The Developmental Dimension in Instructed Second Language Learning

The L2 Acquisition of Object Pronouns in Spanish

Paul A. Malovrh and James F. Lee

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Contents

Foreword

Over the last thirty years, second language acquisition research has indicated that L2 learners seem to acquire single structures through predictable stages, no matter whether they are learning the target language in a rich or a poor language environment. Interlanguage developments have been examined from a functional and a processing perspective. Functional approaches have explored issues related to how form and function relate to one another. Processing approaches have dealt with internal mechanisms and abilities used by L2 learners when learning a second language. In particular, the input processing theory has investigated how learners comprehend sentences and how they make form-meaning connections.

In the present book, Paul Malovrh and James Lee present and discuss original empirical research investigating interlanguage developments with specific reference to the comprehension and production of object pronouns in Spanish. The two authors have successfully addressed, not only a number of issues concerning the concept and nature of interlanguage, but also the issue of ultimate attainment. As a result of their research findings, they propose developmental stages in the L2 acquisition of object pronouns in Spanish in the form of three stages: pragmatic, lexical and morphological.

Based on the results of their research and drawing from previous empirical research and theories, Paul Malovrh and James Lee have produced a solid volume that will be beneficial for both researchers and practitioners in second language learning and teaching. We thank them for their excellent contribution to the Bloomsbury Academic Series in Advances in Instructed Second Language Acquisition Research.

Alessandro G. Benati
Series Editor
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Preface

The conception of this book dates back to a conversation in April of 2007 while attending the annual meeting of the American Association of Applied Linguistics in Costa Mesa, CA. We were discussing our work, in particular the research that would become Lee and Malovrh (2009), sharing results, and commenting on what we referred to as different "fragments" of research investigating the L2 acquisition of Spanish object pronouns. There had already been an abundant database of studies looking at object pronouns within the framework of VanPatten's model of input processing, including Lee's (1987) and (2000) articles and Malovrh's (2006) article. There were also formalist studies investigating morphological variability and feature hierarchies, case studies looking at oral production, works addressing the interface of different linguistic domains and vulnerable features, several dissertations describing development using functional approaches, including the research leading up to Malovrh's (2008) dissertation, two studies comparing learning contexts, and an impressive body of work investigating universal grammar. Each line of research provided important fragments of a larger picture explaining acquisition, identifying its constraints, and/or predicting development. We noted, however, the inability to piece together such fragments due to a variety of incongruities across studies. Some research focused on processing, while other studies looked at production. Most studies analyzed beginning-level learners, while only a few included advanced. Methods of data elicitation varied; studies analyzing production relied primarily on oral interviews, in which case tokens of third-person forms were limited, and other studies utilized a variety of tasks, but did not analyze their varying effect on performance. We concluded that there was a need for a study that could reconcile such methodological differences by tracking the development of Spanish object pronouns in the interlanguage of L2 learners ranging from beginning to advanced levels, by designing a data-elicitation instrument that could generate sufficient data to analyze, by employing a multifaceted analysis that would describe and predict performance in addition to measuring accuracy of form and placement, and by comparing development in processing with that of production among a common group of learners. We addressed these concerns with a small-scale study of 35 participants in Malovrh and Lee (2010). The research we present in this book further develops our work on processing, production, and placement from a developmental perspective and on a larger scale.

In the present volume we explore the interlanguage development of form-function mapping in the L2 processing and production of Spanish object pronouns by a common group of participants whose native language is English. An important difference between our previous work and the present analyses is that the learners we analyze represent a cross-section of different levels of *instructed-only* and *instructed + experience abroad* learning contexts, which provides an important explanatory factor

for our results. In Chapter 1 we provide a brief overview of the role of input and output in SLA, we present the target structure(s) in terms of form, function, and sociolinguistic variation, we provide a description of our participants based on sociolinguistic and instructional variables and their proficiency, and we describe our method for studying processing, production, and placement. In Chapter 2 we provide a review of literature examining the effect of instructional and study-abroad contexts on L2 acquisition. In Chapter 3 we review previous literature investigating Spanish object pronouns in L2 production, and in Chapter 4 we investigate previous literature examining L2 processing. In Chapter 5 we present a concept-oriented analysis of the development of the Spanish direct object in L2 production, and we supplement the analysis with form-function and appropriate-use analyses, of which the former explores constraints in the development of form-function mapping as learners pass from one-to-one to multifunctional stages. The latter examines the relationship between interlanguage restructuring and targetlike use. Previous research has revealed a wide variety of factors affecting L2 production. Therefore, in Chapter 6, we continue our analysis of L2 production by analyzing morphological, semantic, and syntactic predictors of the production, placement, and omission of Spanish object pronouns using the same data set as that of the previous chapter. In Chapter 7 we turn our attention to L2 processing as we analyze the linguistic context and linguistic features affecting L2 processing. And in Chapter 8 we identify related developments in the processing, production, and placement of Spanish object pronouns among a common group of L2 learners. Finally, we conclude in Chapter 9, by identifying the limits of instructional contexts and the importance of extended exposure and experience abroad, and by summarizing the key events characterizing the developmental dimension of Spanish object pronouns by *instructed* and *instructed+experience abroad* L2 learners. We close with providing stages of interlanguage development that, unlike any previous analysis, identifies stages of development with reference to processing, production, and placement of object pronouns in L2 Spanish.

The study of Spanish object pronouns remains an area of intense research in SLA. The present volume draws from preexisting research and new empirical findings to formulate what we believe is the most complete portrait of the L2 acquisition of Spanish object pronouns to date. As research continues and technology improves, new and fascinating findings continue to emerge in areas such as the interface hypothesis, contact linguistics, variationist frameworks of SLA, and phonological theory, to name just a few, and methods of data elicitation are becoming increasingly sophisticated by using equipment measuring eye-tracking and response time. We encourage students and beginning researchers to take up the study of Spanish object pronouns and participate in this exciting line of research, and we hope this volume helps to set the stage for such work.

Paul A. Malovrh
Columbia, SC, USA
September 2012

James F. Lee
Sydney, NSW, Australia
September 2012

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This project would not have been possible without the support, guidance, and help of a number of people who deserve mention. First and foremost, we thank the individuals who volunteered their time to participate in the studies. In addition, a number of people lent their time and expertise to help us create our data-elicitation instruments. They are: Jorge Aguilar-Sánchez, who provided the audio recordings for our processing instrument; Fred Wessel, who filmed and edited the silent film used for eliciting production data; and Carol Storck and Jason Wessel, who acted in the film. Two very dedicated graduate assistants at the University of South Carolina, Sam Hilliard and Joseph Dean, provided their wonderful editing and formatting skills, and one anonymous reviewer provided us with detailed feedback and helpful suggestions. Finally, we are extremely grateful to our series editor at Continuum, Alessandro Benati, who expressed an interest in our work and helped us navigate the editorial process.

Much of this manuscript was completed while also learning the ropes of fatherhood. Even now, as I write this acknowledgement, I am accompanied by the sound of a two-year-old playing with his trains in one room, and a two-month old cooing away in another room, and it's a wonderful symphony by which to close the hard work and dedication that went into this project. I dedicate it all to my sons, Milo and August, and to my wife, Julie.

Paul A. Malovrh

I also wish to thank the people Paul mentioned. Additionally I would like to acknowledge the support I received for this project in the form of two Research Promotion Grants through the Faculty of Arts and Social Sciences at the University of New South Wales and the Conference Travel Grant that allowed me to present, with Paul, the work that became Malovrh and Lee (2010) at the 2009 Conference on L2 Processing and Parsing that Bill VanPatten organized at Texas Tech University. It was a critical time for Paul and me to meet, think, discuss and plan our next steps. I would like to acknowledge the critical feedback we received from Bill VanPatten on our chapter because his insightful comments pushed us to clarify our thinking. We would also like to acknowledge the anonymous reviewer for Continuum who posed the right questions to help us focus the work. To my daughters Ali, Graci and Lili. Thanks for being the great kids that you are.

James F. Lee

Part One

Introduction

1

Introduction

1.1 The linguistic environment

The linguistic environment to which learners are exposed contains the input needed for second language development to proceed. Input is also referred to as primary linguistic data, that is, learners' source of formal information about the second language. The linguistic environment contains not only the input to which learners are exposed but it also consists of the interlocutors with whom they interact, that is, those to whom learners direct language or output and who direct language to the learners. In the following sections, we will overview the theoretical status of input and output in some contemporary theories of second language acquisition (SLA) and connect these to the empirical investigations that form the basis of this book.

1.1.1 Input: The extremes of frequency and triggers

Of nine contemporary theories in second language acquisition (VanPatten and Williams, 2007), the associative-cognitive CREED gives input the most central role in SLA. It maintains that SLA is input-driven. Acquisition proceeds because the mind unconsciously engages in frequency tallying of constructions and exemplars in the linguistic input. From these, the mind creates and then strengthens neural connections. These in turn yield networks of associations in a complex system. In this framework, taken from psychology, language learning is seen as no different from any other type of complex learning.

> As with other statistical estimations, a large and representative sample of language is required for the learners to abstract a rational model that is a good fit to the language data. Input is necessary, and it is sufficient for L1A [first language acquisition] but not for SLA … the shortcomings of SLA stem from these various aspects of transfer and learned attention. (N. Ellis, 2007, p. 88)

Transfer and learned attention are due to L2 learners' mental processors being tuned to the L1; these L1 tunings or settings are, then, the starting point for L2 development.

Of nine contemporary theories in second language acquisition (VanPatten and Williams, 2007), input plays a very limited but necessary role in universal grammar (UG) theory. Input is necessary so that a language learner knows what type of language is to be acquired. The linguistic input triggers values of knowledge that predate any experience a learner has with the linguistic environment. "According to UG theory, there are certain aspects of grammar that are not learned through exposure to input, namely, knowledge of universal constraints. Nevertheless, UG does not operate in a vacuum: universal principles and language-specific parameter settings must be triggered by input from the language being acquired" (White, 2007, p. 50). A large and representative sample of language is not required in UG; frequency tallying is not part of this theoretical framework. Once the input triggers a parameter for *+wh*-movement, for example, input is no longer needed to determine that island constraints operate in *+wh*-movement languages. This latter information is provided by UG.

1.1.2 Input: Processing strategies and form-meaning connections

In all other contemporary theories of SLA, the linguistic environment or input takes a more intermediate position between the extremes of associate cognitive CREED and Universal Grammar. We will examine the role of input in the concept-oriented approach and VanPatten's model of input processing because these two frameworks influence our work most directly. In both these frameworks, the focus is on meaning, and how learners process input is the essential element to explain acquisition.

VanPatten's model of input processing "aims to be a model of what happens during comprehension that may subsequently affect or interact with other processes" (VanPatten, 2007, p. 115). The model assigns input a central role in SLA "because a good deal of acquisition is dependent upon learners making appropriate form-meaning connections during the act of comprehension" (VanPatten, 2007, p. 115). Learners encounter the forms in the input and due to the focus on comprehension, they are to make a connection between the form and the meaning or semantic notion it encodes. As such, the model aims to explain under what conditions learners will make an initial form-meaning connection. It explains why some forms get processed and others do not, as well as why some forms are processed before others, and the internal strategies learners use in comprehending sentences and how these might affect acquisition. The explanatory model is presented as a set of processing principles to account for the part(s) of the input that are made available for learning (i.e., input that becomes intake and is fed into the developing system). The term "developing system" is synonymous with "mental representation." We explore VanPatten's processing principles in more detail in subsequent chapters.

An important precept in the concept-oriented approach is that adult second language learners arrive at the task of second language acquisition with the concepts already in place. Previous language learning and cognitive experience has established all the concepts; second language learners, in contrast to first language learners, do not need to acquire concepts. Rather, they must acquire the target-language-specific means

by which to express them (Bardovi-Harlig, 2007, p. 58). Importantly, underlying the concept-oriented approach is an explanation of how learners process input, for it is in the input that they find the target-language-specific means to express a concept. The concept-oriented approach relies heavily on Andersen's one-to-one principle (1984) and multifunctionality principle (1990). The one-to-one principle states that "an interlanguage system should be constructed in such a way that an intended meaning is expressed with one clear invariant surface form (or construction)" (Andersen, 1984, p. 79). The multifunctionality principle states:

> (a) Where there is clear evidence in the input that more than one form marks the meaning conveyed by only one form in the interlanguage, try to discover the distribution and additional meaning (if any) of the new form. (b) Where there is evidence in the input that an interlanguage form conveys only one of the meanings that the same form has in the input, try to discover the additional meanings of the form in the input. (Andersen, 1990, p. 53)

In her discussion of the concept-oriented approach, Ortega states that Andersen's principles "figure prominently in shaping how learners are able or unable to use the L2 input for developing new resources for meaning-making during language production" (Ortega, 2007, p. 237). We explore these principles and the concept-oriented approach in more detail in subsequent chapters.

1.1.3 Output: A causal role

Output, or the language learners produce has, on the one hand, a causal role in acquisition according to the Interaction Approach (Gass and Mackey, 2007). The Interaction Approach posits three functions for output (Gass and Mackey, 2007, pp. 179–81). First, during an interaction or conversation, learners could receive negative feedback on their production, which might be provided implicitly (e.g. clarification request, confirmation request, comprehension check, recast) or explicitly (e.g. explicit correction). The negative feedback may lead the learner to modify their output by reformulating the utterance in a more target-like way—that is, learners are pushed to create more target-like language. Another function for output is that it has the potential to provide learners a means of testing their L2 knowledge. During such hypothesis testing, learners would say something and then rely on feedback to see if it is correct or acceptable. Third, output is linked to automaticity, defined as the routinization of language use. Output is said to play an integral role in automaticity in that "continued use of language moves learners to more fluent automatic production" (Gass and Mackey, 2007, p. 181).

1.1.4 Output: No theoretical status

At the other extreme, Carroll states that in Autonomous Induction Theory "Language acquisition must be defined from analysis of input and is not equivalent to *control* of linguistic distinctions in speech production" (emphasis original, Carroll, 2007, p. 158).

Acquisition is the construction of mental representations. Establishing a mental representation may well occur at a point in time long before a learner can "reliably activate this mental representation in long term memory for speech production purposes" (Carroll, 2007, p. 158). Output or the processes that yield output engage mental representations for use, but output does not create mental representations (Carroll, 2007, p. 170). As White indicates for Universal Grammar, "…the focus is on how the L2er [L2 learner] represents the L2 in terms of a mental grammar. The theory does not aim to account for second language use [output]…" (White, 2007, pp. 45–6).

1.1.5 Output: Confined roles

VanPatten's model of input processing does not speak directly to the role of output in second language acquisition. The principles that comprise the model all address why learners process some aspects of the input over others and why some form-meaning connections are made before others. VanPatten does state that "the model would suggest that the effects of learner output would be constrained if output does not help to alter learners' processing behaviors…output would be useful if it leads learners to register and correct their misinterpretation of others' meanings" (VanPatten, 2007, p. 132). In VanPatten (2003) he addresses the question, What is the role of output in the creation of the learner's linguistic system? His arguments begin with the assertion that output cannot provide primary linguistic data to the learner because "…output processing mechanisms rely on or assume some kind of linguistic system for their operations; they don't create it" (VanPatten, 2003, p. 68). VanPatten takes an interactionist approach to output but concludes that output is beneficial but not causal for second language acquisition. For example, output created during interactions may lead to the negotiation of meaning as a result of communication breakdowns. Such negotiations may put learners in a position to notice something in the input they had not noticed before. It is possible that learners could receive negative feedback and then subsequently use a linguistic element from the feedback in their own speech. This uptake of the linguistic element is, he argues, evidence of input processing having taken place and not that output causes acquisition. "What these kinds of interactions do for learners is bring something into focal attention" (VanPatten, 2003, p. 68). VanPatten agrees that pushed output may help learners realize that their system is lacking something. Language-related episodes between learners in which they try to resolve a linguistic problem are seen as evidence that the learners have some kind of knowledge about the formal features of the L2, albeit incomplete knowledge. These types of exchanges heighten learners' awareness of this incompleteness and may lead them to subsequently notice instances of the linguistic feature in the input. VanPatten acknowledges that production pressures may force learners to process input better. Knowing that they will have to speak may push learners to attend not only to what others say but how they say it. In sum, "output plays a facilitative role in acquisition, at least in terms of the developing system and its contents. This does not mean that output is not necessary. It is theoretically possible that some aspects of the input would not be processed or noticed if learners did not have experience making output.

Making output may push them to be better processors of input, something they may not do otherwise" (VanPatten, 2003, p. 69).

The concept-oriented approach, on the surface, may seem to emphasize output. As Bardovi-Harlig states:

> …concept-oriented analyses are interested in the range of linguistic devices that speakers *use to express* a particular concept (von Stutterheim and Klein, 1987), the interplay of ways to *express a meaning*, and the balance of what is *explicitly expressed* and what is left to contextual information (Klein, 1995). From the concept-oriented perspective, Klein observes that a substantial part of language acquisition is the permanent reorganization of the balance among *linguistic expression*. The analysis seeks to explain how meanings within a larger concept are *expressed* at a given time, and how the *expression* of the concept changes over time. (emphases added, Bardovi-Harlig, 2007, p. 58)

Clearly, a concept-oriented analysis will focus on language production. While Bardovi-Harlig underscores that production tasks, as close as possible to spontaneous production, are at the heart of a concept-oriented approach, any design that examines form-meaning associations, even highly controlled experimental designs of processing, would be useful to a functional inquiry (Bardovi-Harlig, 2007, p. 63).

1.2 Our investigations of production and processing

The present volume provides a series of original empirical studies focusing on the L2 production and comprehension of direct objects and direct and indirect object pronouns by a cross-section of L2 learners of Spanish. Spanish object pronouns are morphologically marked for person, number, and in third person for case and gender. They are clitic elements of the verb and are placed pre- or postverbally under different circumstances. We explain Spanish object pronouns in a subsequent section of this chapter, focusing on the direct object.

With regard to our studies of production, we use a research design that has not been previously implemented by (1) incorporating L2 learners ranging from beginning to advanced levels of proficiency; (2) controlling for task conditions across learners and learner levels; (3) using a data-elicitation instrument that effectively elicits all of the forms under investigation in a single task; and (4) analyzing data in such a way that captures the emergence of new forms in interlanguage, in addition to the restructuring of form-function associations that had previously emerged in the L2 developing system. With regard to L2 comprehension, we extend the research of previous investigations examining the development of input processing using a research instrument designed to isolate specific linguistic variables affecting comprehension. A unique aspect of our research is that our production and processing data derive from the same L2 learners. In addition, a concept-oriented approach to analyze production and an input-processing approach to analyze comprehension are particularly compatible with each other as we track developments of form-function mapping in interlanguage, since

they both specifically focus on form-meaning connections (Bardovi-Harlig, 2007). We are therefore able to analyze the simultaneous development of forms produced, their placement in OV contexts, and how they are comprehended in OV contexts among a common group of participants. We are also able to isolate a common set of linguistic features and explore their role in production, placement, and processing.

1.3 A multifaceted analysis of L2 production

In our first study, learners from intermediate to highly advanced developmental levels watched a two-part silent video in which two people worked together to make a Spanish potato omelet. After viewing part one, they were asked to orally retell the events they had watched in the video and then asked to adopt the role of one of the participants and retell the video from a first person perspective. They then watched part two, after which they provided a third person and first person retelling. Adopting a concept-oriented approach we analyzed both form-function and function-form mappings.

"Concept-oriented analyses report how learners use language and how they construct their language, but they typically do not report the findings in terms of whether the learners are correct or incorrect relative to the language being learners (what we call the *target language*)" (Bardovi-Harlig, 2007, p. 63). The concept-oriented approach provides the ideal analytic framework for the investigation of development of the L2 production of the Spanish direct and indirect object for several reasons. First, it provides the inductive approach necessary to provide a thorough description of language use in order to then characterize development in terms of linguistic features. Second, the multiple forms available in the input to encode the Spanish direct object, as well as the multiple grammatical functions encoded by direct object clitic forms, provide the opportunity to identify interlanguage strategies guiding the development of form-function and function-form mapping. As Ellis and Barkhuizen (2005, p. 126) conclude regarding their analysis of each method:

> The need to perform a particular function motivates a learner to attend to a particular form, which is consequently acquired. Subsequent development takes place on two planes. Learners acquire alternative forms for performing the same function and also discover new functions that can be served by existing forms… It follows that a full understanding of how learners construct their interlanguages requires both a form-function and a function-form analysis.

Form-function analyses take as their starting point a specific form. Analyzing natural data, the researcher identifies each token of the form and codes all of the functions realized by it in interlanguage.[1] The forms we are interested in are the object clitic pronouns in Spanish. What functions do these forms express in learners' and native speakers' production? Function-form analyses, on the other hand, approach form-meaning associations from the other direction, from that of function. The function or grammatical role we are interested in is that of direct object. When learners and native

speakers produce a direct object, what forms do they use to encode it and where do they place the direct object? When learners produce a direct object pronoun, what function is it performing and where do they place it? What linguistic means do the learners use to express a direct object and how do these means change over time?

Our study of L2 production data begins with an analysis of developing patterns of form-function mapping. In Chapter 5, we address the following research questions:

1. What forms do different levels of L2 learners and native speakers use to express the grammatical role of direct object?
2. What functions do different levels of L2 learners and native speakers express using direct and indirect object clitic forms?
3. What is the relationship between the frequency that different levels of L2 learners and native speakers use an object clitic form and its appropriate use in obligatory contexts?

1.4 The relationship between interlanguage and targetlike use

While the bi-directional analysis of form-function mapping allows us to identify the emergence of new forms in interlanguage and its restructuring architecture, it alone will not account for the development of nativelike phenomena. In order to capture such development, we also analyze the appropriate use of clitic forms and we once again utilize the bi-directional analysis to understand and explain development toward targetlike use. We therefore incorporate into our multifaceted approach measures of accuracy of forms produced as grammatical objects, their placement relative to a simple finite verb, and object omission. Previous research has yielded findings regarding the morphological, semantic, syntactic, and pragmatic features of the target structure that affect the saliency of specific form-meaning associations in input. We conduct further analyses, beyond that of form-function associations, in order to determine the role such features play in the developing system. Specifically, we examine the extent to which accuracy is predicted by morphological, syntactic, and semantic features. We analyze the semantic features of animacy and transitivity, the morphological features of person, number, gender, case, and homophony, and the syntactic feature of preverbal obligatory placement.

In Chapter 6, we begin our analyses of the effect of specific linguistic features on accuracy of forms produced as grammatical objects in VO and OV contexts. We address the following research questions:

1. What is the effect that the morphological features of person, number, gender, case, and homophony, the semantic features of animacy and transitivity, and the syntactic feature of OV and VO/OV placement have on different levels of L2 learners' and native speakers' appropriate use of object clitic forms?
2. Which morphological, semantic, and syntactic features predict different levels of L2 learners' and native speakers' appropriate use of object clitic forms?
3. What is the effect that the morphological features of person, number, gender, case, and homophony and the semantic features of animacy and transitivity have

on different levels of L2 learners' accurate placement of object clitic forms in $O_{pro}V$ contexts?
4. Which morphological and semantic features predict different levels of L2 learners' accurate placement of object clitic forms in $O_{pro}V$ contexts?
5. What is the effect of the semantic features of animacy and transitivity on different levels of L2 learners' and native speakers' omission of a direct object in OV and VO contexts?
6. Which semantic features predict different levels of L2 learners' and native speakers' omission of direct objects in OV and VO contexts?

1.5 An analysis of input processing

The aim of our study of input processing is to examine changes and developments in learners' processing of the role of agent in $O_{pro}VS$ strings, and to determine if similar sequences of development occur in processing as that which we find in production. If the varying saliency of forms in input does indeed account for the early emergence of some forms in production compared to others, then we would like to see if such variance also manifests itself when meaning is assigned to form in input. We therefore examine the effect of linguistic features on processing by measuring similar variables as we did in our production study.

In contrast to the concept-oriented studies, which rely on production tasks that are as close to spontaneous communication as possible, processing studies rely on highly controlled experimental designs, and the results are understood in terms of accuracy and rate of processing. What these different types of studies have in common, however, is their focus on investigating form-meaning associations (Bardovi-Harlig, 2007, p. 63).

A subgroup of the learners who participated in the production study also participated in our processing study. We performed a controlled experiment for which we created two-sentence strings such that an object pronoun occurred in the second sentence. These second sentences all had the same syntactic pattern, $O_{pro}VS$. Adopting an input processing approach (VanPatten, 2007), we manipulated the linguistic characteristics of the object pronouns. The variables we examined were case (accusative, dative), person (1st, 2nd, 3rd), number (singular, plural), gender (masculine, feminine, unmarked), and homophony (+/-). Additionally, we created a contextual variable in which we varied whether the first nouns in the two sentences were identical. The learners' task was to identify who performed the action of the verb. In other words, they were focused on comprehending the meaning of the sentences. When learners encounter an object pronoun in preverbal position, do they assign it the grammatical role of object or subject (agent)? Do any of the linguistic variables contribute to learners successfully assigning the role of object to a pronoun? And do these variables change over time? The results of our investigation of input processing are presented and discussed in Chapter 7, and they address the following research questions:

1. How accurately do different levels of L2 learners assign the role of agent in $O_{pro}VS$ strings?

2. Does co-referencing the O_{pro} in an O_{pro}VS string with a preceding noun in pre- or postverbal position affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?
3. Does the feature of case (accusative, dative) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?
4. Does the feature of person (1st, 2nd, 3rd) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?
5. Does the feature of number (singular, plural) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?
6. Does the feature of gender (masculine, feminine, unmarked) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?
7. Does the feature of homophony (+/-) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?
8. Which factors predict different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?

1.6 A study of production, placement, and processing

Because the same pool of learners participated in the first two studies, we were able to identify a subgroup for which we could connect their performances across the production and processing tasks. To make these connections we had to align our perspectives on the two data sets—that is, we had to look at the elements that were compatible across the two tasks. We aligned our perspective on the production data set to what we could get from the processing data—that is, we analyzed the video retellings for formal accuracy. Was the direct object pronoun learners produced formally accurate (no matter the syntactic pattern in which it appeared)? Also, we analyzed performance in OV contexts. Did learners accurately place an object pronoun (no matter its formal accuracy) in a preverbal context? We aligned our perspective on the processing data set with what we could get from the production data. In doing so, we were not able to include second person forms in the third study because the production data yielded too few second person forms. The second part of the video retelling successfully yielded first person forms, but as a monologue, it did not yield second person forms. We also did not analyze the gender-unmarked forms in this third study because they overlapped with the dative forms. We also did not include the context variable from the processing study because it has no counterpart in the production and placement data.

In Chapter 8 we explore developments in processing, production, and placement of object pronouns with learners who represent a subset of those who provided data for both our production and processing studies. Our purpose is to uncover relationships and connections between the three sets of processes. The study is guided by the following research questions:

1. Is there a relationship between different levels of L2 learners' development of OVS processing, their accurate production of object pronoun forms, and their accurate placement of a pronoun preverbally in obligatory O_{pro}V contexts?

2. Do the linguistic features that affect different levels of L2 learners' OVS processing also affect morphologically accurate oral production and placement of object pronouns preverbally in obligatory $O_{pro}V$ contexts?
3. Which factors predict different levels of L2 learners' development of OVS processing, their accurate production of object pronoun forms, and their accurate placement of a pronoun preverbally in obligatory $O_{pro}V$ contexts?

1.7 Participants

All participants in all our studies are instructed second language learners, i.e., the classroom was their initial contact with Spanish. All participants were enrolled in undergraduate and graduate-level courses at a large public university in the United States at the time of data collection. Assigning the learners to different developmental levels was determined by performance on a very short grammar test (see Appendix A), their course enrollment at the time of data collection, time spent abroad in a Spanish-speaking country outside of the United States, and professional experience teaching the Spanish language. These language experiences prove critical to our groupings of the participant pool into developmental levels (as they did in Zyzik, 2004, 2006). In the next chapter, we explore the effect of formal instruction on second language acquisition, particularly on developmental stages. We also explore the effect that study abroad experience has on second language acquisition so that we better understand the potential of that experience on our participants. A very important aspect to our research is that the participants of our study of input processing consist of a subset of our main group. The participants in our study of production, processing, and placement consist of a subset of those who participated in the processing study.

1.7.1 Production studies

The participants in the study of production (Chapters 5 and 6) consist of native English speakers learning Spanish as a foreign language (n=98), as well as a control group of native Spanish speakers (n=15). Table 1.1 describes the characteristics of the levels in the production studies.

