, i.e., in their last year. Responses to a background questionnaire indicated that six of the fourteen participants in group three had studied abroad, whereas all eleven of the group-four participants had study-abroad experience. Because class enrollment is not necessarily an index of language development we had all learners take an 11-item grammar test (adapted from Woolsey, 2006). A one-way analysis of variance on the grammar test scores determined that we had three levels of learners with the learners in the two upper division courses forming only one group, $F(3, 1704) = 881.67$, $p<.000$. Once the learners completed our processing study, we reexamined the groupings and found that, based on nativelike

processing performance, we had two distinct groups: the highest instructional level and the lower three instructional levels, $F(3, 1704) = 29.67$, $p<.000$. Because the level-three learners grouped with the level-four learners on the grammar test, but with the levels one and two learners on the processing tasks, we decided to maintain them as a separate group. So, for the purposes of the present study, we decided to maintain the four class enrollment-based levels of learners in our statistical analyses.

3.2. Research Instrument

The research instrument consisted of 61 items: 2 starter items to familiarize learners with the time constraints; 23 distracter items; and 36 target items. We can summarize the construction of the research instrument according to the distribution of items across our variables: context (subject = 12, object = 12, neutral = 12); case (accusative = 21, dative = 15); person (1^{st} = 12, 2^{nd} = 6, 3^{rd} = 18); number (singular = 21, plural = 15); gender (masculine = 6, feminine = 6, unmarked = 24); and homophony (+ = 18, - = 18). We note the uneven distribution of person forms. For the 2^{nd} person forms we have only used singular forms whereas for the 1^{st} and 3^{rd} persons we used singular and plural forms. The rationale for our decision is the dialectal variation that characterizes the 2nd person plural.

The following examples show how we manipulated context. We constructed one third (12) of the target items such that the subject/agent of the first sentence became the object pronoun in the second sentence (i.e., object-oriented contexts). We constructed another third such that the subject/agent of the first sentence was also the subject/agent of the second sentence (i.e., subject-oriented contexts). Finally, we constructed one third of the targets such that the first sentence was neutral *vis a vis.* the subject and object of the second sentence. The subject of the first sentence was neither the subject nor object of the second sentence (i.e. neutral context). We note in the subject-oriented contexts the repetition of the subject in the second sentence which some native speakers may find infelicitous. We repeated the subject in order to create three structurally identical processing contexts. All target strings are examples of OVS word order. Examples of the three contexts follow.

object-oriented context
Pensamos salir esta noche. Nos invitó Pablo ir al cine.
We intend to go out tonight. Us-OBJ invited Pablo-SUBJ to go to the movies.
“We intend to go out tonight. Pablo invited us to go to the movies.”

subject-oriented context
María habla frecuentemente con su papá. Lo admira María mucho.
María speaks with her father frequently. Him-OBJ admires María-SUBJ a lot.
“María speaks with her father frequently. María admires him a lot.”

neutral context
La clase de español es difícil. Me ayudará Antonio esta noche.
Spanish class is difficult. Me-OBJ will help Antonio-SUBJ tonight.
“Spanish class is difficult. Antonio will help me tonight.”

A male, native speaker of Spanish recorded the target and distracter sentences, reading them at a normal rate of delivery (neither fast nor slow). From this recording we created an original version and 5 other cut-and-edited versions of the same recording. For the original version we randomized the targets and distracters. Subsequently, we adjusted items to avoid that two items in a row used the same pronoun. To create the five other versions, we blocked the items into three sets (A, B, C). We then rearranged the sets in five different ways, for example, CAB, BCA, etc., so that each version presented the blocks of items in a different order. We created this many versions so as to be sure that our findings would not be subject to any effects for practice or order of presentation.

3.3. Data Collection

Participation in the study was voluntary and only subjects who completed a human subjects consent form were included in the analyses. Each class that we used was taken to a language laboratory to perform the experiment. The participants sat at individual computers and listened privately to the sentences through headphones. In this way, we were able to use all six versions of the instrument in each individual class because the different versions were loaded onto different computers. The time required to complete the processing task was 9 minutes and 50 seconds.

3.4. Data Coding

We present in Table 1 the list of pronouns used in the present study and how they were coded for the linguistic variables we investigated. Whether the pronoun was coded as dative or accusative depended upon the sentence in which it occurred. The sentences were also coded for one of the three context conditions.

Table 1. Summary of the coding of each pronoun per linguistic factor/variable

Factor → Pronoun ↓	Case	Person	Number	Gender	Homophony
me	dative or accusative	1st	singular	unmarked	no
te	dative or accusative	2nd	singular	unmarked	no
lo	accusative	3rd	singular	masculine	yes
la	accusative	3rd	singular	feminine	yes
le	dative	3rd	singular	unmarked	no
nos	dative or accusative	1st	plural	unmarked	no
los	accusative	3rd	plural	masculine	yes
las	accusative	3rd	plural	feminine	yes
les	dative	3rd	plural	unmarked	no

3.5. Data Elicitation Task

We gave each participant an answer sheet that corresponded to the version of the research instrument they received. The task learners performed was to answer a question about each of the sentences they heard. We gave them six seconds to respond after hearing the end of the sentence. For the target sentences, we asked them to identify who performed the action of the verb in the OVS string by answering a question. The questions corresponding to the three target sentences presented above were: Who did the inviting?; Who does the admiring?; and, Who will do the helping? Answers would indicate the L2 learners' assignment of grammatical relations to each noun in the string. If they answered "we did" for who did the inviting (*Nos invitó Pablo ir al cine*.) we scored the answer as evidence of SVO processing. If they answered "Pablo did" then we scored the answer as evidence of correct, nativelike OVS processing.

3.6. Statistical Analyses

Chi square analyses were conducted using SPSS15 to reveal the factors that had a significant main effect on the OVS processing. That is, the dependent variable in our analysis is correct, native-like processing. The analyses were performed on all data, as well as individual variables, based on learner level.

4. Results

We present in Table 2 a summary of the frequency of OVS processing by level of learner and by variable. Overall, Levels 1, 2 and 3, engage OVS processing from 50% to 58% of the time, meaning that they engage SVO processing between 42% and 50% of the time. These figures reveal that the developing system is receiving conflicting information regarding form-function mappings. The Level 4 learners engage OVS processing almost 84% of the time indicating a much more stable system for object pronouns.

Table 2. Summary of the frequency of OVS processing by variable and level of learner

Level → Variable ↓	Level 1	Level 2	Level 3	Level 4
Overall	50.8%	51.6%	57.8%	83.5%
Context				
subject-oriented	59.9%	57.4%	58.6%	79.8%
object-oriented	47.0%	48.5%	52.1%	82.3%
neutral	45.5%	49.0%	62.7%	88.8%
Linguistic factors				
Case				
accusative	47.6%	55.2%	57.6%	86.9%
dative	55.3%	46.7%	58.0%	78.6%
Person				
1st	57.8%	62.7%	69.2%	96.3%
2nd	47.0%	50.0%	68.4%	97.4%
3rd	47.4%	44.8%	46.9%	70.7%
Number				
singular	51.4%	49.9%	59.9%	85.8%
plural	50.0%	54.1%	54.8%	80.4%
Gender				
masculine	54.8%	58.8%	55.0%	68.3%
feminine	32.1%	43.1%	41.4%	88.1%
unmarked	54.5%	52.0%	62.6%	86.3%
Homophony				
+multifunctional	28.7%	32.9%	27.9%	32.0%
-multifunctional	71.3%	67.1%	72.1%	68.0%

In Table 3 we present a summary of the results of the chi square tests on each variable at each level of learner. Context is a significant factor only at Level 1 and for each of the three context conditions. Case is a significant factor only at Level 2 and for both cases investigated. Person is a significant factor affecting Levels 2, 3 and 4 with 1st person forms being significant at all three levels, 2nd person forms at Levels 3 and 4, and 3rd person forms at Level 4. Number never emerged as a significant factor at any level. Gender was a significant factor at Levels 1 and 3 for masculine and unmarked forms and at Level 4 for all three forms. We have graphically displayed the effects of Gender in Figure 1 in order to facilitate our discussion of these finding. Homophony was significant at Levels 1 and 3, in which case those forms that always appeared as a clitic pronoun in the input (and never a definite article, for example) were interpreted according to OVS processing with statistical significance.