Table 1.1 Breakdown of L2 developmental levels

Developmental level	Number	Course enrollment	Grammar test – average score (11-point scale)	Time abroad
1	31	S200	4.45	None
2	24	S310	8.21	None
3	25	S310 / S315 / S326 / S425	9.6	1 month +
4	18	S517	10.89	1 semester +

Level 1 represents 31 L2 learners of Spanish enrolled in a third-semester Spanish language course emphasizing the communicative approach to language instruction, and was taken by students wishing to fulfill the foreign language requirement for undergraduate studies. None of the Level 1 learners had spent time in a Spanish-speaking country. Their average score on the grammar test was 4.45/11. Level 2 represents 24 L2 learners enrolled in an advanced grammar and composition course taken by undergraduate students who are studying Spanish as a major or minor area of concentration. This course is equivalent to the fifth semester of language instruction. None of the Level 2 learners had spent time in a Spanish-speaking country. Their average score on the grammar test was 8.21/11. Level 3 consisted of 25 undergraduate L2 learners who were enrolled in various undergraduate courses for Spanish majors at or above the instructional level of Level 2. Importantly all learners assigned to Level 3 had spent at least one month in a Spanish-speaking country. Their average score on the grammar test was 9.6/11. Learners assigned to Level 4 are 18 students engaged in postgraduate study and at the time of data collection were all enrolled in a seminar on language teaching. Additionally, they are all Spanish instructors at their university and so use Spanish professionally. They have all spent at least one semester living and studying/working in a Spanish-speaking country. Their average score on the grammar test was 10.89/11.

The grammar test consisted of 11 items covering various grammatical points. Test scores were submitted to a one-way analysis of variance (ANOVA) to confirm the different groupings. The results of the ANOVA yielded a significant main effect for Level ($F_{3, 94} = 75.259$, $p < .000$). The results of a post hoc Scheffé's indicated that there were three groupings: Level 1 versus Level 2 versus Level 3 and 4. The grammar test was simply not extensive enough to distinguish between Levels 3 and 4.

Our next analyses of participant characteristics focused on sociolinguistic variables. As seen in Table 1.2, we gathered background information on each participant: the number of years they had studied Spanish and the time they had spent abroad. We submitted these data to separate one-way ANOVAs. The ANOVA tests revealed a significant main effect for the number of years studying Spanish ($F_{3,94} = 31.526$, $p < .000$) and for time spent abroad ($F_{3,94} = 53.79$, $p < .000$). A post hoc Scheffé's revealed that Level 4 was distinguished from Levels 1, 2 and 3 as having spent significantly longer studying Spanish than the others. There were no significant differences in years studying Spanish for Levels 1, 2 and 3. A post hoc Scheffé's revealed that there was no significant differences between Levels 1 and 2 for time spent abroad but that these two levels were significantly different from Level 3, which was significantly different from Level 4. The Level 4 learners are distinguished by their greater number of years studying Spanish and their more extensive experience abroad.

1.7.2 Processing study

The participants in the study of processing (Chapter 7) consist of native English speakers learning Spanish as a foreign language (N=72). Table 1.3 describes the characteristics of the levels in the processing study. The scores on the grammar test

Table 1.2 Sociolinguistic variables distinguishing L2 levels

Developmental level	Gender (M/F)	Average age	Average # years studying Spanish	Average time abroad (months)
1	14/17	19.75	5.23	0
2	7/17	21.75	5.83	0
3	9/16	20	6.8	3.91
4	7/11	25	11.65	14.8

were submitted to a one-way ANOVA. The results of the ANOVA revealed a significant main effect for level ($F_{3,68}$ = 52.713, p = .000). The results of a post hoc Scheffé's revealed only three groupings: Level 1, Level 2, and Levels 3 and 4.

We also analyzed sociolinguistic variables for this set of participants. The information is presented in Table 1.4. We conducted two separate one-way ANOVAs for number of years studying Spanish and time spent abroad. The results of the ANOVA revealed a significant main effect for number of years studying Spanish ($F_{3,68}$ = 11.32, p =. 000). A post hoc Scheffé's showed two groupings: Levels 1, 2 and 3 together and Level 4 separate. The results of the second ANOVA revealed a significant main effect for time spent abroad ($F_{3,68}$ = 90.269, p = .000). A post hoc Scheffé's revealed three groupings: Levels 1 and 2 together and Levels 3 and 4 apart. The Level 4 learners are distinguished by their greater number of years studying Spanish and their more extensive experience abroad.

1.7.3 Production, placement, and processing study

The participants in the production, placement, and processing study (Chapter 8) are all native speakers of English who initially learned Spanish in a classroom setting

Table 1.3 Breakdown of L2 developmental levels

Developmental level	Number	Course enrollment	Grammar test – average score (11-point scale)	Time abroad
1	16	S200	4.25	None
2	20	S310	8.35	None
3	25	S310 / S315 / S326 / S425	9.68	1 month +
4	11	S517	10.72	1 semester +

Table 1.4 Sociolinguistic variables distinguishing L2 levels

Developmental level	Gender (M/F)	Average age	Average # years studying Spanish	Average time abroad (months)
1	8/8	20.88	4.56	0
2	7/13	19.5	6.15	0
3	9/16	20	6.8	3.91
4	5/6	25.27	10	12.36

(*N*=59). Their course enrollments and grammar test scores are given in Table 1.5. We submitted the scores on the grammar test to a one-way ANOVA, the results of which are consistent with the previous two. We found a significant main effect for level ($F_{3,55}$ = 41.338, p = .000), but the post hoc Scheffé's showed three groupings: Level 1, Level 2, and Levels 3 and 4 together.

We then examined the sociolinguistic variables of number of years studying Spanish and months spent abroad and present them in Table 1.6. We submitted these figures to two separate one-way ANOVAs. The results of the ANOVA revealed a significant main effect for years studying Spanish ($F_{3,55}$ = 9.129, p =. 000) with the post hoc Scheffé's showing two groupings: Level 4 separate from Levels 1, 2, and 3 together. The results of the other ANOVA revealed a significant main effect for time spent abroad ($F_{3,55}$ = 59.4, p = .000) with the post hoc Scheffé's yielding three groupings: Levels 1 and 2 together, Level 3, and Level 4. Once again the Level 4 learners are distinguished by their longer time studying Spanish and their more extensive time spent abroad.

1.8 Textbook materials on object pronouns

Because our participants are instructed learners with particular course enrollments and some are instructors we are able to provide information about their classroom exposure to object pronouns, thereby understanding better the context of learning. Tables 1.7 and 1.8 describe the content of three textbooks, first for direct object pronouns and then for indirect object pronouns. Although we do not include participants who are studying beginning Spanish, all our Level 4 learners were teaching beginning Spanish at the time of data collection. All our Level 1 participants were

Table 1.5 Breakdown of L2 developmental levels

Developmental level	Number	Course enrollment	Grammar test – average score (11-point scale)	Time abroad
1	16	S200	4.25	None
2	17	S310	8.53	None
3	18	S310 / S315 / S326 / S425	9.33	1 month +
4	8	S517	10.75	1 semester +

Table 1.6 Sociolinguistic variables distinguishing L2 levels

Developmental level	Gender (M/F)	Average age	Average # years studying Spanish	Average time abroad (months)
1	8/8	20.88	4.56	0
2	7/10	19.41	6.11	0
3	6/12	20.61	6.89	4.01
4	4/4	26.13	10.25	12.13

enrolled in intermediate Spanish and the Level 2 learners were all enrolled in fifth semester grammar/composition courses.

The beginning level textbook is the book from which all our Level 4 participants were teaching (VanPatten, Ballman, and Lee, 2006). The Level 1 participants may or may not have taken this course depending on their scores on a placement examination. The materials presented first and second person direct and indirect object pronouns together. The next day the materials covered third person direct object pronouns and then, in the next chapter, third person indirect object pronouns were presented. Gender agreement was not mentioned in the explicit information but gender concordance was seen in the examples given. The explanation involved presenting subject and object pronouns and distinguishing, to a certain degree, the function of an indirect versus direct object. The learners were given explicit information about the syntax of object pronouns. Homophony was not, however, mentioned. Very quickly all forms and all persons appeared in the instructional materials and very early (i.e. Chapters 4 and 5 of 17). It should be noted that practice activities included both processing and production activities.

The intermediate level textbook is the book that the Level 1 learners used in their Spanish language course (Lee, Young, Bransdorfer, and Wolf, 2005). The working assumption of the materials is that this presentation of direct and indirect object pronouns was not the learners' introduction to the topic, but rather a review. Direct

Table 1.7 Explicit information on direct object pronouns

	Beginning Spanish (pre Level 1 but taught by Level 4)	**Intermediate Spanish (Level 1)**	**Advanced Spanish (Level 2)**
Case	yes	no	no
Person	yes	yes	no
Number	yes	yes	examples
Gender	examples	yes	examples
Homophony	no	no	no
Syntax	yes	yes	examples

Table 1.8 Explicit information on indirect object pronouns

	Beginning Spanish (pre Level 1 but taught by Level 4)	**Intermediate Spanish (Level 1)**	**Advanced Spanish (Level 2)**
Case	yes	no	no
Person	yes	yes	examples
Number	yes	yes	examples
Gender	not applicable	not applicable	not applicable
Homophony	not applicable	not applicable	not applicable
Syntax	yes	yes	examples

and indirect object pronouns were presented separately but in the same chapter. The object pronouns were presented without reference to any other pronouns in the pronominal system. The features of person, number and gender were explicitly explained and included in examples. The learners were given explicit information about the syntax of object pronouns. Homophony was not, however, mentioned. It should be noted that practice activities included both processing and production activities.

The textbook used in what is commonly called the "advanced grammar" course assumed that the grammatical content was for review (Dominicis and Reynolds, 2007). The book also contained readings, vocabulary sections, and writing activities, so it was clearly more than a grammar book, as its subtitle indicates. Direct object pronouns were not formally presented in this book. In Chapter 3 of 14, a section on the redundant use of the direct object pronoun appeared. It focused only on third person forms in sentences where the full NP direct object begins the sentence. The examples provided contained different numbers, genders, and syntactic orders. The indirect object pronouns appeared in Chapter 3 as well in the context of verb constructions in which the affected entity is the indirect object, not the grammatical subject. This class of verbs is quite productive in Spanish. Person, number, and syntactic patterns are given in examples. The treatment of object pronouns at this level is not systematic, as it is in previous courses, but quite directed as specific exemplars of pronoun use. It should be noted that practice activities contained only production activities.

Except for the homophony of direct object pronouns, the participants in the study would have received explicit information about all the linguistic features we examine in our studies.

1.9 The Spanish direct object: What learners encounter in the input

In this section we provide a description of the Spanish direct object, and specifically, clitic pronouns, based on their anaphoric function as well as their morpho-syntactic behavior. We also provide a brief summary of the sociolinguistic variation in the use of direct object clitic pronouns in Peninsular Spanish. The purpose is to demonstrate the acquisitional challenges L2 learners are faced with as they associate functions with the target structures in the input to which they are exposed. As Zyzik (2004) asserted, "As a result of their unique nature, clitics provide an interesting arena for L2 research, since the ability to use clitics productively necessarily entails mastery of syntax (i.e. word order, argument structure) and morphology…" (p. 51).

1.9.1 Function

In Spanish, the grammatical role of direct object corresponds with the semantic role of patient. The patient refers to an argument that undergoes a process, or that is targeted

by some action of an agent, as specified by the event encoded by a verb. In (1), for example, *John* is the direct object (and semantic patient) of the verb, whereas *Mary* is the subject (and semantic agent) of the verb. That is, *John* undergoes the process of being criticized by *Mary*. In (2), *the house* is the patient, which undergoes the process of being painted by *the children* (the agent).

(1) *Mary criticó a John por su falta de preparación para el examen.*
"Mary criticized John for his lack of preparation for the exam."
(2) *Los niños pintaron la casa.*
"The kids painted the house."

Several different forms may encode the direct object. The examples indicated above each consist of a direct object encoded by a full noun phrase. At the discourse level, however, the direct object is typically encoded by an anaphoric clitic pronoun, once it has been previously established as a topic, and when there is no ambiguity as to which preceding argument is the antecedent of the pronoun. In (3), the direct object ("book") is established as a topic in the form of a full NP, followed by its anaphoric direct object clitic pronoun ("it") in the subsequent phrase.

(3) *Compré un libro anoche y lo leí esta mañana.*
I bought-a book-last night-and-it-I read-this morning
"I bought a book last night and read it this morning."

In (3) we see that the word order is different in each verbal phrase, in which the object follows the verb in the first phrase (VO), whereas it precedes the verb in the second phrase (OV). The different word order patterns are constrained on a discursive level. In Spanish new information is placed in the postverbal position, whereas known information is placed in the preverbal position. The different positions serve the pragmatic function of contrasting old from new information (Silva-Corvalán, 2001, p. 174). In addition to varying word order patterns, this discourse constraint also affects syntax such that when a full noun phrase as direct object is placed in the preverbal position, it is doubled with its corresponding clitic pronoun. The phenomenon is known as clitic doubling, and is exemplified in (4).

(4) *El libro lo leí anoche.*
The book-it-I read-last night
"I read the book last night."

Clitic doubling also occurs when a stressed pronoun is used. In other words, it is typically ungrammatical to use one without a clitic pronoun (Zyzik, 2004). In (5) we see an example of clitic doubling, whereas in (6) we see an ungrammatical lack of clitic doubling.

(5) *Ella no me dio el libro a mí.*
She-[neg.]-to me-gave-the book-to me.
"She didn't give the book to me."
(6) **Ella no dio el libro a mí.*
She-[neg.]-gave-the book-to me
"She didn't give the book to me."

Clitic doubling is most common, however, with indirect objects, such as in (7), regardless of the positioning of the full noun phrase relative to the verb, whereas clitic doubling with postverbal direct objects, as shown in (8), is less frequent, and is used mainly in Rioplatense Spanish (Suñer, 1989).

(7) *Yo le di el dinero a James.*
I-to him-gave-the money-to James
"I gave the money to James."

(8) *Lo ayudé a Ramón anoche.*
Him-I helped-Ramón-last night
"I helped Ramón last night."

There are also contexts in which the omission of any form at all may characterize the direct object. Native speakers use omission to convey a partitive interpretation of an utterance (Clements, 1994; Zyzik, 2008), which is provided in (9).

(9) *¿Quieres pan? – No gracias, ya Ø tengo.*
You want-bread – No thank you-already-I have
"Do you want some bread?" – "No thank you, I already have some."

In summary, Spanish speakers encode the grammatical role of direct object using a variety of forms. Direct object clitic pronouns are anaphors that may be used once the direct object has been established in discourse. Their use is constrained by discourse pragmatics, while their duplication with a full noun phrase is syntactically constrained (and pragmatically, as we will see below, when used with strong pronouns), or based on sociolinguistic variation. The omission of both a full noun phrase and its corresponding clitic pronoun is constrained semantically, and may occur to convey a partitive interpretation of a direct object.

It is important to also note, however, the functions that direct object clitic pronouns cannot perform. Doing so requires a working definition of the term "clitic." As Zyzik (2004) pointed out, the definition of a clitic is a source of a wide range of theoretical linguistic debate. Similar to her study, the present one will be concerned with the observable features of clitics in Spanish. In that sense, Zyzik (2004) defined a clitic as "generally understood to be a linguistic element that cannot stand on its own, and thus must 'lean' on a host word" (pp. 6–7). We will adopt here the same definition that she used, consistent with earlier definitions of a clitic as "an element intermediate between a word and an affix, bound to an adjacent word, loosely in syntax, but very tightly in phonology" (Wanner, 1987, p. 23). In other words, a clitic is placed adjacent to its host verb, which may precede or follow it. It cannot occupy a position in a sentence independently as a word without its host. In addition, clitics typically lack phonological stress. Therefore, they are not used to create contrast with another argument through emphasis, which adds further insight into its doubling with strong pronouns, as in (5). Strong pronouns are tonic, and therefore may be used emphatically, whereas clitics may not be. In (10) we see the use of a strong pronoun to convey emphasis, whereas in (11) we see an ungrammatical use. The location of phonological stress in each sentence is indicated in bold.

(10) *No me diste el dinero a **mí**, se lo diste a **él**.*
[neg.]-me-you gave-the money-to me-him-it-you gave-to him
"You didn't give the money to ME, you gave it to HIM."
(11) **No me diste el dinero.*
[neg.]-me-you gave-the money
"You didn't give the money to ME."

Clitics cannot be separated from the host verb, as (12) exemplifies, nor can two clitics that are used together be separated by an intervening conjunction, as (13) indicates.

(12) **Los no compré.*
Them-[neg.]-I bought
"I didn't buy them."
(13) **María lo y la ayudó.*
Maria-him-her-helped.
"María helped him and her."

Furthermore, the order of clitics is constrained by the features of person and case when more than one object clitic is produced. The indirect object (dative) clitic (*se*) must precede the direct object (accusative) clitic (*lo*) as in (10). In addition, reflexive forms precede dative forms, as in (14).

(14) *A Julia se le ocurre una idea.*
To Julia-[refl.]-her-occurs-idea
"An idea occurs to Julia."

With regard to person, the second person forms must precede first person forms, as in (15), and the third person forms will appear last in a combination of forms, as in (16).

(15) *No te nos mueras.*
[neg.]-you [refl.]-us-you die
"Don't die on us."
(16) *Me lo enviaste el regalo a mí.*
Me [dat.]-it [acc.]-sent-the present-to me
"You sent the present to me."

In summary, the function of direct object clitic pronouns is mainly anaphoric, such that their use is governed by discourse-pragmatic factors. Their inherent lack of phonological stress prevents their emphatic use to create contrast with other arguments, while their status of being neither a word nor an affix constrains their position in a sentence. They cannot be used as independent words, and their position is limited to specific sequencing with other object clitics based on case and person. Consequently, L2 learners are exposed to input in which clitic pronouns vary in terms of their discourse-pragmatic function and in which their position is syntactically constrained. The following section will discuss direct object clitic pronouns from a morphological perspective, followed by an overview of their variable placement in a sentence, both of which add further obstacles to L2 learners as they map meaning to the linguistic forms attended to in input.

1.9.2 Form

Table 1.9 provides the paradigms of Spanish object clitic pronouns, including direct objects, indirect objects, and reflexive forms. While the present study's focus is on the L2 acquisition of direct object clitic pronouns, it is important to consider their morphological inflections relative to the other object pronouns, because the differential complexity of form-function mapping of individual forms across the three grammatical roles are interrelated; the complexity of one form may result in the over-reliance by L2 learners on another, less-complex form (VanPatten, 1984; 1990).

As Table 1.9 reveals, the level of morphological complexity of the different forms varies from one person to another. The only inflection in the first person forms is that of number. In addition, the first person singular form *me* ("me") and plural form *nos* ("us") function as reflexive clitic pronouns, indirect object clitics, as well as direct object clitics. Examples of their use in the three different grammatical roles are provided in (17), (18), and (19), respectively, in which the first person singular form is used.

(17) *Siempre me hablo cuando estoy nervioso.* [reflexive]
"I always talk to myself when I'm nervous."
(18) *Mi papá siempre me daba buen consejo.* [indirect object]
"My father always gave me good advice."
(19) *Mi hermana me criticó ayer por lo que dije.* [direct object]
"My sister criticized me yesterday for what I said."

In the first person system the forms *me* and *nos* always represent an object pronoun. Even though they may be used as different types of object pronouns, they are not used to encode other grammatical functions. Consequently, L2 learners are exposed to a transparent, one-to-one form-function association with *me* and *nos*. As we will see, this is not the case for all object clitic pronouns.

Similar to the first person system, the second person object pronouns are not inflected for case. They are slightly more complex than the first person forms due to the dialectal variation that occurs. In Latin American and Peninsular dialects, the second person singular reflexive form is *te* ("yourself"), which is also used as an indirect and direct object pronoun ("you"). The second person plural form, however, varies by dialect. In Peninsular Spanish, the form *os* (meaning "yourselves" as a reflexive pronoun, and "you all" as an indirect and direct object pronoun) is used in all three categories, whereas in Latin American Spanish, the second person plural form

Table 1.9 Overview of object clitic pronominal forms in Spanish

Person	**'Reflexive'**		**Indirect objects**		**Direct objects**	
	(sing.)	**(plur.)**	**(sing.)**	**(plur.)**	**(sing.)**	**(plur.)**
1st	*me*	*nos*	*me*	*nos*	*me*	*nos*
2nd	*te*	*se (os)*	*te*	*les (os)*	*te*	*los/las (os)*
3rd	*se*	*se*	*le/se**	*les/se**	*lo/la*	*los/las*

**Note. se* before *lo/la/los/las*

se is used as the reflexive pronoun ("yourselves"), and *les* is used as the indirect object pronoun ("you all"), and *los* or *las* are used as the direct object pronoun ("you all").

The third person system is the most complex, in that the forms vary in terms of their morphological inflections for case, number, and gender. The form *se* ("himself," "herself," "themselves") is used as a singular and plural reflexive pronoun. The indirect object third person forms *le* ("him," "her") and *les* ("them") are inflected for number and case, but not gender. In addition, the forms *le* and *les* are replaced with *se* when they precede a third person direct object form. The direct object third person forms are the most morphologically complex of the third person object pronouns in that they are inflected for the case, number, and gender of their referent. They consist of the masculine-singular form *lo* ("it," "him"), the feminine-singular form *la* ("it," "her"), the masculine-plural form *los* ("them"), and the feminine-plural form *las* ("them"). In addition, unlike all of the other object clitic pronouns, the direct object forms *lo*, *la*, *los*, and *las* are also used to encode the grammatical functions of definite articles and complimentizers in relative pronoun constructions. In other words, with third person direct object clitic pronouns L2 learners are exposed to multifunctional forms in the L2 input, and need to map them to the different functions of direct objects, definite articles, or relative pronouns, whereas the other pronominal forms (*me*, *te*, *nos*, *le*, *les*, and *se*) always encode object clitics in the input. The different functions encoded by direct object clitic pronouns are provided in (20), using the form *la*, which is indicated in bold in each instance of its use.

(20) *Me encanta la pizza de Chicago, la que comí ayer, y voy a comerla otra vez en el futuro.*
To me-is great-the [def. art.] pizza of Chicago-which [rel. pro.]-
I ate-yesterday-and I am going to eat-it [direct object] again-in the future
"I love Chicago-style pizza, which I ate yesterday, and I'm going to eat it again in the future."

As the above overview of clitic pronoun forms indicates, L2 learners are confronted with a variety of challenges when mapping function with forms in the input and choosing which forms to produce in specific contexts. As Chapter 2 will explain, previous research has identified the early acquisition of the first and second person deictic forms, and has only identified the emergence of specific third person forms in interlanguage, without identifying the subsequent development of the third person system (see, for example, Andersen, 1983, 1984; VanPatten, 1990). Furthermore, in addition to distinguishing between the case, person, number, and gender of each form, L2 learners need to distinguish between the different grammatical functions encoded by third person direct object clitic pronouns. Next we will provide an overview of the variable word order of Spanish, as it relates to the placement of the target structure relative to a (non)finite verb, followed by brief comments regarding their sociolinguistic variation.

1.9.3 Word order

In the previous sections, examples were provided in which the placement of clitic pronouns varied from one example to another. Some examples consisted of OV word order, whereas others consisted of VO word order. In addition, the specific sequence of a combination of clitics used with the same verb was described, based on the syntactic constraints of the morphological inflections for case and person. Here we comment on the variable word order patterns characteristic of Spanish, depending on the (non) finite nature of the verb, which contributes further complexity to the acquisition process (González, 1997; VanPatten, 1996, 2004).

In Spanish, object clitics immediately precede a finite indicative or subjunctive verb form, as well as negative imperative verb forms, examples of which are provided in (21) and (22), respectively (target phrases are underlined):

(21) *Leí el ensayo ayer y lo corregí esta mañana.*
I read-the essay-yesterday-and-it-I corrected-this morning
"I read the essay yesterday and I corrected it this morning."
(22) *Tomás, ¡no lo comas!*
Tomás-[neg.]-it-eat
"Tomás, don't eat it!"

Clitic pronouns are attached to the end of a finite verb in contexts of an affirmative imperative verb form.

(23) *¡Cómelo!*
"Eat it!"

And they may be attached to the end of a present participle or a non-finite verb in a periphrastic construction, exemplified in (24) and (25), respectively.

(24) *¿La naranja? Estoy comiéndola ahora.*
"The orange? I'm eating it now."
(25) *Escribí un poema pero no voy a leerlo en voz alta.*
"I wrote a poem but I don't want to read it out loud."

Examples (24) and (25) are unique, however, because the postverbal position of the clitic is not obligatory. This is known as clitic climbing, and allows the optional placement of the clitic in either the preverbal or postverbal position. Therefore, examples (26) and (27) provide the corresponding preverbal placement of the clitics in examples (24) and (25):

(26) *¿La naranja? La estoy comiendo ahora.*
The-orange? It-I am eating-now
"The orange? I'm eating it now."
(27) *Escribí un poema pero no lo voy a leer en voz alta.*
I wrote-a poem-but-[neg.]-it-I am going to read-out loud
"I wrote a poem but I'm not going to read it out loud."

Not all constructions allow clitic climbing; the option is most often dependent on the verb used. In addition, clitic climbing is not permitted when another element

intervenes between the clitic and the verb. Verbs that are often cited as not allowing clitic climbing are *insistir en* ("to insist"), *asegurar* ("to make sure"), *soñar con* ("to dream"), and *parecer* ("to seem") (Zyzik, 2004: p. 36). What is significant to this overview is that Spanish word-order patterns vary. While SVO order is the canonical word-order pattern, it is not the fixed pattern (Silva-Corvalán, 2001). This presents L2 learners with yet another obstacle when mapping function to forms in the input. A variety of studies working out of the framework of the Model of Input Processing have provided evidence of the tendency of L2 learners to associate the first noun in an incoming string with agency, regardless of the varying word order patterns in Spanish (see, for example, Houston, 1997; LoCoco, 1987; Malovrh, 2006; VanPatten, 1984). There has been no empirical evidence, however, revealing to the extent non-nativelike comprehension has on L2 production.

1.9.4 Sociolinguistic variation

While the present study does not focus specifically on the effects of sociolinguistic variation on the L2 acquisition process, an overview of Spanish clitic pronouns would not be complete without touching on the phenomena known as *leísmo*, *laísmo*, and *loísmo*, which characterize clitic pronouns in Peninsular Spanish, as well discussing the phenomenon of object omission. For a complete description of the sociolinguistic variables associated with each phenomenon, the reader is referred to Schwenter (2006), Fernández-Ordóñez (1999), and Silva-Corvalán (2001), to name a few. Here, we will provide a description of each variant, with examples, as a means to demonstrate the additional complexities with which L2 learners may be confronted as they attend to linguistic forms in the input.

Leísmo refers to the use of the indirect object form *le* to refer to masculine animate referents, regardless of their grammatical case, which is accepted by the Royal Academy (Silva-Corvalán, 2001, p. 178), as opposed to other forms of *leísmo* that are not accepted. For example, the use of *le* with an animate feminine referent and the use of the plural form *les* in place of the direct object forms *los* and *las* are not accepted. Regardless of their acceptance by the Royal Academy, each variant can be found in native Spanish. An example of the variant accepted by the academy is provided in (28), whereas an example of a variant not accepted is provided in (29).

(28) *Roberto lucha con la matemática, y por eso voy a ayudarle.*
"Roberto struggles with math, and that is why I'm going to help him."
(29) **Suzana es buena amiga. Le invité a la fiesta.*
"Suzana is a good friend. I invited her to the party."

Leísmo has also been documented in South American varieties, such as Quiteño Spanish (Suñer and Yépez, 1988) and Paraguayan (Lipski, 1994); it is not strictly a Peninsular phenomenon.

In addition to *leísmo*, there are other patterns of language use known as *loísmo* and *laísmo* in certain Spanish varieties. *Loísmo* refers to the use of the direct object clitic pronoun *lo* in indirect object contexts, an example of which is provided in (30), and

laísmo refers to the use of the direct object clitic pronoun *la* in indirect object contexts, as in (31). While these patterns are much less frequent than *leísmo*, they have been documented in Peninsular as well as Latin American Spanish. Carevedo (1999), for example, noted the use (though limited) of *loísmo* in Andean dialects.

(30) *Armando está en Bloomington. Lo hablé ayer.*
"Armando is in Bloomington. I spoke to him yesterday."
(31) *La pedí a Marta que fuera al banco.*
"I asked Marta to go to the bank."

In addition to the variation described above, there exists extensive research describing and testing the contexts in which object omission occurs in native Spanish. Results point to a wide variety of semantic, pragmatic, and sociolinguistic features determining object omission. Campos (1986) revealed that objects tend to be omitted by native speakers when their referent is non-specific; Schwenter (2006) and Zyzik (2008) noted that omission tends to occur in ditransitive as opposed to monotransitive verb constructions; and Ortiz-López and Guijarro-Fuentes (2009) found that the semantic features of +human, +animate, +definite, and +specific all governed object omission among native speakers and L2 learners representing various sociolinguistic profiles. With regard to sociolinguistic variation, researchers have documented a high frequency of object omission among monolingual and bilingual varieties of Latin America (Lipski, 1994). Yet it is unclear to what extent sociolinguistic variables influence it. Choi (1998, 2000), for example, found that omission ocurred in contexts of [-person] across all levels of social class, and among monolingual and bilingual speakers. Ortiz-López and Guijarro-Fuentes (2009) found that their monolingual, bilingual, and L2 speakers all showed sensitivity to the semantic features noted above, and concluded that such internal semantic features were more significant to object omission than other external sociolinguistic features. In our study, we focus on the semantic features predicting object omission, and we reserve further analyses focusing on contact-induced change and variationist L2 approaches to future research.