Table 3. Summary of the results of the Chi Square tests conducted on each variable

Variable ↓	x^2	*df*	small cells?	Cramer's *V*
Context				
Level 1	8.345*	2	No	.129
Level 2	4.017	2	No	.081
Level 3	2.784	2	No	.089
Level 4	2.543	2	No	.102
Linguistic factors				
Case				
Level 1	2.889	1	No	.076
Level 2	4.319*	1	No	.084
Level 3	.006	1	No	.004
Level 4	2.947	1	No	.110
Person				
Level 1	4.920	2	No	.099
Level 2	15.965***	2	No	.162
Level 3	17.578***	2	No	.223
Level 4	29.735***	2	No	.350
Number				
Level 1	.091	1	No	.014
Level 2	1.08	1	No	.042
Level 3	.916	1	No	.051
Level 4	1.260	1	No	.072
Gender				
Level 1	14.063**	2	No	.168
Level 2	5.077	2	No	.091
Level 3	8.781*	2	No	.158
Level 4	8.420	2	No	.186
Homophony				
Level 1	5.465*	1	No	.105
Level 2	.052	1	No	.009
Level 3	6.538*	1	No	.136
Level 4	2.503	1	No	.101

*p<.05; **p<.01; ***p<.001

5. Discussion

5.1. Level

Our first research question addressed how accurately learners of different levels, including advanced levels, interpret OVS strings. We discovered that only the most advanced level we examined predominantly processed OVS strings accurately at 83.5%. This figure indicates to us that accusative/dative pronoun systems have stabilized at this level. We would characterize the pronoun systems at Levels 1 and 2 as quite unstable in that accuracy is around 50%, meaning that SVO processing is still occurring at about the same rate. About 50% of the time, the system is told that *te*, for example, is nominative case, not dative or accusative. At Level 3 the rate of OVS processing is 57.8%. This figure suggests to us that the learners are beginning to develop toward OVS processing. Along with our results on person, gender, and homophony, this result indicates that the pronoun system is restructuring at this level. Future research should attempt to identify the developmental trajectory as L2 learners restructure and develop from our Level 3 to Level 4.

5.2. Context

Our second research question addressed whether a contextual factor contributes to learners' accurate interpretation of OVS strings. VanPatten and Houston (1998) found that learners

benefitted from context. Malovrh (2006) found that learners benefitted equally from placing context before or after the target. Our statistical analyses revealed that the contextual factor we created significantly contributed to accurate processing only for Level 1 learners, the level VanPatten and Houston (1998) investigated. We saw this greater accuracy particularly with the subject-oriented sentences in which the agent of the first and second sentences was the same person. As learners develop beyond level 1, they are no longer dependent on the clues offered by context. That our more advanced learners were not affected by the contextual condition leads us to hypothesize that contextual constraints become less important as learners' proficiency develops.

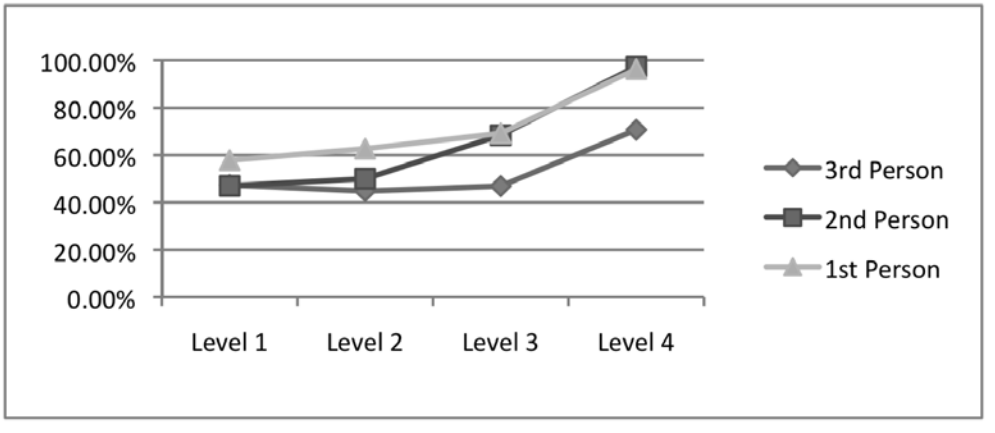
5.3. Linguistic Factors

Our third research question was whether various linguistic factors contribute to learners' interpretation of OVS strings. Those factors were case, person, number, gender, and homophony. Our results revealed that all factors except number were significant for at least one level of learner.

Case. VanPatten (1984) found that learners use the first noun strategy less often with the dative case pronouns than with the accusative case ones. Our results do not corroborate this finding for several reasons. First, we examined case across first, second, and third person forms for which the first- and second- person forms are identical. Second, our learners are more advanced. And yet as our analysis of Person reveals, it would be worth more closely investigating the third person forms in isolation. The case of the form was a significant factor only among Level 2 learners and it indicates to us the instability of the system among Levels 1 and 2. Only at Level 3 was there parity in accurate processing across the two cases, which increased to 58%. We interpret the shifts from Levels 1 to 2 to 3 to reflect an initially unstable pronoun system that is restructured. As a result of the restructuring that occurs at level 3 we get the move to predominate accuracy at Level 4.

Person. No previous research on processing has, to our knowledge, examined the factor of person and yet our results show that it is a very strong indicator of performance. As seen in Figure 1, our results strongly suggest that the acquisition of object pronouns in Spanish as a second language may be person-driven. With *p*-values less than .000, Person very strongly predicts performance. The results are consistent and neat in that first person emerges before second person which emerges before third person. While the previous research has narrowly focused on third person pronouns, we can assert that these are the most difficult for learners. They are the last acquired with even Level 3 learners engaging infrequently in OVS processing on these third person forms (46.9%). The lowest degree of OVS processing for the Level 4 learners, 71%, occurs on the third person forms. The first person forms are the Level 2 and 3 learners' highest degree of OVS processing, in excess of 60% for both groups. With Levels 3 and 4, their highest degrees of OVS processing across all factors are on the 1st and 2nd person forms. Taken together these results suggest that the acquisition of object pronouns may be person-driven. In other words, second language learners may first resolve Person in their acquisition of object pronouns.

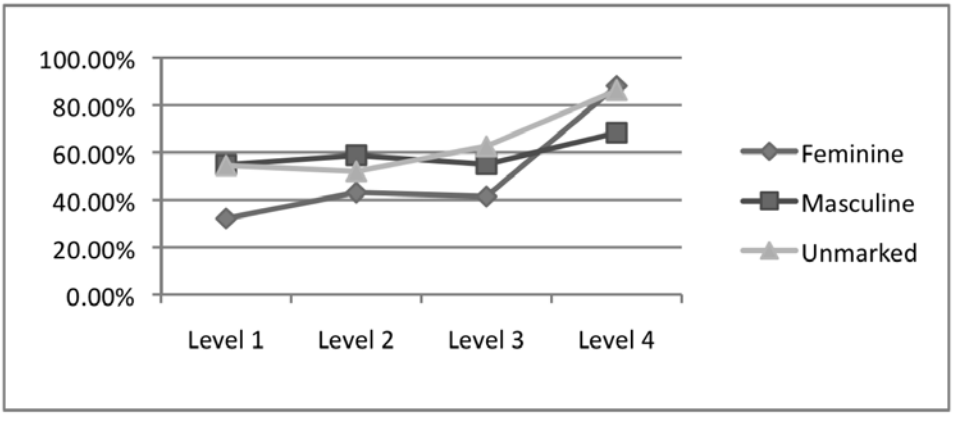
Figure 1: The effects of person across levels.



Number. Both Lee (1987) and Malovrh (2006) found that number was a factor that attenuated learners' use of the first noun strategy to misassign the grammatical role of subject to an object pronoun. Both found that singular forms were less likely to be misassigned than plural forms. The results of the present study do not corroborate these findings for two reasons. First, both Lee and Malovrh focused on third person accusative case forms whereas the present study examined a wider set of forms in both accusative and dative cases. Second, both Lee and Malovrh examined first year learners whereas the present study examined more advanced learners. We hypothesize then that the effect of number might be seen only at the very initial stages of language development.