1.9.5 Summary

The above overview of Spanish direct object clitic pronouns provides a description of their functions and various forms, and contrasts them with other object clitic pronouns. The most morphologically complex of the forms reviewed are those of the third person direct object system. There are several factors that distinguish them from other forms. First, they are the only forms that are morphologically inflected for case, person, number, and gender. Second, in addition to encoding the grammatical role of direct object, they also encode definite articles and relative pronouns, thus requiring that L2 learners map a variety of functions to a variety of forms in the input. This is especially the case for advanced level learners who have experienced a variety of teachers and who have studied and travelled in the Spanish-speaking world. Third, as a result of sociolinguistic variation, L2 learners may be exposed to native-speaker input in which third person direct object forms are used in indirect object contexts, and vice

versa, and in which they are omitted. Finally, all object clitic pronouns (not just the third person system) inherently lack phonological stress and are placed variably in the word order of a sentence.

The overview of Spanish direct object makes it clear that L2 learners are confronted with a variety of challenges; in addition to deciphering the various inflections for case, person, number, and gender in clitic pronouns, and mapping third person direct object clitic pronouns to multiple grammatical functions, L2 learners also may be exposed to native-speaking input in which the use of the third person system direct and indirect object forms vary. The complexities in the form-function mapping of Spanish direct object pronouns contribute to what Lee (2003) referred to as the "acquisitional challenges" with which L2 learners are confronted as they map functions to the forms they are exposed to in the input.

All the learners we examine can be characterized as instructed second language learners, those whose fundamental (early) contact occurred in classrooms. The learners who participated in our investigations represent a wide range of language proficiency and language experience. At the one end are learners who are enrolled in their third semester of Spanish language study at the university level. Their contact with Spanish has been limited to the classroom; none of them had any study abroad experience. At the other end are a group of non-native Spanish-language teachers who are graduate students and hence graduate teaching assistants. All developed their Spanish in classrooms but they all had study abroad experience. In between we have students enrolled in a variety of Spanish courses that count for the major and minor in Spanish. We divided this group of students according to study abroad experience. Those with such experience were placed at Level 3 and those without it at Level 2. This wide range in language proficiency and language experience allows us to explore the acquisition of object pronouns in Spanish from a developmental perspective. Because they are instructed learners we explore the effect of formal instruction on second language acquisition in the next chapter. Because an important difference between the learners is study abroad experience we also explore the effect of study abroad experience on second language acquisition in the next chapter.

Part Two

Previous Research Related to Learning Context and Object Pronouns

2

The Effect of Instruction and Study Abroad on Second Language Acquisition

In his much-cited 1983 review of research on the effect of instruction in second language acquisition, Long states: "Of the many important questions facing the language teaching professional, the most basic must be: Does instruction make a difference?" (1983, p. 359). In the first part of this chapter, we present the results of reviews of research that have addressed the question in absolute and relative terms (e.g., Long, 1983; Norris and Ortega, 2000). We then examine this question from an acquisition perspective, referring to the rate of second language development, the ultimate success or level attained by instructed versus non-instructed learners, and the route of second language development (e.g. Doughty, 2003; Ellis, 1985, 1994; Larsen-Freeman and Long, 1991; Long, 1988). Our greatest concern in this chapter is on the route of second language development as our purpose in this book is to explore stages of development for object pronouns in L2 Spanish for instructed second language learners. Research on the effect of instruction on developmental route has focused on two types of investigations, those of morpheme acquisition orders and those of developmental sequences. We present the results of L2 research on morpheme acquisition orders for children and adults and then present the results focusing specifically on the acquisition of Spanish (van Naerssen, 1986). We follow this by presenting the results of research on the effect of formal instruction on developmental sequences and provide an example from the L2 acquisition of Spanish. The acquisition of Spanish copula, particularly *ser* and *estar*, has been researched in classroom and non-classroom contexts.

Study abroad experience is the crucial difference between the upper and lower levels of our subject population. The study abroad experience is one that mixes intensive or extensive instruction in the host country in the target language and exposure to the target language in communicative, non-classroom or naturalistic settings with a greater variety of proficient speakers than a classroom learner would experience. In the second part of this chapter, we focus on the study abroad context of learning by first contrasting the classroom and study abroad contexts. We then present the findings on the effect of study abroad on the second language development of Spanish with particular attention paid to syntactic development (e.g. Collentine and Lafford, 2006; Lafford, 2006).

2.1 The absolute and relative effects of second language instruction

To assess the overall effects of second instruction, Long (1983) reviewed twelve studies that attempted to address the issue. These studies compared populations whose exposure to the language was classroom only (instruction), non-classroom only (exposure), or a combination of the two environmental conditions (instruction + exposure). Five types of comparisons were made. First, studies that compared equal amounts of instruction and exposure found no differences between the groups. The lack of difference between the groups indicates that instruction is beneficial for learners who have no other opportunities for exposure to the target language. Second are studies that varied the amount of instruction and the amount of exposure, of which there are four types: differing amounts of instruction and exposure with the same total amount of both; differing amounts of instruction with the same amount of exposure; differing amounts of exposure with the same amount of instruction; and differing amounts of instruction and differing amounts of exposure. The results of these studies do not overwhelmingly lead one to conclude that the overall effect of instruction is superior to exposure only. Yet, Long believes about these different studies that there are among them "…several hints of possible benefits for instruction…" (Long, 1983, p. 365), for example:

1. "…more instruction predicts higher proficiency *due to a genuine effect for instruction*…" (1983, p. 370, emphasis original)
2. "Studies of [different types], taken together would suggest that more instruction can also be more beneficial than more exposure…" (1983, p. 372)
3. "Each independent comparison could either be showing an effect for more instruction or more exposure, or for more total opportunity for SLA through more total instruction plus exposure." (1983, p. 374)

In the end Long adopts an optimistic position to state that there is "considerable evidence to indicate the SL instruction does make a difference" (Long, 1983, p. 374) and that the effect of instruction is stronger than the effects for exposure (in five of the twelve studies). He concludes that the effect of instruction holds for children as well as adults, across beginning, intermediate, and advanced level learners, on integrative assessment tasks as well as discrete-point tests, and in acquisition-rich and acquisition-poor environments.

Norris and Ortega (2000) performed a quantitative meta-analysis of the findings from 49 empirical investigations on the effectiveness of L2 instruction in which the effect of focused instruction was compared to that of a control or baseline/comparison group receiving simple exposure and/or simple communication. They use the term "focused" to indicate that a particular linguistic feature was taught and, therefore, changes in performance measured. They addressed the question of the effectiveness of L2 instruction versus simple exposure or meaning-driven communication by calculating the average change in standard deviations and the average effect size associated with instruction. First, they note that, on average, "…L2 instructional treatments

induced 1.66 standard deviations of target-oriented change in L2 ability or knowledge. Although findings across studies were heterogeneous, the substantial magnitude of this average pre- to post-treatment change … suggests that instructional treatments are quite effective…" (Norris and Ortega, 2000, p. 479). Their second analysis yielded a mean effect size of 0.96 or nearly one standard deviation, where 0.80 is considered a large effect size. They state, "…not only does focused L2 instruction make a consistently observable difference that is very unlikely to be attributable to chance, but it also seems to make a *substantial* difference" (Norris and Ortega, 2000, p. 480, emphasis added).

Their review also sought to evaluate the relative effectiveness of different types and categories of L2 instruction. Instructional treatments were categorized according to whether or not there was integration of form and meaning. Integrating form and meaning characterizes Focus on Form (FonF) instruction whereas the lack thereof characterizes Focus on Forms (FonFS) instruction. They also categorized treatments according to whether or not rule explanation or attention to L2 rules was incorporated into the treatment yielding explicit versus implicit instruction. Their analysis revealed that both FonF and FonFS instructional treatments were equally effective, yielding effect sizes of almost one standard deviation. Their analysis also revealed a superior effect for explicit instructional types. "The average observed effect for explicit treatments (d = 1.13) differed by more than half a standard deviation unit from the average effect for implicit treatments (d = 0.54)…" (Norris and Ortega, 2000, p. 482).

Three other findings emerged from their analysis that relate to outcome measures, length of instruction, and durability of instructional effects. A variety of outcome measures have been used to test the effect of L2 instruction, for example, metalinguistic judgments, selected response (i.e. multiple choice options), constrained constructed response (e.g. conjugate a verb form), and free constructed response (e.g. composition or video retelling). Different effect sizes are associated with these different categories of outcome measures and would, therefore, affect interpretation about the effectiveness of a treatment. But, importantly, "…outcome measure types probably did not account for overall differences observed among different instructional treatment types…" (Norris and Ortega, 2000, p. 487). Norris and Ortega divided the length of instruction into two categories: treatments lasting two hours or less and treatments lasting three hours or more. While they find a slight superior effect for the shorter treatment length, they believe that too many intervening (moderator) variables contribute to the finding to make it trustworthy. Finally, they considered the durability of the effect of instruction. They found that, overall, the effect of instruction lasts beyond the immediate post-test but that there was a gradual loss of or deterioration in instructional effect over time, with longer-term treatments (three hours or more) losing less than shorter-term ones (two hours or less).

Does instruction make a difference? Based on the reviews Long (1983) and Norris and Ortega (2000) conducted, we can answer in the affirmative and that instruction makes a substantial difference. To summarize, it appears that different types of instruction are effective, that different measures may color our interpretation of instructional effects, but that a variety of measures indicate a positive effect for instruction, that the length of instruction may be a factor to consider, and that the effect of instruction is durable but subject to gradual deterioration.

2.2 The effect of instruction on second language acquisition

Ellis (1985) reviewed the research on the effect of instruction from the perspective of second language acquisition. To do so, he viewed second language acquisition in terms of the route of development, the rate of development, and learners' ultimate attainment or success in developing toward native- or targetlike competence. (Similar treatments incorporating the constructs of route, rate, and success can be found in Doughty, 2003; Ellis, 1985, 1994; Larsen-Freeman and Long, 1991; and Long, 1988.)

2.2.1 Rate/success of L2 development

The research on the effect of instruction that compares instruction, exposure, and instruction + exposure groups (e.g. Long, 1983) shows that instruction groups are superior to exposure groups. These results constitute the first argument that instruction speeds up learning. Additional research has emerged attesting to the effect of instruction on rate/success. This work examined teaching marked (infrequent) structures in feature hierarchies, that is, the higher position in an accessibility hierarchy. The results of this research show that when learners are taught the marked features of relative clause formation (Doughty, 1991; Eckman, Bell, and Nelson, 1988; Gass, 1982) or possessive pronouns (Zobl, 1985), they also acquire the unmarked ones higher in the hierarchy. Pavesi (1986) found that both instructed and uninstructed learners followed the accessibility hierarchy in their acquisition of relative clauses. Uninstructed learners tended to acquire only the unmarked (frequent) features in the hierarchy (Pavesi, 1986); that is, uninstructed learners were less successful. The thought is that uninstructed learners may never gain access to marked features in the input to which they are exposed. Furthermore, insofar as the features are marked, they are infrequent in the input and lack saliency, making them all the more difficult to acquire.

2.2.2 Route of L2 development

The Contrastive Analysis Hypothesis (CAH) was an important tool in second language teaching and second language acquisition research in the 1960s and 1970s. The CAH advocated a systematic comparison/contrast of two languages, the results of which would be used by curriculum developers to organize course materials and by acquisition researchers to predict L2 errors. According to CAH, linguistic differences across two languages represented areas of difficulty and hence errors would be predicted, whereas linguistic similarities across the two languages represented areas of ease and hence no or few errors would be predicted. The prevailing theory of learning at that time, Behaviorist Theory, viewed learning, including language learning, as the formation of habits and viewed second language learning as the process of replacing L1 habits with those of the L2. Both CA and Behaviorism afforded the L1 a very important role in L2 development. Second language acquisition research did not, however, support the claims of CAH. Dulay and Burt (1974), for example, found

that only 4.7% of the errors made by children acquiring English as a second language reflected the nature of the L1 (Spanish). LoCoco (1975) reported that only 8.23% of the errors made by adult native speakers of English acquiring German or Spanish reflected the nature of the L1. The importance of the role of the L1 in L2 acquisition was diminished and the CAH became less popular as a result of these studies and others. (Duly, Burt, and Krashen, 1982, provide a more extensive review of this line of investigation.)

If not Contrastive Analysis, then what? Second language acquisition researchers looked to work done on child first language acquisition and found inspiration. Brown's (1973) four-year longitudinal study revealed that three children acquired fourteen English morphemes in a similar order. De Villiers and de Villiers (1973) corroborated the order in a cross-sectional study of twenty-four children. Is this also the order in which second language learners acquire these fourteen morphemes? Research emerged on child first language acquisition that suggested children follow a natural sequence in the acquisition of English sentence negation (Klima and Bellugi, 1966), that is, children go through particular stages of development in their acquisition of negation. Do second language learners also follow this natural sequence in the acquisition of negation? Do they go through the same stages of development and in the same order? These questions were at the heart of the L2=L1 Hypothesis that the route of second language acquisition was the same as (or very similar to) that of first language acquisition. The ensuing second language research on morpheme acquisition orders and developmental sequences is the basis for discussing the limitations of formal second language instruction (Doughty, 2003; Ellis, 1985, 1994; Larsen-Freeman and Long, 1991; Long, 1988).

2.2.2.1 L2 morpheme acquisition orders

The research on L2 morpheme acquisition orders was the earliest attempt to examine learner language in its own terms, that is, as an internally governed linguistic system. VanPatten (2003, p. 18) notes that "…acquisition orders refers to the order in which different and independent pieces of language are mastered over time." Different and independent refer to the fact that the selection of morphemes to examine included unrelated verbal inflections such as the progressive aspect marker *–ing*, third person singular present tense *–s*, and simple past tense *–ed* and unrelated nominal morphemes such as definite and indefinite articles, plural *–s*, and possessive *'s*. The criteria by which researchers judged acquisition was the correct suppliance of the morpheme in an obligatory context. The criteria set for acquisition of a morpheme was 90% correct suppliance in an obligatory context and hence the idea of mastery being associated with morpheme acquisition orders. The notion of an order of acquisition came about by ranking the various morphemes according to percentage of correct suppliance, where high versus low percentages were an indication of earlier versus later acquired, respectively. Critics of this line of research argued that ranking unrelated morphemes based on accuracy yielded an order of difficulty rather than acquisition. Despite the criticism, this line of investigation remains important in a discussion of the effect of formal instruction on second language development.

2.2.2.2 Child studies of L2 morpheme acquisition orders

The first researchers to examine morpheme acquisition orders for English as a second language were Dulay and Burt (1973, 1974). They first examined three groups of native speakers of Spanish who differed in terms of amount of exposure to English (1973) and then compared the acquisition orders of native speakers of Spanish and Chinese. The orders for the three groups of native speakers of Spanish were strikingly similar. The order for the group of native speakers of Chinese was also strikingly similar to that of the native speakers of Spanish. The L2 order was quite similar to but not identical to the L1 order. Even so, Dulay and Burt laid the foundation for the idea that there was a natural order to L2 acquisition. Two other key examinations of children took place that supported the work of Dulay and Burt. Fathman (1975) compared the acquisition orders of two groups of children, one that received ESL instruction and one that did not, but all children were enrolled in schools in the Washington DC area. The children represented different ages, different lengths of stay in the US, and different language backgrounds. She found no difference in acquisition orders due to instruction, length of stay, or age. She found the orders to correlate highly across the different schools the children attended. She did not, however, analyze language background as a variable.[1]

2.2.2.3 Adult studies of L2 morpheme acquisition orders

Bailey, Madden, and Krashen (1974) investigated adult second language learners of English who were all enrolled in ESL classes at a US university. Nearly half the learners were native speakers of Spanish and the other half represented eleven other native languages (Greek, Persian, Italian, Turkish, Japanese, Chinese, Thai, Hebrew, Arabic, Vietnamese, Afghani). They first compared the orders for the two different native language groups and found that both groups showed a similar sequence for the eight grammatical morphemes studied. They then combined the results for the two groups into one and compared their performance to that of the children Dulay and Burt (1974) had investigated.

> Both comparisons showed that **the contours for the acquisition sequences of the children and adults studied are very similar**. This initial sequence study of adult morpheme acquisition permits us to suggest that whatever internal factors are interacting with language input in children to produce the results we see, they seem to be operating in adults as well. Furthermore, the first language of the L2 learner, whether child or adult, does not appear to affect the results of this interaction: the sequences observed for all groups are similar. (Dulay, Burt, and Krashen, 1982, p. 209, emphasis original)

Establishing that the accuracy orders for grammatical morphemes were similar for adults, adolescents, and children was the first step in claiming a natural sequence of second language acquisition.

The next necessary step was to establish that the orders were similar for naturalistic and classroom learners. Fathman (1978) compared two groups of adolescents: learners of English as a foreign language taking EFL classes in Germany and

learners of English as a second language enrolled in schools in the United States who received little formal instruction in English. The acquisition orders of the two groups correlated significantly. Pica (1983) examined the orders of three groups of native speakers of Spanish: one group was enrolled in courses at an English language school in Mexico City (instruction only); another group who lived and worked, but did not study English, in an English-speaking community in the suburbs of Philadelphia (naturalistic); and the third group who attended intensive English classes in Philadelphia and who either had a regular conversation partner or an American roommate (mixed – naturalistic and instructed). Because the performances of the three groups were significantly correlated, Pica concluded that the acquisition context did not influence the order in which grammatical morphemes were acquired. Also, Pica correlated the performances of the three groups with Krashen's (1977) natural order, which he derived from a review of literature (see section 2.2.1.3), and found that each group's performance correlated significantly with the natural order.

2.2.2.4 The Spanish data for L2 morpheme acquisition order

Van Naerssen (1986) summarizes the results of several of her previous investigations into the acquisition order of grammatical morphemes in Spanish as a first and second language. She proposed a composite order of acquisition/difficulty for Spanish as a first language based on the results of fourteen studies (similar to Krashen's "average" order for English). The L1 order contains thirty-five morphemes and constructions. She also proposed a composite order of acquisition/difficulty for the acquisition of Spanish as a second language by children based on the results of seven studies. This order contained thirteen morphemes and constructions. Finally, she proposed an order of acquisition/difficulty for the acquisition of Spanish as a second language by adults based on a pool of twenty-seven adults completing first-year Spanish language instruction and the data from four other studies. We present these composite orders in Figure 2.1.

Van Naerssen found a positive but not significant correlation between the L1 and L2 composite orders presented in Figure 2.1 and so she concluded that the two orders were similar but not identical, a conclusion similar to that of Dulay and Burt (1974). Using subsets of the data she compared orders for L1 children and L2 children, for which she found a high and significant correlation, unlike the findings of Dulay and Burt (1974). She then compared the orders for L2 adults and L2 children for which she did not find a significant correlation. She concluded that the orders for Spanish, unlike those for English, were not independent of the age of the learners.

2.2.2.5 Instructional orders

Figure 2.2 shows Krashen's (1977, 1982) average order of acquisition of grammatical morphemes for English as a second language. Krashen derived his "average" order from the various empirical studies on child and adult second language acquisition. He made no claims about ordering relations for morphemes appearing in the same box,

Composite order for L1 Spanish	Order for L2 Spanish – adults
Present indicative Negation with no	Indefinite article Negation with no
Periphrastic future	Number agreement on adjectives Definite article
Indefinite article Number agreement on adjectives	Reflexive/dative pronoun Present indicative
Definite article Preterite	Copula (ser + estar) Number agreement on articles Preterite Relative pronoun
Gender agreement on articles Copula (ser + estar) Gender agreement on adjectives	Periphrastic future Gender agreement on adjectives
Relative pronoun Reflexive pronoun	Gender agreement on articles

Figure 2.1. Van Naerssen's orders of acquisition/difficulty for L1 and L2 Spanish[2]

meaning that we can say that progressive *–ing*, plural *–s*, and copula are early acquired but that regular past *–ed*, third person singular *–s*, and possessive *'s* are late acquired.

What is clear is that this acquisition order does not reflect instructional order. To illustrate this point we present the order of instruction from a contemporary ESL grammar textbook corresponding to the *Common European Framework Reference for Languages* A1-A2 (Davis and Rimmer, 2011). The following list represents the first eight grammar points presented and practiced in the book.

1. copula (singular and plural)
2. present simple (including third person *–s*)
3. present continuous
4. imperative
5. past simple copula
6. past simple regular
7. past simple irregular
8. past continuous

Whereas these grammar points and their grammatical morphemes appear very early in instruction, they do not all appear among the earliest grammatical morphemes acquired. For example, the third person singular morpheme is taught on the second day of class but appears among the late-acquired morphemes.

Van Naerssen explored further the data set that she had gathered of twenty-seven adults completing their first year of university-level language instruction. She analyzed their performance on the final (of six) oral examinations in the course in which they were enrolled. All but three were native speakers of English. She compared the performance of the three non-native speakers of English to that of the twenty-four native speakers of English. Finding no differences between the two groups, she concluded that learners' L1 did not influence the order of acquisition and combined the two sets in all subsequent analyses. Because these learners were all enrolled in the same course, she was able to compare acquisition order with instructional order. She found a negative correlation between the two, indicating an inverse relationship between when instruction took place and acquisition. For example, gender agreement, copula, and present indicative are typically taught early in Spanish language courses but are not among the earliest acquired morphemes. Teaching and learning orders are different.[3]

2.2.2.6 Distortions and disturbances in the natural order

The research on the high degree of similarity among the acquisition orders of English morphemes across ages, contexts of learning, and native language backgrounds is remarkable. But we must also consider when instruction seems to create disruptions and/or disturbances in the natural order.

Perkins and Larsen-Freeman (1975) examined the morpheme orders before and after instruction using a translation test and a picture description task. The before and after orders differed on the translation test but not on the more spontaneous speech elicited by the picture description. This distortion in the natural order is seen as a task effect—specifically, tasks that allow learners to be more form-focused and give them time to be form-focused will disturb the natural order.

Lightbown, Spada, and Wallace (1980) found temporary distortions in the order of acquisition as well as some L1-based influences for francophone children acquiring

Progressive *–ing* Plural *–s* Singular copula (*is/'s*)
Progressive auxiliary Article (*a/the*)
Past irregular
Past regular (*–ed*) Third person singular (*–s*) Possessive *'s'*

Figure 2.2. Krashen's (1977) composite order of acquisition of L2 English morphemes – child and adult

English. Instruction on several morphemes brought about an 11% increase in the accuracy of those forms (a distortion in the natural order) on a grammaticality judgment task. Six months later, however, the effect had disappeared. On a communicative picture description task they found disruptions in the natural order in that the learners did worse on the plural morpheme than on the progressive. They attributed this particular distortion to the learners' L1, French, that has periphrastic possession (not inflectional) and in which the plural *–s* morpheme is silent. When they considered nominal morphemes separately from verbal ones, their orders matched the natural order.

Lightbown (1983) also found a temporary distortion in the natural order with *–ing*. Intensive practice early in a course led learners to overuse *–ing* long into the course and long after the form became infrequent in classroom language use. Learners' use of *–ing* was also inappropriate in that they used it in contexts that required third person present *–s*. Their overuse did not diminish until they were taught uninflected verb forms (present and imperative).

Pica (1983) was mentioned above to support the finding that context of learning did not affect the natural order of acquisition. She also found that naturalistic, instruction only, and mixed learners all made errors of oversuppliance in inappropriate contexts and omitted morphemes in appropriate contexts, which she refers to as disturbances in the natural order. She did find an effect for context of learning when analyzing error type. Oversuppliance was significantly more prevalent among the instruction only learners (Lightbown, 1983) whereas omission was significantly more prevalent among naturalistic learners.

Pienemann (1987) provided three learners of German instruction on a late-acquired (Stage 5) grammar item, the present perfect in German. These learners were not at a stage of developmental readiness for this grammar item; the instruction was premature. He found that such premature instruction led the three learners to avoid using the structure which would distort an accuracy order. He hypothesized that avoidance resulted from the forced production practices the learners underwent as part of instruction. Instruction can lead to oversuppliance (Lightbown, 1983; Pica, 1983) or, perhaps worse, avoidance.

2.2.3 Developmental stages/sequences

"The term *developmental stages* refers to the way in which one single aspect of language is acquired over time" (VanPatten, 2003, p. 18). Developmental stages have been identified for English negation, interrogatives, and relative clauses but also for German word order and Spanish copula. Research has examined the developmental stages of learners at one point in time as well as showing the changes in performance at different points in time. It is important to underscore that on paper, stages appear quite well defined and separate whereas in reality, a learner's interlanguage may contain structures from different stages of development at the same point in time. Transition from one stage to another is not as abrupt as the on-paper description suggests. Synonymous terms for developmental stages are transitional stages, transitional stages

of competence, and stages of acquisition. They all refer to descriptions of a single aspect of learner language.

2.2.3.1 Developmental sequences and formal instruction

Pienemann (1984) reports on the effects of teaching word order to Italian children of migrant workers who attended an Italian-language school in Munich where they received supplemental instruction in German as a second language. He focused on Stage 4 (of 5) that involves inversion of sentence elements. He reported results for two learners. The first child's interlanguage was characterized as being in the advanced level of Stage 3 in German word order, i.e. particle shift in the verb phrase. Instruction on Stage 4 word order was completely successful for this learner. After five days of instruction, the learner applied inversion in four of five possible contexts. This rate of development was far quicker than naturalistic development of Stage 4 word order, which takes months. The second child's interlanguage was characterized as being at Stage 2 in German word order, i.e. preposing adverbs to sentence initial position while maintaining the verb in second position. Instruction on Stage 4 word order was not successful for this learner, although it appeared that it was. The learner's speech contained sentences with inversion but Pienemann referred to these as examples of "pseudo-applications" of inversion. His analyses revealed that about a third of the sentences were speech formulae presented in instruction. All the other samples were copies of sentences that had been learned during instruction, for example, in model dialogues. So, in fact, the learner was not herself applying inversion.

Pienemann (1989) compared when three adult learners were taught aspects of German word order with what they actually learned, i.e., the timing of instruction versus the appearance of the form in interlanguage. The learners were adults enrolled in a beginning level German language course at an Australian university. The design of the study was longitudinal with data collections (interviews) every two weeks for approximately a year. Instruction on German word order came early in the course and within a short period of time. By weeks 5 and 7 all word order rules for German had been presented formally (except Stage 5 V-end). Analyses of the language used in the textbook showed that learners were exposed to all German word order structures from an early stage. All three learners acquired Stage 1 canonical SVO word order first. Stage 2 adverb preposing was also present in their interlanguage early (from week 3).

Stage 3 word-order (particle shift) was taught from week 7 onward. One learner did not acquire this word order. Another learner began to apply this word order rule in week 15 and the other not until week 17 even though he produced contexts for particle shift from week 5. Pienemann states the following regarding the delay between instruction and application: "over a period of twelve weeks his interlanguage structure contrasted sharply with the input and the learning objectives of his German course" (Pienemann, 1989, p. 71). Stage 4 word order (inversion) was taught from week 1 onward with many examples in the input. Only one subject showed the application of inversion rules but did not do so until week 19. The other two learners never acquired inversion. To summarize: "…as a whole there are two general findings which are

important in the present context: (1) formal learners develop their language stepwise, despite the scheduling of teaching; and (2)—more importantly—in the same order as has been found for the natural acquisition of German (at least in the domain of word order)" (Pienemann, 1989, pp. 71–2).

Ellis (1989) examined classroom learners' acquisition of German word order, with special emphasis on Stages 3, 4 and 5 word order features. His subjects were adults enrolled in a beginning level German course in the UK. Pairs of learners were recorded performing a two-way picture description task in weeks 11 and 22 (the end of the first and second terms, respectively). To determine the order of acquisition of the three word order rules, Ellis created an implicational scale for those learners at Time 2 who produced three or more obligatory occasions for each word order rule (n=17). He found that 16 learners demonstrated acquisition of Stage 3 word order, 4 of Stage 4, and 2 of Stage 5, and that the three rules could be implicationally ordered as:

Verb-end>Inversion>Particle

The learners who progressed did so according to the order of acquisition found for naturalistic learners.

Ellis also supplied information about the order of instruction and instructional emphasis given to the three word order rules. The three rules were all presented in term 1 in the following order: inversion, separation, verb-end. Both verb-end and separation received the most instructional emphasis with inversion receiving much less emphasis. The order of introduction did not match the acquisition order for either naturalistic or classroom learners. Pienemann stated the following about the teachability of languages:

> …a structure can only be learned under instruction if the learner's interlanguage has already reached a stage one step prior to the acquisition of the structure to be taught. My hypothesis for an explanation suggests that the teachability of L2 structures is constrained by the same processing restrictions that determine the developmental sequences of natural L2 acquisition: since the processing procedures of each stage build upon the procedures of the preceding stage there is no way to leave out a stage of the developmental sequence by the means of formal teaching. (Pienemann, 1984, p. 185)

Pienemann (1984) referred to this as the Teachability Hypothesis but in subsequent work has subsumed it under his Processability Theory (2007, p. 172). The idea, however, remains with us today that developmental readiness is a factor that explains the lack of effect of formal instruction on the route of second language acquisition.