Gender. Malovrh (2006) did not find that gender was an attenuating factor in learners' use of the first noun strategy to interpret OVS strings. Lee (1987) found that for singular forms, learners engaged less SVO processing when the gender of subjects and objects was different than when they were the same. Both studies examined third person accusative pronouns which are overtly marked for gender. In the present study, we examine the factor of gender a bit differently in that we categorized whether the pronoun carries gender morphology, and if so, if it is masculine or feminine, rather than whether the other nouns in the sentence were masculine or feminine. Under these conditions, gender morphology emerged as a significant factor at three of the four levels. Figure 2 indicates several points that are clear in the data. First, the problematic forms for acquisition are the feminine-marked forms, *la* and *las*, which are characterized as being predominantly subject to SVO processing through Level 3. Remarkable is the change from Level 3 to 4. The increase of OVS processing is 47% and in no other condition have we seen such a sharp increase. The feminine forms do not merely emerge at Level 4 but they surge into the system at 88% accurate processing. Second, the gender-unmarked forms follow a pattern of performance that we have seen with other factors; the rate of OVS performance is similar at Levels 1 and 2 but increases at Level 3 and dramatically increases at Level 4.

Figure 2. The effects of gender across levels.



Homophony. The analysis of gender led us to consider that the gender-marked forms are not only exclusively accusative case, but that they are also forms found in the definite article system in Spanish. That is, *lo*, *los*, *la* and *las* are multifunctional forms. They are object pronouns as well as definite articles. VanPatten (1984) hypothesized that learners' lower performance on third person accusative forms was due to their multifunctionality as both object pronouns and definite articles. The other gender-unmarked forms (*me*, *te*, *nos*, *le*, *les*) are only object pronouns, although *me*, *te*, and *nos* show overlap in terms of case. Our data indicate that the target structures that always represented clitic pronouns in the L2 input resulted in higher levels of OVS processing, with statistical significance at Levels 1 and 3. This finding suggests that L2 development is guided by a one-to-one principle of form-function mapping; learners first map one form to one function, before mapping multiple forms to multiple functions (Andersen, 1990; Bardovi-Harlig, 2007).

6. Conclusions

Whereas previous research on the L2 processing of object pronouns in Spanish has focused on learners at or below our Level 1 learners, the present study's focus on more advanced learners contributes greatly to the database. Given our results we can state confidently that object pronouns are a late-acquired feature of the L2 acquisition of Spanish. The factors that affect their acquisition (and at what levels) are what we have attempted to address in the present study.

Among the factors we examined, the three that have the least effect on the acquisition of object pronouns are Number, with no effect, Case, with the isolated effect at Level 2, and Context, with the isolated effect at Level 1. Because we see context effects only at Level 1, case effects only at Level 2, and OVS processing on average of 51% and 52% at Levels 1 and 2, we conclude that these levels are characterized as unstable in terms of the acquisition of object pronouns. A preverbally placed object pronoun is just as likely to be assigned the grammatical role of subject as it is of object, which is an unstable acquisitional condition. Because we see OVS processing at 84% at Level 4 we conclude that the object pronoun system has stabilized by this level. Somewhere between our Level 3, at which OVS processing is 58%, and our Level 4, the system restructures.

The clearest and most consistent finding we have across levels is that of Person. Our research was the first to systematically investigate this factor and to that end we have made another significant contribution to the database. We can conclude that 1st person forms are first acquired followed by 2nd person forms and quite late by 3rd person forms.

The messiest finding we have across levels is that of Gender. Because OVS processing is well below 50% for Levels 1, 2 and 3 for feminine forms but surges to a very high rate of accuracy at Level 4, we conclude that the feminine-marked forms are the most resistant to acquisition. Because OVS processing of the masculine and gender-unmarked forms is always above 50% we are tempted to conclude that these forms are acquired in parallel. We do not, however, do so because of the changes in OVS processing we found at Level 4 on the feminine forms *vis a vis.* the masculine ones. The rate of increase in OVS processing of masculine forms is flatter than is the dramatic rise of OVS processing for feminine and gender-unmarked forms. Given these results we conclude that the gender-unmarked forms are the most conducive to acquisition.

Future research should continue to examine the emergence of OVS processing with advanced level language learners. Further study of learners who are in between our levels 3 and 4 is needed in order to capture and characterize the linguistic and non-linguistic factors that contribute to so much restructuring. The focus of previous research on third person forms (albeit with beginning-level learners) could be repeated with advanced level learners since these third person forms are the last-acquired. Perhaps case becomes a more important factor for the uniquely case-marked third person forms. Future research should continue to probe the role that gender marking has on the acquisition of object pronouns. What is it about feminine-marked pronouns makes them susceptible to SVO processing and resistant to acquisition?

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