Bardovi-Harlig (1994) demonstrated another aspect of developmental readiness in her research on the acquisition of the pluperfect tense in English as a second language as it is used in the expression of reverse-order reports, that is, the expression of events that are not in the order in which they happened. The use of the pluperfect tense is a morphological way to contrast events as opposed to lexical adverbials or mentioning events in chronological order. All sixteen subjects were enrolled in level 1 of 6 of an

intensive ESL program at a US university. Data consisted of journal entries, narratives from film retell tasks, essay exams and in-class compositions. The learners produced 103 reverse-order reports using a variety of linguistic means including 63 reports that exhibited a contrast in verbal morphology and 40 that did not. Bardovi-Harlig's analysis of the data showed that the pluperfect tense emerged in learners' language at different calendar points in time, but that for each learner, the pluperfect did not emerge until the learner showed stable use of the simple past tense (approximately 80% appropriate use in past-time contexts). Additionally, her analyses revealed that learners had to have expressed reverse-order reports prior to using the pluperfect tense to do so, that is, the pluperfect moved into an already established semantic environment.

Bardovi-Harlig (1995) also examined the effect of teaching the pluperfect tense on learners' interlanguage system. "The effect of instruction is predictable on the basis of the stage of the individual learners at the time of instruction. If the learners had not satisfied the prerequisite stages, instruction had no apparent effect" (Bardovi-Harlig, 1995, p. 161). The prerequisite stages are 80% appropriate use of the simple past and previous expression of reverse-order reports. Both conditions needed to have been met for learners to begin using the pluperfect tense in reverse-order reports. Six of the learners never used the pluperfect tense despite instruction. Two of the six had met the prerequisite conditions, so the prerequisite conditions are necessary but not sufficient for the emergence of the pluperfect. "One possible reason for this is that learners use other available linguistic devices, such as time adverbials, to express reverse-order reports, and these may be so effective for communication that learners have no need to expand their grammars to formally express this semantic concept" (Bardovi-Harlig, 1995, p. 163).

2.2.3.2 The Spanish data: Stages of acquisition of the Spanish copula

One well-studied aspect of the acquisition of Spanish as a second language is the emergence of the copula, particularly *ser* and *estar*, which both translate as English "to be." Our review of the Spanish data serves to exemplify the issues related to the effect of formal instruction on the route of acquisition.

2.2.3.2.1 L2 classroom learners

Much research has been conducted to document the stages of acquisition of the Spanish copula in classroom, study abroad and naturalistic contexts. Geeslin (2005) provides an excellent and comprehensive review of this research. In the context of the present review, we are interested in determining if the stages of acquisition for Spanish copula are the same or at least similar in L2 classroom studies (instruction only), study abroad contexts (mixed instruction + exposure) and naturalistic contexts (exposure only).

The Spanish copula, as presented in Spanish language textbooks, concentrates on the verbs *ser* and *estar*, which both translate to English as "to be." The verbs are introduced early and usually also appear in a section that contrasts the use of the two. The explicit information supplied to beginning-level learners tends be of the following

nature, with variation in the preferred wording of a particular use and in the order in which the use is presented:

Uses of *ser*
To identify people and things
To express nationality
With *de* to express origin
With *de* to tell of what material something is made
With *para* to tell for whom something is intended
To tell time
With *de* to express possession
With adjectives that describe basic, inherent characteristics
To form many generalizations

Uses of *estar*
To tell location
To describe health
With adjectives that describe conditions
In a number of fixed expressions
With present participles to form the progressive tense

Clearly, by the end of the first year of instruction, learners have been given a long list of uses for *ser* and *estar*. This is a similar case to Pienemann's (1989) finding that all aspects of German word order are presented early in a course and in a short period of time. Whether a textbook contrasts *ser* and *estar* in the first or second half of the book, the uses of *ser* and *estar* is considered a first-year or beginning-level grammar item.

VanPatten (1985) carried out a longitudinal study of first-year learners of Spanish enrolled in first and second semester beginning-level Spanish. Picture description and interview data were gathered every other week for a nine-month period (academic year). The data were coded for accurate suppliance of *ser* or *estar* in obligatory contexts. The three stages of copula acquisition for early stage second language learners are presented in column 1 of Table 2.1. VanPatten found that learners began acquiring the Spanish copula with one form, *ser*. Acquisition proceeded by moving *estar* into structures and functions once occupied by *ser*, first the locative and then with adjectives of condition.

VanPatten (1987) augmented his work using a grammaticality judgment task with first-, second-, and third-year learners and class observations. As a result, he added two more stages of acquisition, a very early and temporally limited stage of copula omission and the initial *estar* stage in which *estar* appears with progressives, prior to its appearance with locatives and adjectives. His results confirmed the other stages presented in 1985. The stages of acquisition found in VanPatten (1987) are presented in column 2 of Table 2.1.

Finnemann (1990) did not set out to uncover stages of acquisition but rather to determine if learning style influenced performance with *estar*. His three subjects were enrolled in the second and then third quarter of a first-year beginning language course (similar in level to VanPatten, 1985). He reported average total accuracy rates

Table 2.1 Summary of stages of acquisition of Spanish copula

VanPatten, 1985	VanPatten, 1987	Briscoe, 1995	Ryan and Lafford, 1992	Gunterman, 1992
L2 classroom ONE Overgeneralization of one copula, usually *ser* TWO *estar* appears consistently in locative structures THREE *estar* appears consistently with adjectives of condition	L2 classroom ONE Absence of copula in learner speech TWO Selection of *ser* to perform most copula functions THREE Appearance of *estar* with progressives FOUR Appearance of *estar* with locatives FIVE Appearance of *estar* with adjectives of condition	L2 classroom ONE High accuracy with functions of ser: telling time, professions, copula, de/origin, de/possession, de/composition, impersonal expressions, and characteristics TWO *estar* with progressive THREE *estar* with location FOUR *estar* with adjectives of condition FIVE Other functions of ser: time of events, location of events, and passive	Study abroad ONE Absence of a copula TWO Overuse of *ser* with locatives and adjectives of condition THREE Omission of *estar* with adjectives of condition FOUR *estar* appears with progressive FIVE Replacement of zero-copula errors with *estar* where *ser* is required SIX *estar* replaces zero-copula with adjectives of condition SEVEN *estar* appears with adjectives of condition EIGHT *estar* replaces *ser* with locatives	Naturalistic ONE (0+) Overuse of ser; omission of ser; lack of contexts for estar TWO (1) *ser* appears with impersonal expressions; estar appears with locatives; omission of copula; overuse of *ser* THREE (1+) Estar used with locatives and adjectives of condition; estar appears with progressive; omission occurs less; copula choice errors high (48%) FOUR (2) Omission errors cease; *ser* and *estar* used with adjectives of condition FIVE (2+) Accuracy with *ser* and *estar* is 86% SIX (3) Copula tokens decrease as varied modes of expression increase SEVEN (3+) passive with *ser* appears

for *ser* and *estar* at the end of the second quarter and then the third quarter as elicited through picture description, narration, and role play tasks. He found that the accuracy rate for *ser* was above 90% even at the end of the second quarter. By the end of the third quarter the accuracy rate for *estar* was 40.7%, 14.3%, and 14.8% for the three learners. These results confirm VanPatten's conclusion that acquisition of Spanish copula begins with an overgeneralization of *ser*.

Finnemann also calculated accuracy rates for *estar* in three contexts: progressive, locative, and adjectives of condition. Finnemann found for his three learners that *estar* with locatives was somewhat more accurate than *estar* with adjectives of condition, confirming VanPatten's ordering of Stages 4 and 5, but the results with the progressive were quite different. The accuracy rate with the progressive was the lowest for all three learners and was based on the fewest number of tokens. "For VanPatten's results to hold, it must be the case that although learners begin using this structure later, they become accurate using the progressive more quickly" (Geeslin, 2005, p. 70). Geeslin's explanation is plausible given that VanPatten (1985) makes no mention of the progressive but that VanPatten (1987), using second- and third-year learners that Finnemann and VanPatten (1985) did not, proposed a stage of acquisition for *estar* with the progressive.

Briscoe (1995, cited in Geeslin, 2005) expanded on the uses of *ser* and *estar* that he categorized and elicited. His work examined 77 learners of Spanish enrolled in six levels of instruction: first semester, second semester, third semester, fourth semester, third year, and fourth year (i.e. all levels of the undergraduate curriculum). His task was a picture sequence narration for which he calculated (among other things) correct suppliance in obligatory contexts with acquisition defined as 90% correct suppliance in obligatory contexts. Based on the accuracy rates, Briscoe proposed the five stages of acquisition presented in column 3 of Table 2.1 and these largely confirm those of VanPatten (1987). His fourth year learners had acquired only the functions in Stages 1 and 2. Those functions listed for Stages 3, 4, and 5 showed less than 90% correct suppliance in obligatory contexts. Functions listed for Stage 5 showed few tokens, ranging from 5 to 13, but importantly, he identified a new stage of acquisition. Stage 5, the final stage, contains functions of *ser*. Briscoe did not propose a stage of omission but he commented that omission was more likely in the first year and a half (semesters 1 through 3) rather than later and that not all participants omitted *ser* but even some very proficient learners did. He also found that some learners omitted *estar* particularly with the progressive structure.

2.2.3.2.2 Study abroad learners (mixed: instruction + exposure)

Ryan and Lafford conducted an investigation to determine if the stages proposed in VanPatten (1987) could be generalized from an L2 classroom only context to a study abroad context. They examined sixteen learners who participated in a one-semester intensive language program in Granada, Spain. During their stay they lived with host families and received three hours of language instruction per day. Ryan and Lafford used the ACTFL Oral Proficiency interview to elicit

data before leaving for Granada, half-way through the semester in Granada and again at the end of the semester in Granada. They scored the data for correct suppliance in an obligatory context and analyzed the preferred forms of error with *ser* and *estar*, including omission, which they refer to as zero-copula. The stages of acquisition Ryan and Lafford found are presented in column 4 in Table 2.1. There is considerable overlap with the stages proposed by VanPatten (1987) and some interesting additions. First, omission is treated quite differently in the two studies, although both propose that absence of a copula form is the first stage of acquisition. VanPatten (1987) found that omission occurred only in the earliest weeks of instruction, whereas Ryan and Lafford found a more complex pattern of omission with *ser* and *estar* (as did Briscoe, 1995). Ryan and Lafford proposed a stage of acquisition for study abroad learners in which they omit *estar* with adjectives of condition that follows the stage in which they overuse *ser* with adjectives of condition. Another difference Ryan and Lafford point out is that they found higher accuracy with *estar* and adjectives of condition than with *estar* and locatives in contrast to VanPatten (1987) and Briscoe (1995). But the more important point to underscore is that neither use of *estar* was acquired (90% accurate suppliance in obligatory contexts) in any of the studies.

DeKeyser (1990, 1991) directly compared the performance of study abroad learners with that of L2 classroom learners to determine if the two groups monitored to the same degree on different tasks, a grammar test, three interviews, and three picture description tasks. The first group consisted of seven learners who had completed four semesters (first two years) of language instruction in the US and were participating in a semester-long study abroad program in Spain. During the term in Spain the students were enrolled in five courses, two of which were from the university's regular offerings, but all five courses were taught in Spanish. These students lived in university-affiliated dormitories where they were among the few foreigners. The five US-based or at-home learners were enrolled in the second quarter of second-year Spanish and had extremely little, if any, contact with Spanish outside the classroom. Pretesting revealed that the two groups were equivalent in terms of language learning aptitude, attitude toward language learning, motivation, risk-taking, and attitude toward correct language use. The grammar test contained multiple choice items for subjunctive, conditional, copula choice, and relative pronouns.

DeKeyser's analyses focused on copula choice. He compared the results on the grammar test to the learners' performance on the communicative tasks. He found that for the group in Spain, the three learners who selected *ser* with predicate nouns consistently on the grammar test also did so on the communicative tasks. The three learners who used *estar* with locatives more than 80% correctly also did so on the communicative tasks. The US-based learners were not as accurate at those in Spain, but performed similarly. Geeslin (2005, p. 74) points out about this research is that importantly, there was a difference in proficiency but not language behavior:

> To summarize, those students in Spain who made consistent judgments about the use of *ser* before a predicate noun, always used it correctly in communicative tasks, and those who made consistently correct judgments about *estar* before an

> expression of location used it correctly in the vast majority of cases. The students in the U.S. with consistently correct judgments for *ser* before a predicate noun used it correctly in almost all cases. Students in both groups appeared to monitor their knowledge about *ser* and *estar* quite efficiently, at least those students whose knowledge appeared to be solid. (DeKeyser, 1990, p. 244)

DeKeyser did not make reference to stages of acquisition in his work, but certain elements of his analyses can be related to such work. Both Ryan and Lafford (1992) and VanPatten (1987) show that *ser* is acquired before *estar* with locatives. DeKeyser's results confirm this.

2.2.3.2.3 Naturalistic-like learners (intense exposure)

We now consider a very different learner population and a rather special learning context, the Peace Corps. Gunterman (1992a, 1992b) examined the language development of nine Peace Corps volunteers at the time they completed intensive language training and one year later after their term working as volunteers in a Latin American country. The training program, which took place in the capital city of a Latin American country, consisted of 300 hours of Spanish instruction over eight to ten weeks. The trainees lived with families and attended classes six hours a day. Following training, the volunteers moved to jobs throughout the host country in fields such as agriculture, forestry, cooperatives, and education, providing intensive and extensive contact with the language. Prior to the end-of-year interviews, all nine participants had attended two optional Spanish workshops in the capital, spaced every three to six months. "It is evident, then, that these data at the two levels [end-of-training and end-of-year] result neither from classroom learning alone nor purely from the 'natural' setting; rather, they are representative of a learning situation that progressed from predominantly formal, in-class instruction to predominantly natural, on-site interaction with native speakers" (Gunterman, 1992a, p. 178). Gunterman's population is not strictly exposure-only naturalistic learners but their language performance was assessed after intensive and extensive naturalistic exposure. We, therefore, refer to them in the heading of this section as naturalistic-like.

The oral interviews were administered by interviewers who were certified by the Educational Testing Service to evaluate the proficiency of Peace Corps volunteers in Spanish. Gunterman used both the Foreign Service Institute ratings and their ACTFL oral proficiency equivalencies to group participants. Calculating accuracy rates for copula choice and grammatical and copula choice errors, Gunterman found that the ratings corresponded well to the stages of acquisition in VanPatten (1987) and Ryan and Lafford (1992).[4] We, therefore, use enumerated stages to refer to Gunterman's results, referenced in parentheses by the proficiency rating, and present them in column 5 in Table 2.1.

Gunterman's results confirm the stages of acquisition found by VanPatten (1987) and Ryan and Lafford (1992) but with notable exceptions and expand our knowledge of the acquisition of Spanish copula. Because of the proficiency level of her participants, Gunterman does not propose a unique Stage 1 characterized by omission or the absence of a copula and a unique Stage 2 with overgeneralization of *ser*. Rather, her Stage 1 is a composite that includes omission and overuse of *ser* as well as underuse of

estar contexts. She noted that omission gradually disappeared from learners' speech, ceasing only in Stage 4, rather than it being a temporary early stage (VanPatten, 1985, 1987). Gunterman did not find a stage equivalent to Ryan and Lafford's Stage 3, absence of copula with adjectives of condition, and did not, therefore, find a stage equivalent to their Stage 6, *estar* replaces zero-copula with adjectives of condition. Gunterman found that *estar* appeared with adjectives of condition in her Stage 3 and when it did, *estar* was used correctly 63% of the time. Exclusively correct use of *estar* with adjectives of condition began at her Stage 5 and with locatives at her Stage 6. This order matched Ryan and Lafford's. And, finally, she found what Briscoe (1995) would also find, that the passive with *ser* emerges in the last stage of acquisition.

Because Gunterman's participants reach levels of proficiency we have not yet seen in the database, she found that all functions of *ser* and *estar* were eventually acquired, using 90% accurate suppliance in obligatory contexts at the criteria for acquisition. Gunterman identified the stage at which certain functions of *ser* and *estar* are acquired. We note, however, that the number of tokens is reduced, beginning at Stage 5. We summarize these results in Table 2.2.

2.2.3.2.4 Instructional sequences and emphases

Arguments relating acquisition orders to instructional orders are strongest when the data collection period coincides with an instructional period (e.g. DeKeyser, 1992; Ryan and Lafford, 1992; VanPatten, 1985) and less so when the data collection occurs independently of instruction (e.g. Briscoe, 1995; Gunterman, 1992; VanPatten, 1987). VanPatten stated the following about the issue of instructional order:

> The stages in the acquisition of *ser* and *estar*, like the stages of transitional competence found for ESL and English as foreign language (EFL) learners, cannot be explained by classroom teaching approaches or sequence of instruction. That is, *ser* does not appear first in learner speech because *ser* is taught first. Indeed, for all the learners who participated in this study, both copulas and their usage with common adjectives were taught on the first day of instruction and were reviewed every day for a week; they were also used regularly in classroom

Table 2.2 Stage at which different contexts for *ser* and *estar* are acquired.

Stage at which 90% accuracy is attained	**Structure**
Stage 1 (0+)	Impersonal expressions with *ser* 100% [a]
Stage 3 (1+)	Adjectives of normal qualities with *ser* 92% (65/71)
Stage 4 (2)	Identification with *ser* 96% (23/24)
	Progressive with *estar* 100% (7/7)
Stage 5 (2+)	*Estar* with adjectives of condition 92% (11/12)
Stage 6 (3)	*Estar* with locatives 100% (2/2)
Stage 7 (3+)	Passive with *ser* 100% (4/4)

[a] Gunterman gives the overall accuracy of impersonal expressions with *ser* as 100% (73/73). She does not, however, provide a distribution of tokens across the different proficiency levels. But because she discusses the Stage 1 learner's use of impersonal expressions, we infer that his accuracy rate was 100%.

> conversation. Furthermore, the different stages for the emergence of *estar* with its specific functions cannot be explained via teaching order since *estar* and all of its functions were presented in one chapter and were reviewed holistically at various intervals. (VanPatten, 1987, p. 65)

His final point about instruction and acquisition concerns omission. Omission of the copula, which characterizes the stages of development found by Ryan and Lafford (1992) and Gunterman (1992), never occurs as part of any instructional program.

2.3 The effect of study abroad on second language development

Because the distinguishing characteristic of our upper versus lower level of learners is study abroad experience, it is important that we highlight what the study abroad experience most likely was for the learners. Lightbown and Spada (1993, pp. 71–2) discuss natural acquisition and classroom environments (traditional and communicative) according to the following characteristics: error correction, step-by-step syllabus, time available for language learning, availability of native-speaker interlocutors, exposure to a variety of registers and discourse types, the pressure to speak, and access to modified input. Lafford (2006) contrasts study abroad and at-home contexts of learning according to four of Hymes's (1972) external contextual features: setting, participants, end [purpose/goal], and norms of interaction and interpretation. The perspectives presented in the two works have much in common and we consider them in the following section.

2.3.1 The study abroad and at-home environments contrasted

The classroom setting is often referred to as an input-poor environment. It is true that technology has made the use of authentic material more accessible to classroom learners. But the principal sources of input for a classroom learner are the teacher talk, from either a NNS or NS, and NNS peer language. In classrooms, "There is a small ratio of native speakers to non-native speakers. The teacher is often the only native or proficient speaker the student comes in contact with" (Lightbown and Spada, 1993, p. 72). Lightbown and Spada also comment that peer language would naturally contain errors which would not be heard in a naturalistic environment among proficient, native speakers.

Lafford (2006) expresses concern that at intermediate levels of instruction learners may be exposed primarily to sentence-level input. In the study abroad setting, however, she feels that learners are exposed to much more discourse-level input in and out of the classroom. Study abroad learners often take non-language content courses for which they do the readings and listen to lectures in the target language. In addition to their NS instructors and NNS peers, study abroad learners may also have contact with NS peers and NS host families, such that they experience a variety of people who are proficient speakers. "The [naturalistic] learner observes or participates in many different types of language events: brief greetings, commercial transactions,

exchanges of information, arguments, and instructions at school or in the workplace" (Lightbown and Spada, 1993, p. 71). This greater exposure to a variety of language events will provide the learner with exposure to a variety of authentic materials and importantly, a wider array of formal and informal registers unavailable to classroom learners (Lafford, 2006). The study abroad/naturalistic learner will have access to a wider variety of written input from billboards, posters and ads to free daily publications distributed on public transport.

Another point of contrast Lightbown and Spada present concerns the time available for learning the target language. Classrooms are structured settings in which some type of syllabus has been created to regulate the presentation of information. Exposure to language in the naturalistic setting is not constrained. Classroom learners have a limited amount of time for learning, i.e., however many hours of instruction and assignments per week. The study abroad/naturalistic learner is potentially immersed in the language many hours each day, whether the learner participates in or observes these language events.

Whereas Lightbown and Spada acknowledge that classroom learners' contact with proficient or native speakers is limited, Lafford (2006) discusses the status of interlocutors in the two settings under discussion. In educational settings the participants typically have well-defined roles in terms of the status of their power relations. The instructor has a high status and the learners a low one. Solidarity relations would typically be limited to experiences between the NNS-NNS learners. Because of the relationship between language and power classroom learners would be exposed to an extremely limited register of language, mostly formal. Study abroad learners would, in contrast, experience a wider and more complex range of power relations and registers. These involve a number of NS instructors across a variety of courses, NS host families, NS peers, and NS strangers. While some relations may begin as formal, the potential is there for them to evolve to more informal ones or relations with the same person may exist as both formal and informal.

Lafford (2006) makes an important contrast between instructors as interlocutors for learners and non-instructors in study abroad contexts:

> …in a classroom environment the instructor's role is to serve as a willing interlocutor who takes time to provide good input, notice gaps in a learner's interlanguage, negotiate form or meaning with the learner, provide feedback on learner output and help the learner develop his/her L2 system. (Lafford, 2006, p. 7)

In a study abroad context, the role of any non-instructor NS interlocutors will vary with their relationship with the learner. The interlocutor's willingness to provide varying amounts of input, adjusted or modified to the learner's needs, to make their language comprehensible, will vary.

> For instance, NS host families and NS/NNS friends may take the time to provide information and help learners meet survival needs via the negotiation of form and meaning, while NS strangers (e.g., store clerks) may only be willing to negotiate meaning when communication breaks down (e.g., to sell their products to the

> learner) and may be unwilling or uninterested in taking time to provide feedback on grammatical form. (Lafford, 2006, p. 7)

Lafford (2006) goes on to contrast the norms of interaction found in classroom and study abroad contexts, i.e., fulfilling the goals of the learning process versus the communicative goal of maintaining a conversation or when a focus on form is an appropriate part of interaction. A classroom learner speaking to an instructor or speaking to classmates is allowed to take the time to focus on formal aspects of their communication, i.e. to repair or to negotiate a form as in a language-related episode (LRE). The learner is allowed to impose on their interlocutors because the time taken to focus on form is considered an important part of fulfilling the goals of the language learning process (Lafford, 2006, p. 9). In study abroad/naturalistic contexts, learners do not impose on their interlocutors' time and patience by taking time to focus on form. The focus is on accomplishing a communicative goal, e.g. buying a ticket. In this context, NS interlocutors may not draw a learner's attention to errors if they understand the message conveyed. On the one hand, the NS interlocutor may want not to embarrass the learner and, on the other, may not wish to appear impolite or rude.

The study abroad context is characterized by a combination of classroom and exposure. The study abroad classroom context is different from the at-home language classroom. The learners may well be taking classes at the university with regular university students, bringing them the opportunity for NS peer interaction missing from the at-home experience. They are surrounded by the language in oral and written form via a greater variety of language events. They encounter a wider variety of people who are proficient in the language. They experience a greater range of registers. In the next section, we present the findings of research conducted on study abroad learners of Spanish to document the effect on language development of the greater exposure opportunities available to study abroad learners.

2.3.2 The Spanish data[5]

The published research that compares study abroad learners to at-home learners of Spanish is not extensive and in large part was conducted on a one-semester study abroad experience; the exception is Isabelli and Nishida (2005), who examined development across an academic year. This work is augmented by a number of studies that documented development of study abroad learners with no at-home comparison group (e.g. Ife et al., 2000; Simões, 1996). Based on the two types of study, we will make statements that are generally true and most likely true for contrasting second language development in the study abroad and at-home environments. (Other reviews of the research on study abroad can be found in Collentine and Freed, 2004; Lafford and Collentine, 2006; and, of course, Lafford, 2006.)

Study abroad learners generally perform better than their at-home counterparts in terms of communicative language ability such as fluency (Collentine, 2004; Segalowitz and Freed, 2004), proficiency (Segalowitz and Freed, 2004), narrative abilities (Collentine, 2004), their frequency of use of communication strategies (Lafford, 2004), and their repertoire of both communication strategies and conversational

management strategies (Lafford, 1995). These improvements are associated with the greater opportunities, both quantitative and qualitative, that study abroad learners have to use the second language.

In addition to communicative language ability, research has also examined developments in linguistic ability. Simões (1996) found, using a speaking test, that study abroad learners improved their pronunciation of Spanish even after a five-week program. Díaz-Campos (2006) found, using the ACTFL OPI, that study abroad learners outperformed their at-home counterparts in pronunciation after a one-semester program, yet he found equal performance between the groups using a reading task (Díaz-Campos, 2004).

The development of the L2 lexicon between study abroad and at-home learners presents a more complicated picture. Collentine (2004) tested the two groups of learners using the ACTFL OPI. The study abroad group was more fluent, i.e., producing more words per syntactic unit at a greater speed with fewer pauses. This group also produced more semantically dense utterances. There were no differences between the groups on the number of semantically dense words they used in the interviews. Ife, Vives Bois, and Meara (2000) examined the development of intermediate and advanced level learners who studied abroad for either one or two semesters. They scored the two groups' performance on a vocabulary test and a translation test. Both advanced and intermediate learners made significant gains on both tests. Both the one- and two-semester groups made significant gains on both tests. Finally, they found a significant correlation between length of time abroad and gains on the vocabulary test; the longer the stay the greater the gains. Lafford and Ryan (1995) and Gunterman (1992a) found that learners acquired *por*/*para* usage during their in-country stays. Additionally, Gunterman (1992a, 1992b) showed that all learners made gains in oral proficiency.

Most relevant to our research on object pronouns are examinations of syntactic development. Several studies have examined the acquisition of grammatical structures in Spanish. Comparing performance at the beginning and end of in-country stays, Ryan and Lafford (1992) and Gunterman (1992b)[6] found that learners moved from beginning to late stages in the acquisition of Spanish copula (reviewed in detail above).

Isabelli (2004) examined the acquisition of three properties of the null subject parameter among learners participating in an academic year abroad program in Barcelona, Spain. The three properties of the null subject parameter are: (1) null subjects in tensed clauses are allowed; (2) free verb-subject inversion is allowed in finite clauses; and (3) the absence of *that*-trace effects. She tested learners' knowledge of the null subject parameter using a grammaticality judgment test and a picture-based oral narrative and compared it to the performance of native speakers (none of whom knew English) on the same tasks. The tasks were first administered after the learners had completed a one-month intensive language course in-country. It was at this point that they enrolled in regular university courses and began their typical routines. The tasks were administered again at the end of the academic year, nine months later. The grammaticality judgment task was administered twice (before and after study abroad) while the oral narrative was elicited three times (before, during, and after study abroad). The results on the grammaticality judgment task showed that learners

had already acquired the property of null subjects in tensed clauses at the outset of their in-country stay. There was, however, significant improvement on the other two properties. A detailed analysis of the third property (*that*-trace) showed that the learners had significantly improved in identifying grammatical *that*-trace sentences and although they improved in identifying ungrammatical *that*-trace sentences, the improvement was not significant. Isabelli then compared the learners' post-study scores to those of native speakers, finding no significant differences between the two on the first and second properties of the null subject parameter. But learners scored significantly lower than the native speakers on the third property although they had significantly improved in one aspect. Isabelli performed a secondary analysis of the *that*-trace data. She found that there was no significant difference between the more advanced learners and native speakers on identifying ungrammatical *that*-trace sentences. The oral narratives provided another perspective. The learners produced significantly more null subject pronouns and significantly fewer overt subjects at the end of the program. They also produced significantly more sentences with subject-verb inversion at the end of the program, but never produced any sentences with the third property (*that*-trace). Isabelli then compared the learners' post-study scores to those of the native speakers, finding that there were no significant differences between the groups on either property of the null subject parameter. In summary, all learners improved on the properties of the null subject parameter but only the more advanced learners fully acquired the null subject parameter during their nine-month stay in Barcelona.

Isabelli and Nishida (2005) compared the development of the subjunctive among study abroad and at-home learners. The study abroad group had completed the first two years of Spanish language instruction prior to participating in the study abroad program in Barcelona, Spain. The at-home learners were enrolled in Spanish courses at either fifth or sixth semester. The study abroad group participated in an oral interview at the outset of their stay in Barcelona and then four months and nine months later. The at-home learners were interviewed once, at the end of the fifth semester or at the end of the sixth semester. The data were examined for subjunctive use in nominal, adverbial, and adjectival subordinate clauses. Errors of tense, agreement, or conjugation were not taken into consideration; the form only needed to be recognizable as a subjunctive form. Describing performance (i.e., no inferential statistics were presented) at the outset to that at the four-month mark, Isabelli and Nishida found that the study abroad learners increased dramatically in the number of subjunctive structures and subjunctive forms they produced, meaning also that their usage rate of subjunctive forms increased. The progress from the fourth to the ninth month was less dramatic but definitely present in the data. Once again, the learners produced more subjunctive structures and subjunctive forms and increased their rate of subjunctive form use. They also found that the number of participants who produced subjunctive structures and who produced subjunctive forms increased, particularly from outset to four months but also from four months to nine months.

They restricted their comparison of the study abroad and at-home groups to one item of the oral interview, the subjunctive in adverbial clauses. They found the study abroad group to be superior in the number of subjunctive structures and subjunctive forms produced at four months to the at-home learners at the end of the fifth semester.

A much greater percentage of the study abroad learners produced subjunctive structures and subjunctive forms. In fact, no at-home fifth semester learner produced a subjunctive form. They found the same pattern of results when comparing the study abroad learners at nine months with the at-home learners at the end of the sixth semester. This time, one at-home sixth semester learner produced one subjunctive form. The study abroad group was clearly superior to the at-home groups in terms of their development of the Spanish subjunctive.

2.4 Conclusion

This chapter is structured in two parts. The first considered the effect of instruction on second language development. Does instruction make a difference? Overall it does, and it makes a substantial difference. Instructed learners attain greater levels of nativelike competence and progress faster than naturalistic, untutored learners. Does instruction alter the route of second language development? Overall it does not, but instruction may produce distortions and disturbances in the route of second language development.

The second part of this chapter considered the effect of study abroad experience on second language development. Do study abroad learners progress during their study abroad stay? In several language areas they do, such as lexicon, phonology, and syntax, and in communicative language ability. Is the progress study abroad learners make during their stay superior to that made by similar at-home learners? The answer depends on the language area examined, the length of the stay abroad, and, most likely, the level of the learner at the outset of the study abroad experience. But the evidence leads us to conclude that study abroad learners generally make greater progress than their at-home counterparts.

3

Output and Language Production: L2 Production of the Spanish Direct Object

3.1 Introduction

In this chapter we assume a functionalist approach to interlanguage development, in which the representation of language is viewed in terms of function-to-form and form-to-function mappings (Bardovi-Harlig, 2007), and in which the need to map linguistic form to communicative function is viewed as the process driving acquisition (Ellis and Barkhuizen, 2005). Based in interlanguage theory, it treats performance in production as a mental representation of the L2, which is independent of prescriptive norms of native-language use in both the L1 and the target language (TL) (Selinker, 1972). More specifically, we take a cognitive approach that views the mapping of form to function and function to form as a psycholinguistically constrained process, sensitive to the saliency of input, and as the unit by which we can measure, assess, and infer the psycholinguistic processes guiding interlanguage development (Mitchell and Myles, 2004). From this cognitive-functionalist perspective we analyze interlanguage development of the direct object amongst L2 learners of Spanish whose native language is English.

This book aims to characterize the development of the target structure in terms of the relationship between comprehension, production, and placement. The present chapter begins that process by reviewing literature focusing exclusively on the forms used to encode the direct object. Previous research has investigated the L2 acquisition of the target structure from a variety of perspectives, utilizing tightly controlled experimental conditions in processing studies, for example, or grammaticality judgment tasks to measure knowledge. We focus on research that looks at L2 production, which allows us to describe what L2 learners do with the linguistic devices at their disposal to meet a communicative end, as well as what they do in the absence of a complete linguistic system. We propose a multifaceted analytic framework that captures the development of form-function mapping, on the one hand, and the psycholinguistic principles guiding it, on the other, as a means to tracking interlanguage development. In the next section, we outline our theoretical and analytic framework for investigating production data, followed by a review of what previous literature has shown regarding

the target structure, and then a discussion regarding the sequence in which the target structure develops in interlanguage. How do L2 learners encode the direct object with an incomplete linguistic system, as they develop from beginning to advanced levels? And what form-meaning connections might be captured in a study of production data that would otherwise go undetected in a study of L2 comprehension?

3.2 The concept-oriented approach

Revealing how form-meaning connections are manifest in interlanguage and how they are psycholinguistically constrained requires a theoretical framework that is logically connected to a method of analysis. The former must identify developmental processes whereas the latter must measure them. The concept-oriented approach provides such a connection between theory and analysis by positing that linguistic development is driven by the need to communicate in the target language and by revealing how the L2 learner's linguistic repertoire changes over time in order to do so (Bardovi-Harlig, 2007). With regard to the syntactic and morphological complexity of the Spanish direct object, the concept-oriented approach provides a valuable tool in which changes in the linguistic repertoire can be charted and explained, due to the multiple forms available in the input to encode it and the L2 learner's variable use of specific forms at different points of development.

The approach analyzes learner language from the perspective of meaning. It holds as a central premise that adult L2 learners have already acquired the underlying function of language from their L1; their task is to identify the forms in the L2 input needed to realize it (Bardovi-Harlig, 2007). In this regard, making connections between how L2 learners process input and how it is evident in output requires a common unit of analysis, the form-meaning connection, and the varying saliency of forms in the input is fundamental to the concept-oriented approach. The analyst begins by coding natural production data for the forms used to encode a particular meaning. Since the approach assumes that language serves communication (Cooreman and Kilborn, 1991), collecting production data in communicative contexts provides a sample of the forms learners have at their disposal. The result of the analysis is a distribution of a variety of forms to one function, whether nativelike or not, thus revealing the linguistic repertoire in the interlanguage of L2 learners at a given point in time. It is in this regard that the concept-oriented approach considers output to be a representation of L2 knowledge while also acting as a catalyst for development; learners are motivated to notice the forms in input that are needed in order to meet a communicative end (Ortega, 2007).

Examples of studies utilizing a concept-oriented analytic approach include those investigating the L2 development of tense and aspect (see, for example, Bardovi-Harlig, 1994, 2000, 2004; Dietrich, Klein, and Noyau, 1995; Meisel, 1987), in which three stages of interlanguage development are identified: the pragmatic, the lexical, and the morphological. The pragmatic stage is the earliest stage of development, characterized by L2 learners' dependency on the interlocutor's scaffolding of discourse, by context,

or by contrasting events (Bardovi-Harlig, 2004). In the pragmatic stage, an L2 learner may (for example) omit any structure at all that would indicate a past time frame, thus relying on context or an interlocutor to interpret or construct meaning. The next stage is the lexical stage, in which explicit use of lexical expression is used to realize a concept (Meisel, 1987), such as the adverb (underlined) in (1).

(1) * *Yesterday I bake a cake.*

The most advanced stage is the morphological stage, in which L2 learners use different morphological inflections to encode meaning (Bardovi-Harlig, 2007). As learners pass from one stage to the next, the functional load of a specific concept (i.e. meaning) is redistributed and shared between pragmatic, lexical, and morphological devices, and form-function mapping develops beyond a one-to-one stage. Such a redistribution of, or shared, functional load between lexical and morphological devises is exemplified in (2).

(2) *Yesterday I baked a cake.*

Since the concept-oriented approach reveals the development of forms used to encode a particular function, ranging from one form to multiple forms, we must ask ourselves why some forms are selected in interlanguage before others, and what strategies govern interlanguage development. In the next section, we provide an overview of the operating principles that describe the developing distribution of functional load to different forms.

3.2.1 Accounting for paths of development

One of the fundamental steps forward in the field of SLA has been what Dussias (2003, p. 234) refers to as the transition in research "from a product-oriented cognitive approach to a process-oriented one." The former refers to early studies that focused on prescriptive analyses of L2 learner production and attributed variation in performance to linguistic errors. The latter, however, refers to the theoretical transition in research to the internal processes and strategies governing an L2 learner's actual performance (p. 234).[1] Such studies were limited to a description of interlanguage; they did not examine its development. Later research, such as Andersen's (1979, 1983, 1986, 1990) nativization model, VanPatten's (1996, 2004) model of input processing, and Pienemann's (1998) processability theory, would focus specifically on the psycholinguistic strategies responsible for interlanguage development.[2] We consider Andersen's model as one that provides fundamental insight into the relationship between input and L2 knowledge and the psycholinguistic operating principles guiding form-meaning connections throughout development.[3]

3.2.2 Operating principles

The nativization model proposes a continuum of interlanguage development in which nativization and denativization represent opposite ends of the acquisition

process. "Nativization constituted development independent of the nature of the target language system and denativization as development towards that target system" (Andersen, 1990, pp. 47–8). Thus, the nativization model treats interlanguage as an autonomous entity, and it views the continuum as ranging from interlanguage to the target language. Rather than identifying interlanguage principles, it explains the creation and restructuring of the interlanguage system according to seven psycholinguistic operating principles that account for stages of interlanguage development (Dussias, 2003, p. 239). The principles explain the relationship between input and output by predicting the developmental path by which, psycholinguistically, forms in the input are mapped to functions in interlanguage.

The operating principles explain that the more perceptually salient a form in the input is, the sooner it will be mapped to function in the interlanguage developing system, thus governing the path of development. Some of the principles function independently of others, whereas others interact with each other.[4] The principles that we feel best explain the selection of some forms before others to encode the Spanish direct object in interlanguage include:

The One-to-One Principle
An interlanguage system should be constructed in such a way that an intended underlying meaning is expressed with one clear invariant surface form (or construction). (Andersen, 1984a, p. 79)

The Multifunctionality Principle
(a) Where there is clear evidence in the input that more than one form marks the meaning conveyed by only one form in interlanguage, try to discover the distribution and additional meaning (if any) of the new form. (b) Where there is evidence in the input that an interlanguage form conveys only one of the meanings that the same form has in the input, try to discover the additional meanings of the form in the input. (Andersen, 1990, p. 53)

The Principle of Formal Determinism
When the form-meaning relationship is clearly and uniformly encoded in the input, the learner will discover it earlier than other form-meaning relationships and will incorporate it more consistently within his [*sic*] interlanguage system. In short, the clear, transparent encoding of the linguistic feature in the input forces the learner to discover it. (Andersen, 1990, p. 55)

According to the model, L2 learners' initial stages of form-function mapping are guided by a one-to-one principle, in which only one surface structure is associated with one underlying meaning in the input (Andersen, 1990, p. 51). This constraint applies to specific forms, such as articles and pronouns (Andersen, 1984; Zobl, 1980). Thus, the one-to-one principle would predict a tendency toward defaulting to one specific form to encode a particular function in the early stages of development (Andersen, 1984). When learners begin to discover additional forms in the input encoding the same function, and, likewise, when they discover that specific

concepts can be encoded with multiple forms, they have reached a developmental stage characterized as multifunctional. Here we see the path of development take its course; only when the L2 learner has perceived and noticed a particular form in the L2 input, and converted that form to intake, can s/he begin to then discover additional form-meaning associations consisting of the same form. Of particular relevance to form-function mapping is the acknowledgement of bi-directionality explicit in the multifunctionality principle (i.e. parts "a" and "b" of the principle). Multiple forms may encode one particular function and multiple functions may be encoded by one particular form. The transition from the one-to-one stage to the multifunctionality stage is guided by the principle of formal determinism.

The operating principles provide specific insight into the L2 acquisition of the target structure under investigation here. They are based on naturalistic language data and posit the psycholinguistic constraints governing the developmental path of L2 acquisition in terms of form-function mapping. We are able to account for development in terms of the varying saliency of specific form-meaning associations in the input, either due to their semantic transparency and similarity with their L1, or their varying levels of complexity in form-function mapping (i.e. multifunctionality).[5] In addition, they account for a path of development in the emergence of forms to function, and also the restructuring of interlanguage as multifunctionality emerges. In the next section we provide an overview of previous research analyzing the form-function development of the target structure, interpreting findings according to the operating principles within a concept-oriented analysis. We then argue for the need to analyze the development of form-function mapping bi-directionally, using a multifaceted analysis.

3.3 The L2 production of the Spanish direct object

The variety of research investigating the L2 acquisition of the Spanish direct object reflects the complexity of the target structure across various linguistic domains. Most studies focus primarily on the variable use of specific clitic pronouns (Andersen, 1983, 1984; Bruhn de Garavito and Montrul, 1996; Franceschina, 2001; Liceras, 1985; Liceras, Maxwell, Laguardia, Z. Fernández, R. Fernández, and Díaz, 1997; McCarthy, 2008; Sanchez and Al-Kasey, 1999; Torres, 2003; VanPatten, 1990; Zyzik, 2004, 2006, 2008), while others focus specifically on the syntactic aspects of object expression, such as clitic placement and object omission (Andersen, 1983, 1984; Bruhn de Garavito and Montrul, 1996; VanPatten, 1990; Zyzik, 2008), or the repetitive use of full NPs in discourse (Sanchez and Al-Kasey, 1999; Torres, 2003), or the syntactic-semantic interface of omission (Ortiz-López and Guijarro-Fuentes, 2009), to name a few. What becomes immediately apparent when comparing the results of the different studies is the overwhelming evidence of default form-meaning associations in the interlanguage of L2 learners and the inter- and intra-learner variability of object expression.[6] As the review will show, previous research has yielded specific fragments of a complex picture. We organize our review of literature by first focusing on case studies of beginning-level learners that provide information regarding form-function

mapping within a functionalist framework. We then review studies examining development beyond the beginning stages, and then those that provide specific information regarding morphological variability and the semantic features that have been shown to affect object expression and omission.

3.3.1 Case studies of early stage learners

The seminal work regarding the L2 acquisition of the Spanish direct object is that of Andersen (1983), in which he analyzed the natural data of a twelve-year-old boy living in Puerto Rico (Anthony). Andersen (1984) continued the study by examining a number of form-function mappings in Anthony's interlanguage, focusing specifically on gender inflection. Each study was based on a different 45-minute interview. His analyses revealed that Anthony's use of object pronouns was variable in terms of their accurate form and placement. For example, he had acquired the deictic forms *me* ("me"), *te* ("you"), and *nos* ("our"), but only produced those forms in the postverbal slot in VO constructions, and never in the preverbal slot in OV constructions, resulting in a combination of nativelike and non-nativelike utterances. Examples are seen in (3) and (4).

(3) *Ayúdame.* (VO)
Help [imp.]-me (DO)
"Help me."

(4) **y compre a mí una camisa.* (*VO)
and-she buys-to me [strong pro]-a shirt
"and she buys me a shirt."

In (3), Anthony accurately produced the object clitic after the finite imperative verb form, whereas in (4), he post-posed a tonic pronoun (in place of a clitic) after the finite verb of an active sentence. The findings indicate that the first and second person deictic forms were the first to emerge, but were not yet being mapped to OV word orders.

Anthony's production of the third person system was less developed. His first interview generated six contexts in which to use a preverbally placed third person object pronoun, and five contexts to use post-posed third person forms. As Table 3.1 indicates, Anthony omitted all of the third person preverbal forms and supplied three masculine forms in the postverbal position.[7]

The data generated by Anthony's second interview consisted of 14 contexts requiring preverbal third person indirect and direct object clitics. In one instance, he overused the subject pronoun *él* ("he") in place of the direct object clitic *lo* ("it/him"). In three instances, he used a redundant full NP in place of a clitic, and in ten instances he did not use any form at all (omission). Table 3.2 provides the breakdown of Anthony's production of direct object clitics in ratio to their contexts and provides an analysis of his interlanguage strategies.

Andersen concluded that Anthony transferred his knowledge of direct object placement from English. He employed the strategy when he mapped SVO word order

Table 3.1 Anthony's production of clitic pronouns in Andersen (1983) (first interview)

Clitic	Finite V(OV) Production / contexts	Non-finite V(VO) Production / contexts
me	15/17	1/2
te	-	-
nos	1/1	-
lo(s)	0/2	3/4
la(s)	0/2	0/1
le(s)	0/2	-
Total	16/24	4/7

Note: Adapted from Andersen (1983)

Table 3.2 Anthony's production of clitic pronouns in Andersen (1984) (second interview)

Clitic	Finite V(OV) Production/contexts	Non-finite V(VO) Production/contexts	What did Anthony produce as alternatives?
me	0/2	7/7	2 strong pro (a mí)
nos	0/1	0	1 strong pro (nosotros)
te	0	2/2	
lo(s)	0/5	0	2 NPs; 3 omissions
la	0/4	0	4 omissions
le	0/1	0	1 omission
les	0/1	0	1 omission
Total	0/14	9/9	

Note: Adapted from Andersen (1984)

to Spanish SOV phrases because he attended to SVO utterances in Spanish input, which match the word order of Anthony's native language, and resulted in the potential to overgeneralize the prototypical word order from input to the mapping of all sentence structures in his IL.[8] Andersen also concluded that Anthony followed a one-to-one form-function mapping strategy with regard to clitic forms, which explained his tendency to omit third person forms. He asserted that the homophonous nature of the third person accusative forms *la*, *las*, and *los* (i.e. they also encode definite articles) resulted in Anthony's lack of producing them as such, due to his inability to map them with additional functions (Andersen, 1984, p. 86).[9] He also noted that Anthony did not exhibit any difficulty with inflections for person; his main limitation involved the almost complete omission of third person forms. Andersen (1984) concluded that Anthony's lack of production and gender marking in the third person system was due to his inability to know what form to use, and to know where to put it (p. 86). Based on the data yielded by his interviews, Anthony's production of the direct object reveals characteristics of pragmatic and lexical stages of development, in that he begins with omission, before using default clitic forms to distinguish between first and third person. He does not, however, show any signs of morphological analysis, and we do

not see any distinction in his production of markers for number, gender, or case. Table 3.3 provides a description of Anthony's production based on concept-oriented stages.

VanPatten (1990) drew on Andersen's findings by conducting a case study on a beginning-level L2 classroom learner (David) with the intention of comparing natural and classroom-learning contexts. David was enrolled in a first-year, university-level Spanish course, and was a native English speaker. VanPatten interviewed him every two weeks throughout the course of a semester and analyzed his production of clitic pronouns. The comparisons revealed similarities as well as differences between David and Anthony. Table 3.4 shows the breakdown of individual clitic forms used by David in OV and VO contexts.

Like Anthony, David demonstrated the early acquisition of the first person clitics *me* ("me") and *nos* ("us") and the second person clitic *te* ("you"). Both learners also maintained SVO word order, regardless of the presence of a (non)finite verb. Whereas Anthony often omitted any form at all in the direct object position, David always produced a form to mark the direct object, either as a full NP or another, non-nativelike pronominal form, such as one with the wrong person. Anthony, on the other hand, did begin to show his ability of producing clitic forms using the appropriate person. Finally, both learners were limited in their ability to produce third person forms marked for number and gender. While David did produce nativelike indirect object clitics (*le*, *les*) in 28 of 29 obligatory contexts, he only produced nativelike direct object clitics at a rate of 20%.

Like Andersen, VanPatten (1990) concluded that both learners maintained a one-to-one form-function mapping strategy and that learning context did not influence the complexity and sequence of acquisition for either learner. He also concluded that

Table 3.3 Developmental characterization of Anthony's production of direct objects

Stage	Description
Pragmatic	SV(O) word order; O as stressed pronoun or zero
Lexical	SVO word order; O as 1st/2nd person clitics
Lexical	SOV word order; O as 1st person (*me*) preverbal
Lexical	SOV word order; O as default 1st person (*me*) and 3rd person (*lo*) clitics; 1st person preverbal, 3rd person postverbal

Table 3.4 David's production of clitic pronouns reported in VanPatten (1990)

Clitic	Finite V(OV) Production / contexts	Non-finite V(VO) Production / contexts
me	14/15	3/3
te	3/7	-
nos	3/3	-
lo(s)	2/5	2/4
la(s)	0/5	-
le(s)	28/29	-
Total	58/70	6/9

Note: Adapted from VanPatten (1990)

the instructed learning context resulted in a lower tendency to omit forms than a natural context did, crediting the difference to the quality and quantity of input received in each environment. VanPatten's study provides additional insight regarding form-function mapping in the L2 acquisition of direct object clitic pronouns. First, he provided additional data confirming Andersen's assertion of the primacy of the deictic pronouns *me*, *te*, and *nos* in interlanguage, all of which follow a one-to-one form-function relationship in the input, and the later acquisition of the third person direct object forms, which are multifunctional with grammatical categories other than clitic pronouns. Second, within the third person clitic pronoun system, VanPatten's data reveal the primacy of the indirect object pronouns *le* and *les*. Unlike the third person direct object clitic pronouns, and like the deictic pronouns, the indirect object third person forms correspond to a one-to-one principle; they always represent a clitic pronoun in the input, and never a different grammatical category, such as a definite article. Finally, VanPatten's study confirms the acquisitional challenge of producing nativelike word orders beyond the canonical SVO pattern.

Andersen's and VanPatten's case studies provide a valuable point of departure from which subsequent research would analyze the target structure. Their findings, however, do not provide a complete portrait of the L2 acquisition of Spanish direct object clitic pronouns. Despite VanPatten's findings confirming the primacy of a one-to-one strategy guiding acquisition, his analysis, like Andersen's, is limited with regard to what it reveals about development of form-function mapping in interlanguage that would explain a particular sequence of emerging forms. Which third person forms emerge once *lo* appears? VanPatten's analysis was both qualitative and quantitative. He provided empirical frequencies regarding the (non)nativelike production of clitic forms and followed up with explanations of why David produced so many tokens of indirect object clitic pronouns, concluding that the input typical of a classroom context was different from that of a natural one. His analysis, like those of Andersen, did not reveal the development *per se* of form-function mapping of the target structure. While we can identify the primacy of forms that follow a one-to-one mapping principle prescriptively, we do not know if David indeed follows a one-to-one principle in his interlanguage. In other words, we do not know if he distributed the direct object clitic pronouns to other functions outside of those being analyzed.[10]

The proficiency level of Anthony and David also prevents us from arriving at conclusions regarding L2 development. We know, for example, that Anthony was a natural language learner residing in Puerto Rico, but we do not know his precise (or general) level of L2 proficiency, while David represented a first-year instructional level. Like Anthony, David demonstrated early acquisition of the first and second person object clitic pronouns and subsequent emergence of third person forms with a limited ability to use the appropriate form. We do not know, however, how development of the third person system proceeds beyond their emergence in interlanguage. Finally, the generalizability of the findings regarding David and Anthony's use of object clitics is limited. The data provided are not able to reveal developmental patterns within a range of more advanced proficiency levels. In addition, as Tables 3.1 and 3.2 indicate, the amount of data elicited from Anthony only yielded 54 contexts in which clitic pronouns may have been used, and only 24 of which were for third person

forms. Likewise, David produced a substantial number of indirect object clitics, but a limited number of direct object forms. Subsequent research would aim to elicit a larger amount of data from a wider range of proficiency levels.

3.3.2 Development beyond the early stages

Torres (2003) continued the investigation within the context of the operating principles posited by Andersen with the aim of identifying development among learners whose L2 proficiency levels exceeded that of Anthony and David. She elicited data by means of oral interviews from 15 different L2 learners on three different occasions over the course of one semester. Ten of the informants were classroom learners and five were L2 learners studying abroad in Spain. She rated the L2 proficiency levels (based on ACTFL OPI ratings) ranging from novice-high to advanced-low in the classroom-learner group, and from intermediate-low to intermediate-high in the study-abroad group. She analyzed the L2 production of direct object clitic pronouns by first identifying the production of the target structure in obligatory contexts, and then identifying omission in place of any direct object form. She provided individual frequencies of production of each clitic pronoun by each of the 15 informants, and also provided the raw count of occurrences of non-nativelike production. Table 3.5 collapses the raw frequency of direct object clitic pronouns supplied in contexts for clitic pronouns that Torres found across all fifteen learners.[11]

As Table 3.5 shows, there are more contexts in which third person forms were used than first and second person forms. In addition, there are many more instances of omission within the third person system than there are for the other persons. We can deduce from Table 3.5 that the L2 learners in her study, like Anthony and David, were more challenged by the third person forms. Torres characterized her data as revealing "intra-learner and inter-learner variation in the number of clitics supplied in clitic contexts" (p. 116). She also noted that clitics did not begin to be produced until the intermediate level of learning. She added that it was "difficult to compare the numbers [of clitics produced by each learner] because each conversation was a different length, but they averaged between twenty-five and forty minutes" (p. 117). Torres calculated frequencies of use, overuse, and inaccurate use of each clitic form, and attempted to build on the stages of development identified by Andersen in Anthony's interlanguage. They are shown in Table 3.6.

Table 3.5 Torres' (2003) frequency of clitic production in clitic contexts

Clitic	1st interview	2nd interview	3rd interview	Total
me	13/16	9/12	17/20	39/48
nos	0/1	0/1	3/4	3/6
lo	6/29	12/17	42/66	60/112
la	3/14	2/11	3/14	8/39
los	2/3	2/6	6/10	10/19
las	0/3	2/7	0/1	2/11

Note: Adapted from Torres (2003)

Table 3.6 Stages of development in the production of clitic pronouns in Torres (2003)

Stage	Description
0	Novice-high – Intermediate-low; no clitics; *gustar*-formulaics only
1	Intermediate-low; 1st person only (*me*, *nos*)
2	Intermediate-mid; increase in production of specific forms; 3rd person produced in postverbal slot
3	Intermediate-high; advanced-low; increased accuracy accompanied by fewer clitics and reduced clitic contexts

Note: Adapted from Torres (2003)

What is evident in her conclusion is that she did not identify many differences from the stages hypothesized by Andersen. She adds "Stage 0," which accounts for the L2 learners' lack of production of clitic pronouns, labeled as a "developmental limitation." In the next stage, non-homophonous forms are produced; a transition to multifunctionality occurs, when the third person forms begin to appear in the postverbal slot. The predominance of SVO word order is also present. The advanced-level learners are characterized as producing fewer contexts in which to use clitics, but with increased accuracy of the target structure when they do produce them.

Torres' analysis provided an important contribution by analyzing production by advanced-level learners. By analyzing the data of L2 learners at a higher proficiency level than those of Andersen's and VanPatten's studies, she showed that the third person forms are not only acquired after the deictic forms, but that they persist as an acquisitional challenge.

From a methodological perspective, Torres' study, in addition to those of Andersen and VanPatten, provides an example of the difficulty of eliciting a sufficient number of tokens of all forms under analysis by means of oral interviews. The elicitation of all third person forms (and their contexts) equally among the fifteen participants varied, thereby limiting the ability to analyze the inter- and intra-learner variation she observed. This makes it difficult to distinguish a lack of contexts in which to use a clitic pronoun from the developmental limitations to do so. She also excluded from her analysis all tokens of overgeneralization of direct object clitic forms to other grammatical contexts, including those used as subjects, basing her decision to do so on what she believed to be individual differences (p. 134). Consequently, as is also the case with the case studies of Andersen and VanPatten, we cannot draw conclusions regarding the extent of specific patterns of form-function mapping of the target structures in her L2 learners' interlanguage and distinguish between idiosyncratic and systematic variation.

Another study focusing on form-function mapping is Zyzik (2004). Working in the framework of the competition model, she identified semantic features of the clitics used as cues by L2 learners to create a prototype form for each case. Her analysis provides the first quantitative empirical investigation in which third person object pronouns were analyzed bi-directionally, from form to function and from function to form. She collected data from fifty L2 learners representing four different levels of proficiency, which she determined based on level of instruction and time spent in a

Spanish-speaking country. She employed a variety of elicitation tasks, which included structured oral interviews, video narrations (re-tell tasks), a picture description task, and a storybook narration. The total third person direct object clitic production elicited by her tasks, combined, is indicated in Table 3.7, along with the average number of tokens produced per individual, indicated in parentheses.

Since the Level–1 learners in Zyzik's study only produced five clitics, she began her distributional analysis with Level 2. The distribution of direct object clitic pronouns to the different functions she identified for Levels 2–4 is indicated in Table 3.8, in which we see a steady increase (by level) of the pre- and postverbal forms. We also see a decrease in production of tokens overgeneralized as objects of a preposition, as well as those incorrectly placed after a finite verb. Consequently, the analysis reveals interlanguage development by showing what L2 learners do with these forms.

The function-form analysis in Zyzik (2004) provided a cross-section of anaphoric devices that were used by L2 learners to realize the semantic role of patient by first identifying the contexts of direct objects, and then coding the different forms used in those contexts. The distribution is indicated in Table 3.9.

Table 3.7 Total third person direct object clitic use in Zyzik (2004)

Clitic	**Level**				**Total**
	1	2	3	4	
lo(s)/la(s)	5 (.42)	85 (7.08)	153 (12.75)	249 (17.78)	491

Note: Adapted from Zyzik (2004)

Table 3.8 Zyzik's (2004) distribution of direct object clitic pronouns to different functions by proficiency level

Structural context	**Number of tokens**		
	Level 2	**Level 3**	**Level 4**
Preverbal direct object	33	97	146
Postverbal direct objects (correct)	29	46	91
Preverbal indirect object	2	7	6
Object of preposition	4	0	0
Reduplicated direct object	9	2	4
Postverbal after finite form	8	1	2

Table 3.9 Zyzik's frequency of distribution of forms to direct object function

Level	**NP Overuse**	**Zero**	**Clitic**	**Strong Pro**	***Se* as anaphor**
1	174	31	6	15	10
2	100	42	87	10	12
3	57	29	176	12	18
4	60	15	298	0	20
Total	391	117	567	37	60

Note: Adapted from Zyzik (2004)

What is most evident in Table 3.9 is the dramatic increase of clitic pronouns as anaphora throughout proficiency levels as well as the decline (though more gradual) of omission and of NP overuse. In other words, as proficiency levels rose, L2 learners opted for using a more complex form to encode the direct object, thus increasing the cognitive demands of using clitics that agreed morphologically with their antecedent.

Zyzik concluded that there were three stages of development for the accusative case based on her bi-directional analysis. Table 3.10 shows that development was characterized as a move away from relying on full NPs as direct objects, and movement toward the use of clitic pronouns.

Zyzik's (2004) study marked a step forward in how we analyze the acquisition of the target structure. Using a function-to-form analysis, she was able to identify the (re)distribution of functional load to different forms as learners developed beyond beginning stages. Using a form-to-function analysis, she recorded what L2 learners do with forms beyond the scope of a single function, thus capturing a more refined transition toward multifunctionality.

Aside from the contribution of Zyzik (2004) to our understanding of the effective analytic framework for investigating the target structure, there are several aspects regarding the acquisition of the direct object that her study did not address, thus calling for future research to continue the investigation. Zyzik's analysis did not provide a description of individual third person direct object clitic forms. Since her study compared the acquisition of clitic pronouns in terms of the proto-categories of accusative, dative, and the clitic *se*, she collapsed all four of the third person direct object forms *lo*, *la*, *los*, and *las* into one category labeled "lo." We do not know how each specific accusative form was produced by her L2 learners, nor do we know how specific forms were mapped with specific functions in interlanguage, even with functions representing a different grammatical category outside of the semantic role of patient. Therefore, we do not know the order of emergence of *lo*, *los*, *la*, and *las*. As a result, the hypotheses posited by Andersen (1984) and VanPatten (1990) regarding the subsequent emergence of forms cannot be supported or refuted.

Zyzik (2006) continued the analysis of the data generated in her (2004) work and examined more closely the overgeneralization of the indirect object *le* to direct object contexts. She found that L2 learners associate the indirect object form with animacy

Table 3.10 Stages of development for the accusative case in Zyzik (2004)

Stage	Description
1	Emergence: Accusative clitics begin to appear in reference to inanimate objects. Occasional misplacement and reduplication. Use of clitics as independent lexical items may occur. NP overuse is the dominant anaphoric strategy.
2	Expansion: Preverbal accusative clitics become more frequent. Placement improves, NP overuse declines; case distinctions persist.
3	System completeness: Accusative clitics are preferred for anaphoric reference.

Note: Adapted from Zyzik (2004)

and tend to use it with animate direct object referents, which she referred to as *L2 leísmo*. Her finding suggests that basic form-function mapping may not simply be explained in terms of Andersen's one-to-one principle and that other features, such as animacy, may be contributing to interlanguage construction.[12]

Whereas all of the cognitively oriented studies reviewed thus far investigated L2 acquisition by L1 English learners, Klee (1989) investigated the L2 production of the target structure by native speakers of Quechua. Her study provides the opportunity to compare data cross-linguistically using typologically different L1s. Quechua is an SOV language, and the Spanish of Quechua speakers frequently exhibits the overuse of SOV word order and the misuse of clitic pronouns (Klee, 1989, p. 402). She studied the production of clitic pronouns by four different native Quechua speakers. Each informant represented a different L2 proficiency level in Spanish, which Klee determined based on the sociolinguistic variables of education, socioeconomic status, and the amount of contact with the Spanish language. Table 3.11 provides the frequency of clitic production by each participant in ratio to what were considered obligatory contexts. (Rather than using their pseudonyms, we will label informants based on their respective proficiency level.)

Klee's findings build on the operating principles hypothesized by Andersen (1984). First, she noted the overgeneralization of SOV word order by Learner 1 (she did not report such phenomena occurring with the other learners).[13] Klee's informants also showed challenges in producing nativelike object pronouns similar to Anthony's. She noted that nativelike production correlated with the level of education of each informant and their level of contact with Spanish speakers (p. 406). Table 3.11 shows that the direct object pronouns used most accurately by these learners were the deictic forms *me*, *te*, and *nos*. Furthermore, like all other results reviewed, the third person system presented Klee's learners with the greatest challenge. Omission of clitics and full NPs was the dominant strategy in third person contexts. When clitics were produced, Klee noted that the third person forms *le* and *lo* were used most accurately first, followed by the plural forms *les* and *los*. The least accurately used forms appeared to be those marked for the feminine gender *la* and *las*. These results are consistent

Table 3.11 Klee's (1989) frequency of clitic production

Form required	Learner 1	Learner 2	Learner 3	Learner 4
me	29/30	62/66	21/21	56/56
te	3/10	2/3	11/11	6/6
nos	1/4	21/21	11/11	5/5
le	0/3	21/45	12/13	35/41
les	0/5	0/2	7/9	3/5
lo	2/28	7/29	14/20	19/26
la	0/1	2/17	0/11	3/12
los	0/7	0/1	11/18	3/4
las	0/9	0/3	0/8	0/0

Note: Adapted from Klee (1989). These learners represent four different L2 proficiency levels, in which Learner 1 is the lowest level and Learner 4 is the highest.

with all of the other findings reviewed thus far and support the one-to-one principle. Klee concluded that her participants used object clitic pronouns based on their inflections for case first, then for number, and then for gender (p. 407), but presented those conclusions while also noting that further research with a larger number of subjects is necessary to determine the order of acquisition of these forms (p. 406). Klee's study provides the most thorough data set of individual forms thus far from which specific conclusions may be drawn regarding each form and provides a working hypothesis that the order of acquiring the third person forms follows *le/lo*, *les/los*, *la/las*. The order would coincide with the movement from one-to-one mapping to multifunctional mapping. A further analysis of the distribution of forms to functions in interlanguage would reveal how form-meaning associations in interlanguage restructure when new forms emerge, and could potentially confirm the hypothesis posited by Klee (1989).

3.3.2.1 Focus on clitic placement

Liceras (1985) investigated the placement of clitic pronouns by sixty L2 learners of Spanish, thirty of whom were native English speakers and thirty of whom were native French speakers, with the theoretical aim of identifying access to UG. She collected data using two different instruments for comparison. One required that learners "tell a story or write a dialogue explaining images projected on a screen" (p. 158), and they were explicitly instructed to use object pronouns in their production. This task was utilized as a means to collect "spontaneous speech that was somewhat controlled" (Liceras, 1985, p. 158). The other task was in the form of "structural exercises that were given as part of their placement test" (pp. 158–9). It required that L2 learners replace an italicized noun in a written sentence with the appropriate pronoun.

The narrative task showed that both groups placed pronouns before a conjugated verb, after an infinitive, and before a periphrastic verb phrase. Both groups also produced three different non-nativelike word orders. They were omission of an obligatory clitic, post-posed clitics after a conjugated verb, and clitics placed in the middle of periphrastic constructions. There were more instances of the non-nativelike placement in the substitution exercise than there were in the spontaneous production exercise (p. 161). Based on the errors generated in both exercises, she concluded that clitics are viewed as independent words in the non-native grammars of L2 learners.

Bruhn de Garavito and Montrul's (1996) results corroborated those of Liceras (1985). They tested the acquisition of object clitic placement by twenty intermediate L2 learners of Spanish whose native language was French. Participants completed a proficiency test and an elicited written production task in which the underlined NP in a Spanish sentence needed to be replaced with a clitic pronoun. Specifically, Bruhn de Garavito and Montrul wanted to determine the extent to which the acquisition of finite/non-finite verb distinction would affect the placement of clitics. They found that L2 learners placed the clitic appropriately, according to the (non)finite verb, 70–80% of the time. They concluded that L2 learners had acquired position, while problems with clitic climbing persisted.

3.3.3 The need for a comprehensive study

When considering the findings of the research reviewed thus far, we see several consistencies regarding the development of form-function mapping and L2 production. A variety of limitations, however, prevent us from identifying a sequence of interlanguage development. First, methods of determining proficiency levels from one study to another varied; we cannot assume that Torres' level 1 learners were at the same level as Zyzik's and Klee's, for example. Second, methods of data collection were not uniform across studies; it is unclear to what extent particular methods, such as oral interviews, may or may not have limited the elicitation of specific target forms. Third, further research is needed to analyze the production of specific third person direct object clitic forms. In Table 3.12, we hypothesize a sequence of development based on previous research, using a concept-oriented framework, which we assert would require further investigation in order to be substantiated.

The most consistent findings are the predominance of SVO word order among beginning-level learners, the preference for full NPs or omission in place of clitics, the early emergence of deictic forms, and the pervasive challenge of using third person clitics throughout development. We also include the late emergence of feminine third person forms, and the overgeneralization of default clitic forms, mainly the masculine singular *lo*. From a concept-oriented perspective, we interpret the development in terms of the level at which forms are analyzed in interlanguage, beginning with a pragmatic stage, followed by a lexical stage, and then followed by a morphological stage.

The pragmatic stage is characterized by a lack of analysis of forms encoding the direct object, resulting in the omission of full NPs and clitics. L2 learners at the pragmatic stage do not show evidence of attending to forms in the input that encode the direct object, and thus rely on context (or an interlocutor) to construct meaning. At the lexical stage, forms begin to be used as lexical items, though without any level

Table 3.12 Summary of potential sequences of L2 production of the Spanish direct object.

Sequence	Description
	PRAGMATIC STAGE
1	SVO dominance; full NPs or omission in place of clitic pronouns
	LEXICAL STAGE
2	Emergence of deictic clitics in postverbal slot
3	Emergence of deictic clitics in preverbal slot
4	Emergence of third person pronouns in postverbal slot
5	Emergence of third person pronouns in preverbal slot
6	Emergence of singular forms before plural forms
7	Emergence of masculine forms before feminine forms
8	Persistence of default masculine forms
	MORPHOLOGICAL STAGE
9	Emergence of feminine forms
10	Person, number, and gender are stable

of morphological analysis. The stage is characterized by either the use of full NPs, or the default use of clitic forms. The default clitics are used as independent words in interlanguage to encode person; the deictic forms are used consistently to mark first or second person, and *lo* is the default third person form, regardless of grammatical gender and number. There is also some evidence that, at early stages of development, *lo* marks an inanimate direct object, and *le* marks an animate one. In any case, learners follow a one-to-one principle in their interlanguage. The final stage begins with the morphological analysis of the third person forms, and we see the emergence of forms inflecting number and gender. The findings reviewed thus far, however, do not reveal any level of interlanguage stability with third person forms as L2 learners reach advanced levels.

Research analyzing form-function mapping also reveals several methodological challenges when studying the target structure. We assert that the concept-oriented approach may effectively reveal the developmental route of the target structure as interlanguage is constructed. We also assert that a bi-directional analysis of form-function mapping will supplement the concept-oriented approach by not only identifying the emergence of new forms in interlanguage, but also the restructuring of form-function distribution as multiple forms are used to encode multiple meanings. Such an analysis would better capture the transition from a one-to-one stage of interlanguage development to a multifunctional one. Previous research taking a more formalist approach to acquisition has shed findings that, at times, corroborate those of the previous studies already reviewed and, at others, add additional findings to what we know regarding morphological and semantic features of the target structure that influence its saliency in input. We now turn to our review of such studies in order to identify additional phenomena guiding development.

3.4 Pragmatic, semantic, and morphological predictors of L2 object expression

Recent studies investigating interface phenomena within the framework of universal grammar have identified a variety of features that are considered to be *vulnerable* to learning in L2 acquisition.[14] Research investigating the acquisition of the Spanish direct object specifically has focused on the discourse-pragmatic/syntactic and semantic/syntactic interface (see, for example, Borgonovo, Bruhn de Garavito, and Prévost, 2006; Borgonovo, Bruhn de Garavito, Guijarro-Fuentes, Prévost, and Valenzuela, 2006; Ortiz-López and Guijarro-Fuentes, 2009; Prévost and Valenzuela, 2006). They identified various interface features, such as definiteness, specificity, and animacy, that may impose additional cognitive demands on the L2 learner, which may result in an inability to process some forms in input, and thus be late acquired. Other studies have focused on object omission and/or the use of default clitic forms in non-targetlike contexts, and related such phenomena to the grammatical morphology of person and number (see, for example, Franceschina, 2001; McCarthy, 2008; Zyzik, 2008). In this section we explore the findings of such research, with the aim of better understanding

the morphosyntactic development of the target structure, with particular attention being given to object omission and third person clitics.

3.4.1 Discourse-pragmatic and semantic features

Sanchez and Al-Kasey (1999) investigated the L2 acquisition of Spanish direct object clitics among twelve L2 learners divided into three different proficiency groups, based on a proficiency test. Their performance on two tasks was compared to that of six native speakers. The two tasks consisted of an oral narrative and a sentence-matching task using pictures. The sentence-matching task examined the acceptability of sentences representing specific word orders. Sentences that involved an OV construction with a fronted object included a clitic licenser of the fronted object. The sentence-matching task revealed results similar to earlier studies in processing. Sanchez and Al-Kasey (1999) found a preference for SVO word order among the lower-level learners. Also, their data revealed that L2 learners preferred clitic doubling when its referent was inanimate and indefinite, whereas the native speakers preferred it when it allowed for an interpretation of clitic left-dislocation. Finally, they found that omission of direct objects was acceptable by L2 learners.

The oral narrative data, however, reveal information more specific to the effects of task. Sanchez and Al-Kasey (1999) conducted a function-form analysis to reveal that L2 learners and native speakers preferred explicit forms for realizing the role of direct object and that omission was not common. Their results are indicated in Table 3.13, which uses the term "incorrect overt NP" in the same fashion that Zyzik (2004) used the term; they both refer to the use of a full NP when it has already been established as the topic in discourse, and its continuity as such has not been interrupted. We will discuss Table 3.13 in terms of the incorrect overt NPs and the percentages of clitic use.

While Zyzik (2004) showed a positive correlation between declining use of overt NPs and increase in proficiency level, Sanchez and Al-Kasey (1999) revealed a curve with a dip at level 2. Such findings would lead to research more closely examining the occurrence of omission in L2 production and its relationship with the expression of other forms as the direct object.

Zyzik (2008) specifically investigated the use of null objects in L2 production and compared it with data from a grammaticality judgment test with the overall aim of determining whether omission is the result of representational or performance limitations.[15] Some research, such as Fujino and Sano (2002), assert that in the L1 learners'

Table 3.13 Distribution of direct object forms to direct object function in Sanchez and Al-Kasey (1999)

Level	% Correct Overt NP	% Incorrect Overt NP	% Clitics
1	65	29	4
2	76	19	4
3	51	28	13
Native	58	0	42

Note: Adapted from Lee (2003)

underlying grammar licenses null arguments, whereas other studies have posited that omitting arguments is due to processing limitations (see, for example, Bloom, 1990; Prévost and White, 2000; Valian, 1990). Zyzik found that null objects occurred in 2.9% of all direct object contexts. Further analyses revealed that they were most common in ditransitive verb constructions, and were restricted to environments in which referents were highly accessible and indicated topic continuity. Of particular relevance to the present review of literature, she concluded that omission occurred in place of clitics, and not in place of full NPs. In other words, direct object omission in Zyzik's production data was synonymous with *clitic* omission. Given that L2 learners self-corrected during production, and that the results of the GMT differed from those of the production task, she concluded that omission was a performance phenomenon.

Zyzik's (2008) results shed new light on the findings of previous literature. While each of the aforementioned studies yielded information regarding object omission, hers set out to investigate the constraints surrounding it. Whereas Andersen (1983) concluded that Anthony omitted third person object clitics due to a lack of knowledge of form and placement, Zyzik revealed that such a lack of knowledge is not necessarily evident—that is, L2 learners may possess knowledge of such forms but cannot access all of them equally during on-line production tasks. In addition, her findings partially support VanPatten's (1990) conclusion that instruction plays a large part in omission. While David did not produce null objects, Zyzik's instructed learners did, yet at a very low rate. Her finding regarding the relationship between object omission and clitic omission is evident in the findings of previous research as well. A closer look at the data of Andersen, VanPatten, Torres, and Klee reveals that omission was most common in contexts of third person clitics. Finally, her study indicated that L2 learners are sensitive to topic continuity, and may omit the object when the topic is immediately in focus throughout discourse.

Working within the context of contact phenomena, Ortiz-López and Guijarro-Fuentes (2009) explored the syntax/semantics interface by comparing the distribution of direct objects of a group of L2 learners of Spanish (L1 Creole) (n=5) to that of a group of bilingual speakers (Spanish/Creole) (n=5), and a group of monolingual speakers along the boarder of Haiti and the Dominican Republic (n=5). Using an oral interview, they elicited and coded the target structure, the results of which are indicated in Table 3.14.

Ortiz-López and Guijarro-Fuentes found that, while there were quantitative differences between overt versus null object expression across the three groups, the differences were not qualitative. All groups used lexical objects in the majority of

Table 3.14 Distribution of third person direct objects, by linguistic group[16]

	Lexical objects	**Overt objects**	**Null objects**	**Total**
Monolingual	443 / 76%	108 / 19%	30 / .05%	581
Bilingual	393 / 74%	102 / 19%	34 / .06%	529
L2	316 / 72%	92 / 21%	33 / .07%	441
Total	1152 / 74%	302 / 19%	97 / .06%	1551

Note: Adapted from Ortiz-López and Guijarro-Fuentes (2009)

contexts, preferred overt objects over null, and rarely omitted obligatory objects. Based on their results, they investigated the semantic features of [+/- specific], [+/- definite], and [+/- animate], in relation to object omission. They found that all groups dropped the direct object when its referent was [-specific], and that all groups overtly expressed it when its referent was [+animate], or, more specifically, [+human]. These L2 learners showed that external factors, such as differences between Creole and Spanish, or contact phenomena, were not as vulnerable as internal factors, such as the semantic features analyzed.[17] The authors concluded that future studies should increase the amount of participants and elicit a larger pool of data to analyze.

These studies reveal important findings regarding additional factors affecting object expression. Like Zyzik (2004), Ortiz-López and Guijarro-Fuentes (2009) identify a connection between animacy and overt expression, while their results regarding specificity do not corroborate those of studies utilizing acceptability tasks (see, for example, Borgonovo et al., 2006). Like VanPatten (1990), Zyzik (2008) identifies the tendency to omit clitics in ditransitive verb constructions. In addition, Sanchez and Al-Kasey (1999) and Zyzik (2008) both conclude that L2 learners are sensitive to topic continuity in discourse and omit the object when it is in focus. Future research is needed in order to establish the extent to which such features develop in the interlanguage of L2 learners.

3.4.2 Morphological features

Research focusing specifically on the syntactic aspects of direct objects (or its interface with other linguistic domains) reveals a variable placement of clitics relative to a (non)finite verb, in which learners tend to treat clitics as an unanalyzed lexical item. It also showed a relationship between omission and third person clitics—omission occurred mainly in place of third person clitic forms. It did not, however, analyze specific forms within the third person system. Research focusing on the morphology of clitic pronouns and its variability in L2 production helps us to understand which forms present L2 learners with the most challenge, and also addresses the relationship between morphology and syntax in L2 production.[18]

Studies examining errors in the production of direct object clitics have yielded important information regarding the morphological variability in L2 production. Liceras, Maxwell, Laguardia, Fernández, Fernández, and Díaz (1997) examined the interlanguage development of clitic pronouns among five secondary-school learners of Spanish and six university-level learners. While all were beginning-level learners of Spanish, they were all bilingual in French, in addition to some of them being speakers of Arabic, Greek, Italian, or Portuguese. The researchers gathered data using two tasks: an oral interview designed to elicit spontaneous speech and a sentence-repetition task, the details of which were not provided. Data were collected three times throughout the course of a semester from each participant using both tasks.

The researchers analyzed the production of four types of clitics: direct objects, indirect objects, reflexives, and experiencers. Table 3.15 provides the breakdown of the different clitics produced during the interviews.

Table 3.15 Average percentage of Nativelike spontaneous production of clitics

	Reflexive	**Experiencer**	**Direct Object**	**Indirect Object**
Secondary	68%	62.5%	84%	50%
(n=5)	28/41	5/8	16/19	2/4
University	51%	58%	100%	63%
(n=6)	22/43	21/36	5/5	5/8

Note: Adapted from Lee (2003)

L2 production of nativelike clitic forms varied from one form to another. We see, for example, that only nine of the eleven learners produced direct object clitic pronouns, and that the university-level learners produced them free of error. We do not know, however, the specific nature of the errors that were made. With regard to the sentence repetition task, a breakdown of nativelike repetition per individual was provided. Like the findings of Zyzik (2004, 2006) and VanPatten (1990), they noted the overuse of the indirect object in direct object contexts; the data showed a tendency to repeat the form *le* in place of *los*, *las*, and *nos*, leading the authors to conclude that the L2 learners had not yet acquired the agreement features of the target structures.[19]

Franceschina (2001) revealed a more systematic use of clitic forms in her analysis of gender and number agreement in the L2 production of Martin, a native English speaker who began his study of Spanish as an adult and subsequently lived in an immersion setting for 19 uninterrupted years. Data were collected through eight oral interviews between Martin and the researcher, totaling 94 minutes. The accurate use of number and gender inflection was analyzed in obligatory contexts. Results indicated that the majority of errors were based on gender, far outnumbering that of number. Further analysis indicated that the masculine form *lo* was overused in 40.74% of obligatory contexts for the feminine form *la*, and 48.15% in contexts for the neuter. Meanwhile, the overgeneralization of the feminine form only occurred in 7.41% of masculine contexts and 3.7% of neuter contexts. Franceschina's findings show a clear default use of the masculine form *lo* by Martin across all gender contexts.

McCarthy (2008) analyzed production of twenty-four L2 learners of Spanish, characterized as intermediate (n=15) and advanced (n=9), using an elicited production task in which participants were shown a picture of an object by an interviewer and then required to explain what was happening to it, using a clitic pronoun. The pictures were counterbalanced such that each form for number and gender could be elicited equally. She compared her production data to results on a comprehension test by the same learners with the aim of determining whether morphological variability would be the result of representational or performance deficits, in which case the former would be revealed in comprehension data and the latter in production data.

Using the Feature Hierarchy (Harley and Ritter, 2002) as a model to explain variability, McCarthy found that, in production data, the underspecified masculine and feminine forms were adopted by intermediate-level learners as default clitics and that the underspecified masculine form persisted as a default among advanced-level learners. She found similar results in her comprehension data, thus concluding that morphological variability is a result of representational deficits driven by feature

specification. Like Franceschina (2001), McCarthy (2008) provides convincing evidence that the morphological variability in the L2 production of Spanish clitics is systematic, and is pervasive reaching advanced levels of proficiency. Interestingly, none of the aforementioned studies has revealed the ultimate attainment of the feminine clitic forms.

The research focusing on morphological variability confirms the use of default morphological forms in L2 production. Within the third person system, singular forms are used over plural forms and masculine forms are used over feminine forms, with accurate gender inflection remaining an acquisitional challenge. Researchers focusing specifically on omission concluded that omission of direct objects occurs in place of third person clitics, and not in place of full NPs (Zyzik, 2008). In addition, two of the studies we reviewed above (McCarthy, 2008; Zyzik, 2008) address variability in terms of whether it is a reflection of representational deficits or a performance-based phenomenon and arguments were made in favor of each cause, respectively.

3.5 Conclusion

Previous research has contributed individual fragments to the summary indicated in Table 3.12, and the complexity of acquiring the target structure is evident when we compare results. The fragmentation stems from the diversity of data-collection methods, the various levels of proficiency involved across studies, and the various methods of analysis used. In order to formulate a more accurate description of acquisition of the Spanish direct object evident in L2 production, we need data ranging from beginning to advanced levels and analyses of the simultaneous development of form and placement, before drawing conclusions regarding the interlanguage strategies underlying acquisition. Furthermore, we need to examine L2 production in communicative contexts if we are to isolate and identify the interlanguage strategies employed while working with an incomplete linguistic system.

The specific methodological challenges identified in previous research allow us to formulate our research design. First, eliciting the number of tokens necessary to produce generalizable results regarding all of the target structures through oral interviews is difficult, thus requiring the use of an instrument designed to elicit all forms under analysis. Second, different data-elicitation tasks may reveal different linguistic behavior, due to varying communicative pressure or cognitive demands. We therefore require a task universally completed by all participants under study. Third, we need to analyze data produced by a wider range of L2 learners, from beginning to advanced stages of development. Finally, while the concept-oriented approach effectively reveals the changing form-function mappings throughout development, it does not provide the analysis necessary to isolate specific constraints on development. We assert that a multifaceted analysis is required in order to deal with such challenges. In addition to tracking the different forms used to encode the direct object, it is also important to track the distribution of forms to various functions throughout development, in order to capture the transition toward multifunctionality as (non)homophonous forms are

incorporated into the L2 developing system. In this regard, a bi-directional analysis of form-function mapping will reveal how interlanguage is constructed and restructured. While we assert that homophony is an important aspect of saliency of forms in the input, our review of literature revealed that L2 learners are sensitive to a variety of other features as well. Additional analyses, therefore, should measure the effect of such features on the appropriate use and placement of forms. This multifaceted approach would thus incorporate features of object expression that could yield a predictive model of development.

The concept-oriented approach also holds that production reflects the language that is extracted and processed from the input. We therefore need to consider acquisition at the level of input processing if we are to provide an explanation of why some forms emerge before others in production. How is the varying saliency of forms in input handled at the level of input processing, and what is its effect on development?

In Chapter 4 we review the various roles assigned to input by contemporary theories of SLA and we review literature that sheds light on the cognitive constraints of processing input.

4

Input and Input Processing: Principles, Processes, and Strategies

4.1 Introduction

The purpose of this chapter is to examine the role of input in SLA and to present relevant theories and models of input processing. We begin with a presentation of the role of input in nine contemporary theories of second language acquisition. In their 2007 volume on theories of second language acquisition, VanPatten and Williams identified ten observations that every theory of second language acquisition needs to explain. The first of these is that "Exposure to input is necessary for SLA. This observation means that acquisition will not happen for learners of a second language unless they are exposed to input. Input is defined as language the learner hears (or reads) and attends to for its meaning" (VanPatten and Williams, 2007, p. 9). Our presentation of the role of input in these theories is to underscore that different theories attribute greater or lesser importance to the role of input in SLA.

We present next the summative works of Slobin (1973, 1985), Peters (1983, 1985), and VanPatten (1996, 2007), who each proposed principles of input processing. Slobin proposed a set of Operating Principles that guide children's first language interaction with input as they develop their language-making capacity. Peters developed two types of principles to account for the way children interact acoustically with first language input: segmentation principles and extraction principles. Slobin's and Peter's principles were important precursors to VanPatten's model of input processing for adult second language acquisition. He has proposed a set of principles to account for adult second language input processing guided by notions of attention and resources. Most relevant to our research on input processing are their formulations of the role of word order in first and second language processing.

In this chapter, we also present the findings of background research on input processing in first and second language development with particular reference to the Competition Model that has examined in great detail the role of word order in sentence interpretation, specifically, the cues people use to assign the agent or actor of the verb. Bates and MacWhinney (1989, pp. 44–5) summarize the research on the Competition Model indicating the order of importance of different cues in a variety

of languages used to assign the agent/actor of an action. Word order is the most important cue for sentence interpretation for children acquiring English, French, and Dutch as first languages but one of several cues available to children acquiring Italian, Hebrew, Hungarian, Serbo-Croatian, and Warlpiri (an Australian aboriginal language). Word order is the most important cue to agent/actor assignment for adult native speakers of English, but plays a much lesser role in adult sentence processing in French and Dutch. In case-marked languages such as Dutch, German, Serbo-Croatian, Hungarian, Turkish, Hebrew, and Warlpiri, case is the most important cue to agent/actor assignment (Bates and MacWhinney, 1989, pp. 44–5).

In the following section we present the Feature Hierarchy and Feature Strength Hypothesis (Carminati, 2005). Features are linguistic or formal cues available during sentence processing. Of interest here are the linguistic features that mark or encode person, number, and gender. Languages, such as Spanish and Italian, mark verbs for person and number. They mark nouns and most adjectives for gender and number. They mark clitic pronouns variously for case, person, number, and gender. We will see that linguistic features have different cognitive values.

Word order-based processing or SVO processing by learners of second languages has also been well documented, particularly among native speakers of English acquiring a variety of second languages. We present some of the evidence for SVO processing in languages such as French, German, Japanese, and Spanish on a variety of sentence configurations. We finish this chapter by presenting the findings of research on the second language processing of object pronouns in Spanish, the linguistic target of our present study. When the object is pronominalized in Spanish it is a case-marked clitic, marked also for person, number, and gender, and placed obligatorily in preverbal position with a simple finite verb. Due to the case marking on the pronoun, the placement of the grammatical subject (or agent/actor) is flexible on either side of the verb phrase.

4.2 The role of input in SLA

VanPatten and Williams (2007) is a collection of essays in which a scholar, working within a particular contemporary theoretical framework, explains that framework. Whereas VanPatten and Williams (2007, p. 9) assert that input is necessary for SLA, it is left to those working in different theoretical frameworks to delineate the role of input in the construction of a mental grammar and its importance in the process of second language acquisition. The importance of input in these various theories ranges from: (1) Not giving input much theoretical emphasis; to (2) Asserting that input is necessary but not sufficient for SLA; to (3) Claiming that input is necessary for SLA; and to (4) Input being the critical factor.

4.2.1 Not much theoretical emphasis

Lantolf and Thorne present Sociocultural Theory (SCT). They explain that "Since the social world is the source of all learning in SCT, participation in culturally organized

activity is essential for learning to happen" (Lantolf and Thorne, 2007, p. 218). Social participation in particular learning environments is seen to be more important for acquisition than input. Social participation may be public dialogue between interlocutors or private speech (vicarious participation, as Lantolf and Thorne refer to it). Private speech is directed to one's self and so is a dialogue with one's self. To engage in private speech a learner observes the linguistic behavior of others and then imitates it. Imitation is not parroting but is more akin to rehearsing with the language. Within SCT input is just one ingredient in a complex social equation.

4.2.2 Necessary but not sufficient

In Universal Grammar (UG), input plays only a limited but quite necessary role in second language acquisition. White (2007, p. 50) states: "According to UG theory, there are certain aspects of grammar that are not learned through exposure to input, namely knowledge of universal constraints. Nevertheless, UG does not operate in a vacuum: Universal principles and language-specific parameter settings must be triggered by input from the language being acquired." The key concept here is "trigger." Language-specific input triggers the deduction of knowledge that predates learners' exposure to second language input.

In the Interaction Approach, input is seen as necessary for second language acquisition but in and of itself, it is not sufficient. Gass and Mackey (2007, p. 177) affirm, on the one hand, that "Input is the *sine qua non* of acquisition…input is an essential component for learning in that it provides the crucial evidence from which learners can form linguistic hypotheses." On the other hand, they state "…there is no assumption in the interactionist approach that input alone is sufficient. In fact, it is the way that a learner interacts with the input (through interaction) that is at the heart of this approach" (Gass and Mackey, 2007, p. 192). Input is necessary, but other key elements for second language acquisition are interaction between interlocutors (particularly native with non-native speakers), learner output, and feedback.

4.2.3 Necessary

Even though Processability Theory and the Concept-Oriented Approach examine output, input is a necessary part of these frameworks. Both place primacy on explaining developments in learners' second language grammars. Developmental constraints or functional processing principles determine what learners can process. What gets processed is, in turn, reflected in second language production at any given point in time.

With regard to Processability Theory, Pienemann (2007, p. 152) states the following: "Because output is constrained by processability, learners cannot produce structures that are beyond their level of processing. Thus, practice does not make perfect in language learning, and interaction in which learners may become aware of structures may not lead to their being produced. Production of new features and structures reflects a change in processing and is not the cause of it." Processability Theory is

clearly distinguished from theories that have a role for output in second language development.

As Bardovi-Harlig (2007, p. 58) states, "A basic tenet of the concept-oriented approach to second language acquisition is that adult learners of second or foreign languages have access to the full range of semantic concepts from their previous linguistic and cognitive experience. Von Stutterheim and Klein argue that 'a second language learner—in contrast to a child learning his first language—does not have to acquire the underlying concepts. What he has to acquire is a specific way and a specific means of expressing them (1987, p. 194)." Second language learners find these language-specific ways and language-specific means in the input to which they are exposed. They use the L2 input to uncover new linguistic resources for creating or producing their own expressions of meaning.

A very different type of theory, Autonomous Induction Theory (AIT), also asserts that input has a necessary role in second language acquisition. Carroll (2007, p. 168) states: "It seems almost trivial to suggest that input is necessary for SLA, but as AIT predicts, acquisition proceeds from processing cues in the primary linguistic data and not from language production. Because the theory relies on modularity and views language processing as separate from other kinds of processing, input data are necessary for acquisition to proceed (when it does)." Also important in AIT is the idea that the learners' L1 is a filter for L2 knowledge and that some UG-like pre-existing knowledge is at work.

VanPatten's model of input processing (IP) assigns a central role to input. "It goes without saying that IP incorporates the important role of input. What is more, however, is that the model of IP would suggest that most of acquisition is incidental. As we noted earlier, IP is dependent on comprehension (learners actively engaged in getting meaning from what they hear or read). In a certain sense, acquisition is a byproduct of learners' actively attempting to comprehend input" (VanPatten, 2007, p. 130). Also critical to this model of input processing are the comprehension, processing, and parsing strategies that learners bring with them to the task of comprehending the second language. These strategies influence the way learners perceive the linguistic data in the input. Because our research on input processing is grounded in VanPatten's model, we describe it more completely in section 3.3 below.

4.2.4 Critical

"The Associative-Cognitive CREED is input driven … Input is necessary, and it is sufficient for successful L1A but not for SLA. This is because the initial state for SLA is no longer a blank slate: The learner's language representations, processing routines, and attention to language, are tuned and committed to the L1" (Ellis, 2007, p. 88). That the theory is described as input-driven underscores that input is the central ingredient in acquisition. Language development is seen as a process of frequency tallies performed unconsciously by the brain. Each time an item is in the input, the brain tallies it, connects it, strengthens connections to it and with it, creates associations and networks of associations that eventually become a complex language system.

While different contemporary theories give input different roles and different levels of importance in the theory, we agree with VanPatten and Williams that exposure to input is necessary for language acquisition. What language learners need for first and second language acquisition is in the input, which is why input is also referred to as primary linguistic data. But how do learners get the language from the input into their heads? That is, how do they process the input? In the next section, we examine three frameworks related to input processing.

4.3 Principles that capture learners interacting with input

4.3.1 Slobin

In his extensive crosslinguistic research on child first language acquisition, Slobin focused much attention on how children organize and store language and proposed a set of operating principles to describe those processes (e.g. Slobin, 1973). He refers to the operating principles alternately and interchangeably as language acquisition strategies (187), general heuristics (191), cognitive procedures (1985, p. 1193), and as "basic self-instructions for language acquisition" (191). The early versions of his operating principles follow (Slobin, 1973).

Operating Principle A: Pay attention to the ends of words. (191)
Operating Principle B: The phonological forms of words can be systematically modified. (192)
Operating Principle C: Pay attention to the order of words and morphemes. (197)
Operating Principle D: Avoid interruption or rearrangement of linguistic units. (199)
Operating Principle E: Underlying semantic relations should be marked overtly and clearly. (202)
Operating Principle F: Avoid exceptions. (205)
Operating Principle G: The use of grammatical markers should make semantic sense. (206)

These operating principles underwent significant development as significantly more data was gathered and then presented in the two-volume crosslinguistic study of language acquisition (Slobin, 1985). Operating Principles A through G gave way to an elaborated set of forty-one operating principles (Slobin, 1985). These forty-one operating principles break out into seven different types: attention, storage, mapping, review, production, units, and position. In both their early and later versions, the operating principles draw attention to the role of word order in both processing and production. About the operating principles for the position of elements, Slobin stated that the Language Making Capacity needs Operating Principles "for the solution of morphosyntactic problems. Stored linguistic material is continually scanned for the relative position of elements. OPs for position of elements regularize placement of linguistic units, and are responsible for early syntactic preferences on the levels of word, phrase and clause" (Slobin, 1985, p. 1231).

Operating Principle C is quite relevant to our present study. "One of the earliest and most pervasive operating principles has to do with attention to order of elements in an utterance. It seems that a basic expectation which the child brings to the task of grammatical development is that the order of elements in an utterance can be related to underlying semantic relations" (Slobin, 1973, p. 197). From the operating principles and in conjunction with available data, Slobin proposed universal courses of linguistic development. Connected to Operating Principle C is Universal C3: Sentences deviating from standard word order will be interpreted at early stages of development as if they were examples of standard word order (Slobin, 1973, p. 198). The evidence he cited to support the universal were children's interpretation of English passive sentences as if they were active ones (Bever 1970; Fraser, Bellugi, and Brown, 1963), children's interpretation that the order of mention of events matches order of occurrence even if the conjunction, i.e., before/after, indicates otherwise (E. V. Clark, 1971), and German children's imitation and comprehension of imperative V-DO-IO sequences as V-IO-DO sequences which is the standard word order for imperatives. The children would adjust the case markings on the articles to reflect the standard word order (citing Roeper, 1973). In light of more crosslinguistic data, Slobin (1985) limited the scope of Universal C3 "to languages that rely heavily on word order to express semantic relations" (1165), such as English. All participants in the studies we present in this volume are native speakers of English, who demonstrate word order effects in their processing of second languages, as will be demonstrated below.

4.3.2 Peters' heuristics for processing linguistic input

Peters (1983) focused her work on the area of perception proposing "a series of heuristics for processing linguistic input. These heuristics are modeled after Slobin's Operating Principles (1973) for the acquisition of syntax, but they apply to a much earlier stage of language acquisition" (Peters, 1983, p. 18). Peters' heuristics attempt to account for what happens when a child tries to make sense of a continuous speech stream. The processes Peters (1985) delineates are extraction and segmentation. Extraction is the process of recognizing and remembering recurring chunks of speech out of the continuous speech streams present in the environment. Extraction for a child is phonologically based. Segmentation is the process of analyzing the extracted chunks of speech to discover the linguistic sub-units which comprise them and to become aware of the syntactic information contained with them. Segmentation, then, is an attempt to describe learning and problem-solving processes. They account for the way a child accommodates new intake data and restructures the current system. The operating principles she posited in 1983 underwent significant development. In 1985, Peters presented three basic extraction principles accompanied by five ancillary principles based on salience. She presented one basic segmentation principle followed by six segmentation principles that refer to internal cues and two that refer to external ones. She presented three principles that refer to the segmentation of morpho-syntactic frames and finally, five principles of segmentation that provide feedback to the system. Like Slobin, Peters words her extraction and segmentation principles as

"self-instructions" to the child. Here are her three basic extraction principles and her basic segmentation principle.

EX: *Extract*. Extract whatever salient chunks you can.
EX: *Compare*. Determine whether a newly extracted chunk of speech seems to be the same as or different from anything you have already stored.
EX: *Store*. If it is different, then store it separately; if it is the same, take note of this sameness but do not store it separately.
SG: *Segment*. Attempt to segment utterances you hear or utterances you have already extracted into smaller linguistic units. (Peters, 1985, p. 1065)

Object pronouns in Spanish lack perceptual salience because they are clitics. These monosyllabic, clitic forms are never stressed. How are they extracted from the input stream? Because our research examines classroom learners, we know that they have been taught these forms explicitly. Such explicit teaching may raise their awareness of the forms in the input. Another challenge facing second language learners of Spanish, captured in Peters' extraction principle of storage, is that the third person direct object forms are homophonous with definite articles. These multifunctional forms will at some point need to be stored separately.

4.3.3 VanPatten's model of adult L2 input processing

Slobin's Operating Principles refer to children's first language processing, production, and learning. Peters is concerned with acoustic (perceptual) saliency in the language to which a child is exposed. VanPatten (1996) developed a set of principles that account for adult second language processing. His model accounts for what kind of intake data are made available for learning, but it is not an account of learning (1996, p. 147). In distinguishing his principles from those of Slobin and Peters, VanPatten asserts that his principles are concerned with attention and capacity. In 1996, he presented three main principles with the first and third having subprinciples. The main principles are:

P1: Learners process input for meaning before they process it for form. (17)
P2: For learners to process form that is not meaningful, they must be able to process informational or communicative content at no or little cost to attentional resources. (27)
P3: Learners possess a default strategy that assigns the role of agent to the first noun (phrase) they encounter in a sentence. We call this the "first noun strategy." (32)

As documented and discussed in Lee and Benati (2009), VanPatten significantly developed the principles over the years, arriving at their most recent formulation (VanPatten, 2007). Underlying VanPatten's principles are what he has called the primacy of meaning and the availability of resources. The primacy of meaning captures the idea that learners are driven to get meaning while comprehending—that is, while comprehending the learner focuses on the what (information and content) not the how (the forms used to encode the information). Resources refers to cognitive

resources. Comprehension for second language learners is quite effortful in terms of cognitive processing and available working memory. Effort imposes limits and so has consequences for what learners pay attention to. The current formulation of VanPatten's principles follows (VanPatten, 2007).

The Primacy of Content Words Principle: Learners process content words in the input before anything else. (117)
The Lexical Preference Principle: If grammatical forms express a meaning that can also be encoded lexically (i.e., that grammatical marker is redundant), then learners will not initially process those grammatical forms until they have lexical forms to which they can match them. (118)
The Preference for Nonredundancy Principle: Learners are more likely to process nonredundant meaningful grammatical markers before they process redundant meaningful markers. (119)
The Meaning-Before-Nonmeaning Principle: Learners are more likely to process meaningful grammatical markers before nonmeaningful markers. (120)
The Sentence Location Principle: Learners tend to process items in sentence initial position before those in final position and those in medial position. (125)
The First Noun Principle: Learners tend to process the first noun or pronoun they encounter in a sentence as the subject (or agent). (122)
The Lexical Semantics Principle: Learners may rely on lexical semantics, where possible, instead of the First Noun Principle (or an L1 parsing procedure) to interpret sentences. (124)
The Event Probabilities Principle: Learners may rely on event probabilities, where possible, instead of the First Noun Principle (or an L1 parsing procedure) to interpret sentences. (123)
The Contextual Constraint Principle: Learners may rely less on the First Noun Principle (or L1 transfer) if preceding context constrains the possible interpretation of a clause or sentence. (124)
The L1 Transfer Principle: Learners begin acquisition with L1 parsing procedures. (122)

Relevant to our research, of course, are the First Noun Principle, the L1 Transfer Principle, and the associated principles that account for when learners' use of a first noun strategy and L1 transfer are attenuated. In the present study we examine cross-sectionally the development of processing at different points in time, i.e., at different levels of L2 proficiency, documenting the move from learners' overwhelming assignment of the first noun as agent to their accurate processing of preverbal clitics as object pronouns.

4.4 The Competition Model

In this section we examine aspects of the Competition Model which takes functional linguistics as its base (Bates and MacWhinney, 1982; MacWhinney and Bates, 1989).

In his foreword to MacWhinney and Bates (1989), Slobin identifies the seeds of the Competition Model as work done by Fraser, Bellugi, and Brown (1963) and himself (Slobin, 1963, 1966). Fraser et al. showed three-year-olds pairs of pictures with minimal contrasts. Among the sentences they had included actives and passives in reversible sentences; either entity could perform the action of the verb. The paired pictures for these sentences differed only in the direction of the action, i.e., agent-patient relations. Fraser et al. asked the children to point to the picture that, for example, showed "The daddy is kissed by the mommy" or "The car is bumped by the train" (Fraser, Bellugi, and Brown, 1963, p. 127). They noted that some of their children pointed to the pictures in which the man and the car were performing the actions rather than receiving them. Slobin used the same pictures in his research but added nonreversible sentences such as "a girl watering flowers," "a boy raking leaves," "a man eating a watermelon" (Slobin, 1966, p. 221). He did, however, create the anomalous condition with these sentences so that "a watermelon is eating a man" and "the flowers are watering the girl." He also created passive versions of these sentences, e.g., "the girl is being watered by the flowers." Slobin asked children and adults to indicate if the picture they were shown corresponded to the sentence they heard (true or false). Slobin found that response time was slower for reversible than for nonreversible sentences, active or passive. That is, both word order and lexical semantics play roles in sentence processing. Bever (1970) added to the paradigm by using the technique of acting out sentences with dolls and toys. He introduced the notion of a word order-based processing strategy: "Any *Noun-Verb-Noun* (NVN) sequence within a potential internal unit in the surface structure corresponds to actor-action-object" (Bever, 1970, p. 298).

The Competition Model of sentence processing and production accounts for the mapping of linguistic cues to categories of meaning, taking into account six parameters: frequency, detectability, availability, reliability, conflict validity, and processability. The foundational research examines the assignment of agent-patient relations by manipulating the linguistic cues in sentences. Cue validity and conflict validity are important concepts. Cue validity has three components. Availability refers to a cue being there when someone needs it. Reliability refers to how often a cue leads to correct interpretation when someone uses it. Conflict validity refers to how often a cue leads to a correct interpretation when it is in conflict with another cue. The research generated crosslinguistically has lead Bates and MacWhinney to identify the importance of various linguistic cues to actor assignment. The cues include word order, SV agreement, case markings, agreement between objects and clitic markers, animacy, stress, and topicalization. Case markings are the most important cues to actor assignment for adult speakers of German, Dutch, Serbo-Croatian, Hungarian, Turkish, Hebrew, Warlpiri, and Japanese. In English, for adults, children aged 5–7 and children under 5, the most important cue to actor assignment is word order. English is "…the only language we have studied to date in which word order is the most important determiner of sentence meaning across all tested morphological and semantic/pragmatic conditions" (Bates and MacWhinney, 1989, p. 47). Bates et al. (1984) found that children whose native language was English relied on word order over lexical semantics to interpret the string of words "box open boy." Native

speakers of English learning other languages will bring to the task of second language acquisition an approach to sentence interpretation based on word order. In contrast, word order is the least important cue to actor assignment for adult native speakers of Spanish. For native speakers of English to become Spanish-like in terms of processing, they will have to alter considerably the way they approach processing linguistic cues in the input. This change parallels the one that children of certain languages undergo. Specifically, children whose native languages are French and Dutch use word order as the most important cue to actor assignment but not so adult speakers of these languages. Word order is not at all important to adult speakers of French and is second to case markings for native adult speakers of Dutch. Animacy and then word order are the two most important cues for children whose native language is Italian but word order falls in importance to adults coming after SV agreement, clitic agreement, and animacy. With reference to Hungarian, a free word order, case-marked language, Plèh states: "We have already seen some evidence related to the issue of basic word order. The fact that naïve people apply an order based strategy when facing difficulties of interpretation suggests that in the 'psychological model' of sentence order plays a role even in a formally nonconfigurational language [free word order]" (Plèh, 1989, p. 174). The same can be said of other nonconfigurational languages such as German, Warlpiri, Turkish. Word order is an available cue for sentence interpretation and some, albeit little, use is made of it, more in children than in adults (Bates and MacWhinney, 1989, p. 44–5).

4.4.1 Cues used by native speakers of Spanish

Kail (1989) examined the effects of word order, verb agreement, object pronoun clitics, and the object marker *a* in native language processing of Spanish. Spanish word order is flexible. Verbs agree in person and number with their subjects. Pronoun clitics agree in person and number with their referents. The object marker *a* is a feature of Spanish used to identify a [+animate] accusative. The various combinations of these variables yielded 54 combinations; the ungrammatical ones allow the researcher to assess cue strength—that is, which cue wins out in having the speaker determine who performed the action of the verb. The purpose of the experiment was to discover the relative cue strengths. He used the following types of sentences and presented them in three different words order sequences: NVN, NNV, and VNN. Some of the following sentences are found in Kail (1989, p. 102); others we have extrapolated from his description.

3 clitic pronoun conditions
No clitic pronoun

(1) *El cocinero a la barrendera mordió.*
The cook-MASC a-ACC the streetsweeper-FEM bit
The cook bit the streetsweeper.

Clitic favors N1 as agent

(2) *El cocinero a la barrendera la mordió.*
The cook-MASC a-ACC the streetsweeper-FEM her bit
The cook bit her, the streetsweeper.

Clitic favors N2 as agent

(3) **El cocinero a la barrendera lo mordió.*
The cook-MASC a-ACC the streetsweeper-FEM him bit
*The cook bit him, the streetsweeper.

3 agreement conditions
A. Two cases of ambiguous agreement–N1 and N2 are both singular or plural

(4) *El cocinero empujó al pescador.*
The cook-MASC-SING pushed a-ACC the fisherman-MASC-SING
The cook pushed the fisherman.
(5) *Los cocineros empujaron a los pescadores.*
The cooks-MASC-PL pushed a-ACC the fishermen-MASC-PL
The cooks pushed the fishermen.

B. 4 cases of N1 agreement–verb agrees with N1

(6) *El pescador a los cocineros les empujó.*
The fisherman-MASC-SING a-ACC the cooks-MASC-PL them pushed–3rd SING
The fisherman pushed them, the cooks.
(7) *Los pescadores al cocinero le empujaron.*
The fishermen-MASC-PL a-ACC the cook-MASC-SING him pushed–3rd PL
The fishermen pushed him, the cook.
(8) **A los cocineros el pescador les empujaron.*
a-ACC the cooks-MASC-PL the fisherman-MASC-SING them pushed–3rd PL
*The fisherman, they pushed them, the cooks.
(9) *Al cocinero los pescadores le empujó.
a-ACC the cook-MASC-SG the fishermen-MASC-PL him pushed–3rd SING
*The fishermen, he pushed him, the cook.

C. N2 agreement – verb agrees with N2

(10) *Al pescador los cocineros le empujaron.*
A-ACC the fisherman-MASC-SING the cooks-MASC-PL him pushed–3rd PL
The cooks pushed him, the fisherman.
(11) *A los pescadores el cocinero les empujó.*
A-ACC the fishermen-MASC-PL the cook-MASC-SING them pushed–3rd SING
The cook pushed them, the fishermen.
(12) **Los cocineros al pescador le empujó.*
The cooks-MASC-PL a-ACC the fisherman him pushed–3rd SING
*The cooks, he pushed him, the fisherman.
(13) **El cocinero a los pescadores les empujaron.*
The cook-MASC-SING a-ACC the fishermen them pushed–3rd PL
*The cook, they pushed them, the fishermen.

2 a-marker conditions
Accusative positioning as N2

(14) *La panadera empujó a los carteros.*
The baker-FEM-SING pushed–3rd SING a-ACC the mailmen-MASC-PL
The baker pushed the mailmen.

Accusative positioning as N1

(15) *A los carteros la panadera empujó.*
A-ACC the mailmen-MASC-PL the baker-FEM-SING pushed–3rd SING
The baker pushed the mailmen.

Kail found that native speakers of Spanish showed no statistically significant effect for word order nor any effect for canonical (SVO) versus noncanonical (OVS) word order. The accusative marker *a*, however, emerged emphatically as the most decisive cue used by native speakers of Spanish. When the first noun was preceded by the accusative marker *a* it was chosen erroneously as the agent only 5% of the time. When the second noun was preceded by *a* it was chosen erroneously as the agent only 6% of the time. Second language learners of Spanish, on the other hand, do not find the object marker *a* to be such a decisive cue. As we will see in a subsequent section, second language learners select the *a*-marked object as the subject up to 57% of the time (LoCoco, 1987).

4.5 Feature Hierarchy: person > number > gender

There exists an established literature in language typology claiming that the features of person, gender, number stand in an implicational relation to one another, as captured in the following expression.

Feature Hierarchy: person > number > gender

The implicational hierarchy reads as such: if a language possesses a feature, then it must have all the ones above it in the hierarchy. Thus, if it possesses the feature of gender, it must also have number and person. If it has number, then it must also have person but not necessarily gender. The implication is that, in some sense, person is more important or basic to language than number and gender because it is universal—that is, person occurs across languages independently of the other two. Next in importance or basicness is number, and last, and supposedly least, gender.

The motivation for the Feature Hierarchy comes mainly from two types of linguistic evidence: the frequency of occurrence and co-occurrence of the features in the world's languages (Greenberg, 1963) and the observation that certain syntactic phenomena appear to be sensitive to the hierarchy and to subhierarchies within each feature (Silverstein, 1985; Harley and Ritter, 2002).

Within each feature, subhierarchies have been proposed. Within number, singular has been argued to be more "basic" than plural (singular > plural). In languages with

number features, the singular tends to be the unmarked form and the plural the marked form; the singular form is the base form from which we derive the plural. Within the person feature first/second person group together as more basic than third person (Carminati, 2005; Malovrh and Lee, 2010; Silverstein, 1985). Identifying the speaker/hearer relationship is a most basic aspect to communication.

Harley and Ritter (2002) relate the Feature Hierarchy to conceptual categories in human cognition that have found systematic encoding in language. They suggest that the hierarchical organization of features is a direct reflection of their relative degrees of "cognitive significance"; features higher in the hierarchy or subhierarchy are more cognitively significant and more cognitively salient than the ones coming below. Gender features are less cognitively significant/salient than number features, which in turn are less cognitively significant/salient than person features. Put another way, person features are the most cognitively significant and salient features.

4.5.1 Research on the Feature Hierarchy and Feature Strength Hypothesis

Carminati (2005) tested the Feature Hierarchy and her Feature Strength Hypothesis in a processing study on Italian, a language that has the features of person, number, and gender. She created sentences with subordinate clauses in first position that contained an overt subject and object. The main clause in second position contained no overt subject or subject pronoun but manipulated gender, number, and person features in order to disambiguate whether the antecedent in the subordinate clause was the subject or object. She used self-paced reading and compared the reading times between sentences that established the subject or object as antecedent. The overwhelming preference was for the subject of the second clause to also be the subject of the first clause.

The sentences in (16) and (17) are taken from Carminati (2005) and exemplify how gender agreement on adjectives can establish the referent in Italian.

Subject referent–feminine adjective

(16) *Quando Lucia ha telefonato a Marco, era appena tornata da Londra.*
When Lucia has telephoned to Marco, θ was just comeback-FEM from London.
When Lucia telephoned Marco, she had just come back from London.

Object referent – masculine adjective

(17) *Quando Lucia ha telefonato a Marco, era appena tornato da Londra.*
When Lucia has telephoned to Marco, θ was just comeback-MASC from London.
When Lucia telephoned Marco, he had just come back from London.

She found that when gender is the only feature to resolve the reference back to the subject or object of the first clause, reference back to the object provoked a processing cost. That is, reading times were slower for object referents.

The sentences in (18) to (21), taken from Carminati (2005), show how gender and number were manipulated. In (18)-(20), number was not manipulated in that the

referents are both singular and the verb forms are both third person singular. In (21), the subject of the subordinate clause and the verb form are plural but the subject of the main clause, the verb form and adjective are singular.

Subject antecedent–feminine adjective–both singular

(18) *Quando Maria cerca Roberto, diventa ansiosa.*
When Maria looks for Roberto, θ becomes anxious-FEM
When Maria looks for Roberto, she becomes anxious.

Object antecedent–masculine adjective–both singular

(19) *Quando Maria cerca Roberto, diventa ansioso.*
When Maria looks for Roberto, θ becomes anxious-MASC
When Maria looks for Roberto, he becomes anxious.

Object antecedent–masculine pronoun, masculine adjective–both singular

(20) *Quando Maria lo cerca, diventa ansioso.*
When Maria him-looks for, θ becomes anxious-MASC
When Maria looks for him, he becomes anxious.

Object antecedent–masculine pronoun, masculine adjective–number changed

(21) *Quando i Rossi lo cercano, diventa ansioso.*
When the Rossis him-look for, θ becomes anxious-MASC-SING
When the Rossis look for him, he becomes anxious.

Carminati found that the reading times were faster for (21) when number disambiguates reference than when gender alone does it as in (18)-(20). The sentences in (22)-(24), taken from Carminati (2005), show how person and number can be manipulated through verb forms. Note that the adjective "*triste*" is not gender-marked in Italian but is only marked for number.

Object antecedent–number differences

(22) *Quando Gianni ha salutato i nonni, sembravano veramente tristi.*
When Gianni has–3rd-SING greeted the grandparents, θ looked-PL really sad-PL
When Gianni said goodbye to the grandparents, they looked really sad.

Object antecedent–number + person differences

(23) *Quando ho salutato i nonni, sembravano veramente tristi.*
When I have–1st-SING greeted the grandparents, θ looked–3rd-PL really sad-PL
When I said goodbye to the grandparents, they looked really sad.

Object antecedent–number + person differences

(24) *Quando hai salutato i nonni, sembravano veramente tristi.*
When you have–2nd-SING greeted the grandparents, θ looked–3rd-PL really sad-PL
When you said goodbye to the grandparents, they looked really sad.

Under these conditions, Carminati found that reading times were faster when there was a change in person—that is, when the subject of the subordinate clause was either first or second person singular and the subject of the main clause was third person plural. The slowest reading times were for (22) in which the person remained constant as third but the difference was in number only.

To examine the effects of person more closely, Carminati held number constant (singular) and manipulated only the person of subjects and objects. Note that the adjective "*prepotente*" is unmarked for gender in Italian.

1st person sg subject antecedent

(25) *Quando ho litigato con Maria, ero molto prepotente.*
When θ have–1st-SING quarrelled with Maria, θ was–1st-SING very pushy
When I quarrelled with Maria, I was very pushy.

2nd person sg subject antecedent

(26) *Quando hai litigato con María, eri molto prepotente.*
When θ have–2nd-SING quarrelled with Maria, θ were–2nd-SING very pushy
When you quarrelled with Maria, you were very pushy.

1st person sg object antecedent

(27) *Quando Maria ha litigato con me, ero molto prepotente.*
When Maria has–3rd-SING quarrelled with me–1st-SING, θ was–1st-SING very pushy
When Maria quarrelled with me, I was very pushy.

2nd person sg object antecedent

(28) *Quando Maria ha litigato con te, eri molto prepotente.*
When Maria has–3rd-SING quarrelled with you–2nd-SING, θ were–2nd-SING very
pushy
When Maria quarrelled with you, you were very pushy.

3rd person sg subject antecedent

(29) *Quando Maria ha litigato con me, era molto prepotente.*
When Maria has–3rd-SING quarrelled with me–1st-SING, θ was–3rd-SING very pushy
When Maria quarrelled with me, she was very pushy.

3rd person sg subject antecedent

(30) *Quando Maria ha litigato con te, era molto prepotente.*
When Maria has–3rd-SING quarrelled with you–2nd-SING, θ was–3rd-SING very pushy
When Maria quarrelled with you, she was very pushy.

3rd person sg object antecedent

(31) *Quando ho litigato con Maria, era molto prepotente.*
When θ have–1st-SING quarrelled with Maria, θ was–3rd-SING very pushy
When I quarrelled with Maria, she was very pushy.

3rd person sg object antecedent

(32) *Quando hai litigato con María, era molto prepotente.*
When θ have–2nd-SING quarrelled with Maria, θ was–3rd-SING very pushy
When you quarrelled with Maria, she was very pushy.

Carminati found a bias in favor of antecedent resolution toward the subject. Reading times were faster when the subjects of the two clauses were the same (25, 26, 29, 30) and slower when they were different (27, 28, 31, 32). Of greater interest in terms of the feature subhierarchy was the finding that for sentences in which the antecedent is the object, reading times were faster for the first and second person sentences (27, 28) and slower for the third person ones (31, 32). In Carminati's words, "the processing penalty for violating the antecedent preference of pro is significantly reduced when 1st/2nd person disambiguates pro than when 3rd person does. The 1st vs. 2nd person manipulation did not yield significant differences, thus suggesting that 1st and 2nd person behave uniformly in these experimental contexts" (2005, p. 272).

The Feature Hierarchy and the Feature Strength Hypothesis are relevant to the present study. Various object pronouns in Spanish are encoded for the features of person, number, gender.

4.6 Word order in L2 processing

The fundamental characteristic of language learners, be they children acquiring their first language, children acquiring a second language or adults acquiring a second language, is that they possess an incomplete linguistic system. Their mental grammars do not include all the elements of the code that linguistically mature speakers utilize either to encode or decode meaning. Linguistically mature speakers, depending on the language, utilize a variety of syntactic constructions, morphological configurations, and semantic and pragmatic features to encode their intended meanings. Learners, given their incomplete linguistic systems, must utilize the linguistic resources at their disposal to interpret the meaning of utterances they hear or read. The repertoire of resources available to linguistically mature speakers is unavailable to language learners for either encoding or decoding meaning, and so they must rely on and make do with fewer linguistic resources. One such linguistic resource is word order. In order to assign meaning, learners must assign grammatical and semantic roles to words in the input. When processing the meaning of incoming information, learners utilize the order of the words as cues to assign grammatical roles such as subject and object or thematic roles such as agent and patient. The use of word order by native speakers of English learning other languages has been well documented. In this section, we

present some of the crosslinguistic research that shows the various linguistic contexts in which native speakers of English utilize word order as a cue to sentence interpretation. As we will see, word order is a cue to sentence *mis*interpretation. The purpose of reviewing this literature is to demonstrate that the processing difficulties learners have with object pronouns in Spanish is part of a larger acquisitional challenge.

4.6.1 Japanese passive construction

Canonical word order in Japanese is SOV with the verb always appearing in sentence final position. Japanese uses NNV sequences in both active (33) and passive sentences (34). In both sentence types the grammatical role of subject is marked は and the subjects occurs in sentence initial position. The patient in an active sentence is marked as such を and occurs in second position as in (33). The agent in a passive sentence is marked に as such and occurs as the second noun in the string as in (34).

(33) Tomは　Chrisを　たたきました。
Tom-SUBJ Chris-PATIENT struck
Tom struck Chris.
(34) Chrisは　Tomに　たたかれました。
Chris-SUBJ Tom-AGENT was struck
Chris was struck by Tom.

Benati, Lee, and Hikima (2010) found that learners correctly interpreted passive sentences presented in isolation only 11% of time. Adopting a first noun strategy, learners misinterpreted the other 89% as active sentences. That is, they would have identified Chris in (34) as the person who did the hitting. When the sentences were presented in the contexts of a dialogue and a story, correct interpretation was 20% and 21%, respectively.

4.6.2 French causative construction

French has a causative construction formed with the verb *faire* "to make" yielding sentences with two agents as in (35). The verb *faire* is followed by an infinitive. The agent of the action expressed in the infinitive verb is post-posed and marked with *à*.

(35) *Claudine fait promener le chien à Diane.*
Claudine makes to walk the dog to Diane
Claudine makes Diane walk the dog.

Wong (2010) found that learners correctly interpreted causative sentences embedded in discourse from 0% to 4.5% of the time. Learners indicated that the first noun, Claudine, was the agent of the verb *promener*. They tended to identify the second noun, Diane, as a patient or owner of the dog. That is, "Claudine walks the dog for Diane" or "walks Diane's dog." Similar results for misinterpreting French causatives have been reported in Allen (2000) and VanPatten and Wong (2004).

4.6.3 German case-marked definite articles

Culman, Henry, and VanPatten (2009) examined word order in German with specific regard to accusative case marking on the masculine form of the definite article. Typical word order in German is SVO as in (36) but due to case marking German allows OVS sentences as in (37).

(36) *Der Junge küsst die Frau.*
The boy-SUBJ kisses the woman-OBJ
The boy kisses the woman.
(37) *Den Jungen küsst die Frau.*
The boy-OBJ kisses the woman-SUBJ
The woman kisses the boy.

Learners correctly interpreted OVS sentences from 8% to 15% of the time. Overwhelmingly they identified the first noun in OVS sentences as the subject or agent. Henry, Culman, and VanPatten (2009) found a similar result. Learners in their study correctly interpreted OVS sentences from 14% to 19% of the time. LoCoco (1987) found that learners of German correctly interpreted OVS sentences 26% of the time when they heard the sentences but accuracy increased to 81% when they heard and simultaneously read the sentences.

4.6.4 Spanish and German word order patterns

Typical word order for Spanish is SVO as in (38). Spanish marks accusative case with *a* when the object is [+animate] or when the sentence is reversible as in (38–41). The accusative marker allows for flexible word order: OVS as in (39).

(38) *El coche empuja al camión.*
The car pushes a-ACC the truck
The car pushes the truck.
(39) *Al camión empuja el coche.*
A-ACC the truck pushes the car
The car pushes the truck.

LoCoco (1987) found that learners of Spanish interpreted OVS sentences correctly when they heard them only 46% of the time. When they simultaneously heard and read them accurate interpretation increased to 65%. González (1997) found that first-year learners of Spanish correctly interpreted OVS strings only 30% of the time.

LoCoco (1987) also examined two other sentence types in Spanish and German. The second type of sentence involved indirect object pronouns accompanied by the full indirect object noun phrase (clitic duplication) and full noun phrase direct objects. The direct objects were semantically constrained from performing the action of the verb. Typical word order is SO_{pro}VDOIO and is exemplified in (40). The position of the subject and full noun phrase indirect object is flexible as seen in (41).

(40) *El muchacho le trae la cerveza a la muchacha.*
The boy her brings the beer to the girl
The boy brings the beer to the girl.
(41) *A la muchacha le trae la cerveza el muchacho.*
To the girl her brings the beer the boy
The boy brings the beer to the girl.

Results revealed that the IOVDOS Spanish sentences as in (41) were correctly interpreted 40% of the time when presented orally and between 40% and 64% when presented simultaneously in writing. The misinterpretations were strictly attributed to assigning agent status to the first noun even though it was marked with *a*.

The German versions of (40) and (41) involved case marking on the definite articles. The typical word order in (42) is SVIODO in which the article *dem* marks dative case and *der* nominative. An alternative word order is presented in (43) in which *dem* marks dative case and *das* nominative.

(42) *Der Junge bringt dem Mädchen das Bier.*
The-SUBJ boy brings the-OBJ the beer
The boy brings the girl beer.
(43) *Dem Jungen bringt das Mädchen das Bier.*
The-OBJ boy brings the-SUBJ girl the beer.
The girl brings the boy beer

Learners correctly interpreted sentences such as (43) 59% of the time when they heard them and 93% of the time when presented simultaneously in writing. The third type of sentence LoCoco included contained full noun phrase subjects, direct objects, and objects of prepositions. There were no semantic constraints on subject and object such that any of the three nouns in the sentences could perform the action of the verb. The direct object was [+animate] and was case marked with *a*. Typical word order is found in (44) and is essentially SVO with the prepositional phrase appearing in sentence final position after the DO. As seen in (45–47) the prepositional phrase can move to sentence initial position and the subject can move to sentence final position as in (45) and (46). The word order variant in (47) has the DO moved to sentence final position.

(44) *La madre empuja al niño hacia el padre.*
The mother pushes a-ACC the child toward the father
The mother pushes the child toward the father.
(45) *Hacia el padre empuja al niño la madre.*
Toward the father pushes a-ACC the child the mother
Toward the father the mother pushes the child.
(46) *Hacia el padre empuja a la madre el niño.*
Toward the father pushes a-ACC the mother the child
Toward the father the child pushes the mother.
(47) *Hacia la madre empuja el padre al niño.*
Toward the mother pushes the father a-ACC the child
Toward the mother the father pushes the child.

Learners interpreted correctly sentences such as (45–47) 44% of the time when they heard them. Learners identified the object of the preposition as the agent of the action 19% of the time, which accounted for 33% of the errors. The case marked direct object was identified as the agent when it was in second position immediately after the verb as in (45) and (46) 22% of the time, which accounted for 40% of the errors. The case-marked direct object was identified as agent when it was in third position at the end of the sentence as in (47) 15% of the time, which accounted for 27% of the errors. When learners heard and simultaneously read a sentence, preverbally placed objects of the preposition were interpreted correctly 86% of the time. The error rate was due to learners identifying the direct object as agent when it occurred in second position.

LoCoco's German sentences were similar to the Spanish ones as exemplified in (48–50). The articles in German are marked for nominative and accusative case.

(48) *Zur Mutter schiebt der Junge den Vater.*
Toward the mother pushes the child the-ACC father
Toward the mother the child pushes the father.
(49) *Zum Vater schiebt den Jungen die Mutter.*
Toward the father pushes the child the-ACC mother
Toward the father the child pushes the mother.
(50) *Zur Mutter schiebt der Vater den Jungen.*
Toward the mother pushes the father the-ACC child
Toward the mother the father pushes the child.

Learners correctly interpreted the object of the preposition when in first position 40% of the time. They identified the object of the preposition as the agent of the action 53% of the time, which accounted for 87% of the errors made. When learners heard and simultaneously read a sentence, preverbally placed objects of the preposition were interpreted correctly 94% of the time. The error rate was due to learners identifying the direct object as agent when it occurred in second position. As LoCoco's results clearly demonstrate, word order is a very powerful cue for native speakers of English learning Spanish and German, especially when processing oral input.

To summarize, word order effects in second language processing occur with a variety of sentence patterns and constructions and in a variety of languages. We have seen learners identify the first noun as agent with Japanese passive constructions, French causative constructions, Spanish and German accusatives, Spanish and German datives, and Spanish and German objects of prepositions. In the next section we turn our attention to object pronouns in Spanish, the focus of our research.

4.6.5 Processing object pronouns in Spanish: the First Noun Principle

A well-documented phenomenon in the first and second language acquisition literature is that of the First Noun Strategy, also referred to as SVO processing and incorporated into VanPatten's model of input processing as the First Noun Principle (VanPatten, 2004, 2007). When processing incoming information for meaning, language learners tend to interpret the first noun or pronoun they hear or read as the

agent of the sentence, in effect, processing the string of words as Agent-Action-Patient. The importance of the pervasiveness of the first noun strategy can not be underestimated in second language acquisition because, as a result of learners using it, incorrect intake data is delivered to learners' developing systems. A preverbally placed *lo*, for example, does not mean *he* but *him*. Interpreting a preverbally placed *lo* as a subject pronoun has consequences for the internal grammar learners are constructing for Spanish. VanPatten (1996, p. 89) hypothesizes that the first noun processing strategy alone may contribute to a host of learner production errors including misuse of object and reflexive pronouns as subjects, use of *gustar* as a transitive verb, overreliance on subject pronouns, nonuse of the object case marker *a*, overreliance on SVO word order in language production, and a delay in the acquisition of person-number verbal morphology. SVO processing occurs despite several permutations in word order and the linguistic characteristics of the preverbal object pronoun (e.g. case, number, and gender markings).

The use of the first noun strategy to misassign the grammatical role of object pronouns as subjects/agents by second language learners of Spanish is well established in previous literature. The focus of this 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 will be seen in our review of literature, this research has focused on learners in the first two years of language study and on third person accusative pronouns.

4.6.6 Establishing that L2 learners of Spanish use the first noun strategy in processing

VanPatten (1984) established that first- and second-semester learners of Spanish use the first noun strategy to process $O_{pro}VS$ sentences that were presented aurally. He focused on third person, singular and plural, accusative and dative case pronouns. The target sentences appear in (51) through (64).

Accusative case

(51) *Los invita él al cine.*
Them invites-SING he to the movies
He invites them to the movies.
(52) *Lo visita la muchacha.*
Him visits the girl
The girl visits him.
(53) *Lo invitan ellos al cine.*
Him invite-PL they to the movies
They invite him to the movies.
(54) *La visita el chico.*
Her visits the boy
The boy visits her.

(55) *Los invita el chico al cine.*
Them invites-SING the boy to the movies
The boy invites them to the movies.
(56) *Al chico lo invitan los chicos al cine.*
A-ACC the boy him invite-PL the boys to the movies
The boys invite him to the movies.
(57) *Lo invitan los chicos al cine.*
Him invite-PL the boys to the movies
The boys invite him to the movies.

Dative case

(58) *Les da dinero él.*
Them give-SING he money
He gives them money.
(59) *Les pregunta la muchacha, "¿qué hora es?"*
Them asks-SING the girl, "what time θ is?"
The girl asks them, "what time is it?"
(60) *Le dan dinero ellos.*
Him give-PL money they-MASC-PL
They give him money.
(61) *Le pregunta el chico, "¿qué hora es?"*
Her asks the boy, "what time θ is?"
The boy asks her, "what time is it?"
(62) *Les da dinero el chico.*
Them gives money the boy
The boy gives them money.
(63) *Al chico le dan dinero ellos.*
To the boy him give-PL money they
The give him money.
(64) *Le dan dinero los chicos.*
Him give-PL money the boys
The boys give him money.

The learners heard a target sentence, and then chose a picture from four options that matched their interpretation of the sentence. The pictures varied as to who performed the action and who received or benefitted from the action. Two important findings emerged. First, his results showed that learners misinterpreted OVS sentences as SVO sentences between 35% and 70% of the time, indicating a robust use of the first noun strategy during input processing. Second, he found that the learners misinterpreted the first pronoun 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). He attributed the difference between cases as one of multiple functionality. The accusative clitics *lo*, *los*, *la*, and *las* function as clitics as well as definite articles, whereas *le* and *les* function exclusively as clitics. 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. Moreover, he found no significant differences in performance across singular/plural paired verb forms, that is, *invita/invitan* and *da/dan*.

4.6.7 Morphological features influencing learners' use of the first noun strategy

Lee (1987) established that first-year learners of Spanish use the first noun strategy to process $O_{pro}V$ 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 so that in Spanish, the subject of the second verb is not realized in the surface string. 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. Sample sentences follow in (64) through (67).

Singular, genders–same

(64) *Roberto piensa ir al laboratorio de lenguas con el trabajo de español porque lo entrega mañana.*
Roberto-MASC-SING intends to go to the laboratory of languages with the work-MASC-SING of Spanish because it-MASC-SING θ hands in–3rd SING tomorrow
Roberto intends to go to the language laboratory with the Spanish work because he hands it in tomorrow.

Singular, genders–different

(65) *Teresa piensa ir al laboratorio de lenguas con el trabajo de español porque lo entrega mañana.*
Teresa-FEM-SING intends to go to the laboratory of languages with the work-MASC-SING of Spanish because it-MASC-SING θ hands in–3rd SING tomorrow
Teresa intends to go to the language laboratory with the Spanish work because she hands it in tomorrow.

Plural, genders–same

(66) *Como son estudiosos, Pablo y David compran muchos libros y los leen durante las vacaciones.*
Because θ are studious-MASC-PL, Pablo and David buy–3rd PL many books and them-MASC-PL θ read–3rd PL during the vacations
Because they are studious, Pablo and David buy many books and read them during vacation.

Plural, genders–different

(67) *Como son estudiosas, Juana y Virginia compran muchos libros y los leen durante las vacaciones.*
Because θ are studious-FEM-PL, Juana and Virginia buy–3rd PL many books-MASC-PL and them-MASC-PL θ read–3rd PL during the vacations
Because they are studious, Juana and Virginia buy many books and read them during vacation.

The sentences were presented individually in written form with the direct object pronoun underlined. The learners 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.) The 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 as in (66) and (67) were misinterpreted as subjects significantly more often than singular pronouns as in (64) and (65), 66% versus 38%, respectively. There was no significant difference in performance between sentences in which the genders of the nouns were the same as in (64) and (66) and those in which they were different as in (65) and (67), 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 as in (64) were misinterpreted as subjects significantly more often than those in the gender-different sentences as in (65), 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. These results demonstrated the influence that morphological features have on promoting or attenuating learners' use of the first noun strategy. One of Slobin's Operating Principles for language acquisition is "Pay attention to the ends of words," and these learners did. The gender markers appear at the end of the word in singular sentences and so it attenuated SVO processing. When the gender marker was not obscured by an additional plural marker, learners processed it more frequently.

4.6.8 Context effects attenuating learners' use of the first noun strategy

Houston (1997) examined the role of background knowledge (a type of extralinguistic context) in the use of the first noun strategy by fourth-semester learners of Spanish, who were all enrolled in courses which utilized the *Destinos* video series as a major course component. He created two matched sets of ten sentences, all with $O_{pro}VS$ word order. When the direct object is placed preverbally, then a corresponding clitic pronoun appears in the verb phrase. All the direct objects were [+animate] and so the full noun phrase was marked with *a*, the cue that native Spanish speakers use overwhelmingly to assign actor/patient relations (Kail, 1989). In one set, the target sentences all referred to events in the *Destinos* series, as in (68), whereas in the other set, the names were substituted, as in (69).

+Background (*Destinos*)

(68) *A Raquel la contrata don Pedro.*
A-ACC Raquel her contracts don Pedro
Don Pedro contracts Raquel.

–Background (names substituted)

(69) *A Silvia la contrata Ricardo.*
A-ACC Silvia her contracts Ricardo
Ricardo contracts Silvia.

Prior to listening to the target sentences, the learners performed a task on the characters from *Destinos*. This task not only insured that subjects possessed appropriate background knowledge but that it was activated for the sentence interpretation task. The learners 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 a blank line on each side of it. Their task was to fill in the blanks with names indicating who did what to whom. Each learner heard both the *Destinos*-based sentences as well as the –Background sentences.

The results revealed a significant effect for background knowledge; it attenuated learners' reliance the first noun strategy to identify actor/patient relations. Only 28% of the +Background sentences were misinterpreted whereas 48% of the –Background sentences were misinterpreted as a result of learners using a first noun strategy. Background knowledge attenuated learners' reliance on the first noun strategy but it did not eliminate it. For learners, the marker *a* does not have the same cue strength as it does for native speakers (Kail, 1989). Whereas VanPatten (1984) and Lee (1987) had examined first-year learners, Houston demonstrated the pervasiveness of the first noun strategy among second-year learners.

VanPatten and Houston (1998) examined the effects of linguistic context on fourth-semester learners' processing strategies. They created ten target sentences containing $O_{pro}VS$ word order strings in which a clause preceding the object pronoun provided contextual information as exemplified in (70) and (71). The target sentences were matched to ten sentences that contained a preceding clause that did not provide a contextual cue as exemplified in (72) and (73). In all twenty sentences the subject of the first verb was the direct object of the second one. The contextual information resulted from the action of the second verb and motivated that person to be the object of the second verb. In (70), the insult resulted in Ricardo's anger. In (71), the attack resulted in Roberto's hospitalization. The target sentences were constructed with the verbs *attacked, insulted, rejected, greeted*, and *kissed*.

+Context

(70) *Ricardo está enojado porque lo insultó Susana en la reunión.*
Ricardo is angry because him insulted Susana in the meeting
Ricardo is angry because Susana insulted him in the meeting.
(71) *Roberto está en el hospital porque lo atacó María con un cuchillo.*
Roberto is in the hospital because him attacked María with a knife
Roberto is in hospital because María attacked him with a knife.

–Context

(72) *Ricardo me dice que lo insultó Susana en la reunión.*
Ricardo me tells that him insulted Susana in the meeting
Ricardo tells me that Susana insulted him in the meeting.
(73) *Gloria contó a sus amigas que la atacó Ramón en su casa.*
Gloria told to her friends that her attacked Ramón in his house
Gloria told her friends that Ramón attacked her in his house.

The learners heard a sentence and then performed an interpretation task. They were given a verb, in English, with a blank on each side of it that they were to fill in with names, indicating who did what to whom. Results revealed that providing a linguistic context attenuated learners' use of the first noun strategy to interpret agent/patient relations. In the context condition, only 59% of the sentences were misinterpreted whereas 84% were misinterpreted in the no-context condition. 84% use of the first noun strategy is the highest percentage found for Spanish data and it was found in fourth-semester learners. VanPatten and Houston also found a significant effect for verb in that subjects performed better on sentences with *attacked*, *insulted*, and *rejected* than they did with *kissed* and *greeted*. A significant interaction between verb and context condition was found and attributed to differing performance on the *kissed* sentences across the context conditions. VanPatten and Houston removed these sentences from the data and the subsequent ANOVA revealed, once again, significant main effects for condition and verb, but no significant interaction. The results from Houston (1997) and VanPatten and Houston (1998) contributed to VanPatten's development of his model of adult L2 input processing. In VanPatten (2004) he added subprinciples to the First Noun Principle that clarify circumstances in which learners might rely less on word order and more on other factors, such as context and lexical semantics, to interpret agent/patient relations.

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 $O_{pro}VS$ constructions. The factors were: topic familiarity—sentences relating information about characters from the television program *The Simpsons* as in (74) versus those that did not as in (75); context location preceding the target as in (76) versus context location following it as in (77); gender—the gender of the subject and object in the $O_{pro}VS$ string were the same as in (78) and (79) or different as in (80) and (81); and number—the object pronoun was either singular as in (78) and (80) or plural as in (79) and (81). He began with eight sentences about the characters from the long-running television show *The Simpsons* (+Familiar) and then created the set with made-up names (–Familiar). Next he created an alternative set of sentences in which he manipulated the location of the context information to be after the target string. Half the sentences contained feminine gender-marked pronouns and the other half masculine. Half the sentences contained a singular pronoun and the other half plural.

Topic familiarity

(74) *Homer y Bart son mal educados y los critican las hermanas de Marge.*
Homer and Bart are bad educated and them criticize the sisters of Marge
Homer and Bart behave badly and Marge's sisters criticize them.
(75) *Susan se siente como una víctima cuando la insulta Richard.*
Susan feels like a victim when her insults Richard
Susan feels like a victim when Richard insults her.

Context location (pre- and post-target)

(76) *Bart no saca buenas notas, pero Lisa sí, y a veces lo critica Lisa.*
Bart no earns good grades, but Lisa yes, and at times him criticizes Lisa
Bart does not earn good grades, but Lisa does, and at times Lisa criticizes him.
(77) *A Bart lo critica Lisa porque Bart no saca buenas notas.*
A-ACC Bart him criticizes Lisa because Bart no earns good grades
Lisa criticizes him because Bart does not earn good grades.

Gender-same singular and plural

(78) *Ralphie es un chico extraño y lo rechaza Bart.*
Ralphie-MASC-SING is a kid strange and him-MASC-SING rejects Bart-MASC-SING
Ralphie is a strange kid and Bart rejects him.
(79) *Patti y Selma fuman mucho y por eso las critican Marge y Lisa.*
Patti and Selma-FEM-PL smoke a lot and therefore them-FEM-PL criticize Marge and Lisa-FEM-PL
Patti and Selma smoke a lot and therefore Marge and Lisa criticize them.

Gender-different singular and plural

(80) *Marge es la madre y es muy autoritaria pero a veces la desobedece Bart.*
Marge-FEM-SING is the mother and θ is very authoritarian but at times her-FEM-SING disobeys Bart-MASC-SING
Marge is the mother and is very authoritarian but at times Bart disobeys her.
(81) *Las hermanas de Marge no son simpáticas y por eso no las adoran los hombres.*
The sisters-FEM-PL of Marge no are nice and therefore no them-FEM-PL adore the men-MASC-PL
Marge's sisters are not nice and therefore men do not adore them.

Malovrh began the procedure with a discussion, in English, of *The Simpsons* in order to activate the learners' knowledge of the characters from the show. The learners were asked to name characters and describe them. Following the discussion, Malovrh presented the sentences one at a time on an overhead projector. Learners performed two different tasks. Malovrh followed the procedures of Houston (1997) and VanPatten and Houston (1998) for the +Familiar sentences. Learners were given a verb, in English, with a blank on each side of it that they were to fill in with names, indicating who did what to whom. He followed the procedures of LoCoco (1987) and VanPatten (1984) for the –Familiar sentences. Learners were given two pictures from which to select who did what to whom.

Malovrh found that these beginning-level learners misinterpreted object pronouns as agents between 32% and 56% of the time. He also found that object pronouns in the –Familiar condition were misinterpreted as agents significantly more than those in the +Familiar condition, 50% versus 35%, respectively. As in Houston (1997) topic familiarity seems to attenuate learners' use of the first noun strategy. The positioning of the contextual information did not affect performance. First noun strategy use was 43% when content preceded the target and 42% when it followed the target. The gender of the object and subject did not affect performance. First noun strategy use was 42% when the gender of the two was the same and 43% when it was different. Finally, he found that plural object pronouns were misinterpreted as agents significantly more that singular ones, 53% versus 32%, respectively. The plural forms seem to encourage the use of the first noun strategy (Lee, 1987).

4.6.9 Summary of variables examined in studies on processing Spanish object pronouns

A summary of the variables examined the studies on the L2 processing of Spanish object pronouns appears in Table 4.1. The database consists of only a handful of studies. The area in which no research has been conducted is that of person. The five studies all examine third person pronouns. Only one study compared learner performance on dative case pronouns; the other studies focused exclusively on the accusative case pronouns. The morphological features of the pronouns themselves have been examined in only two studies. The level of learner under scrutiny has been first and second year learners, that is, learners who are clearly early stage language learners. Only one study made a comparison of groups of learners with different amounts of previous instruction. The research we present in the next chapter will address these lacunae in the database.

Table 4.1. Summary of the variables examined in studies of L2 processing of Spanish object pronouns

	Case	Person	Number	Gender	Context	Level
VanPatten (1984)	yes		yes verb			1st year semester 1 and 2
Lee (1987)			yes pronoun	yes		1st year
Houston (1997)					yes extralinguistic	2nd year
VanPatten and Houston (1998)					yes linguistic	2nd year
Malovrh (2006)			yes pronoun	yes	yes linguistic extralinguistic	1st year

4.7 Conclusion

This chapter functions as an extended review of previous literature, literature that was theoretical and empirical. In this chapter we examined the role of input in nine contemporary theories of second language acquisition. For some theories, not only was input crucial to second language acquisition but input processing also played a key role. We reviewed three frameworks developed to account for how children (Peters, 1985; Slobin, 1973) and adults learning a second language (VanPatten, 2007) work with input, or primary linguistic data, for language acquisition. Our focus was both on word order and the forms of words. The Competition Model is relevant to the present study because it manipulates word order as well as other factors that are encoded linguistically such as case, gender, and number (MacWhinney and Bates, 1989). The end result of the research done on the Competition Model has been to establish which cues are most valid and most reliable for identifying agent/actor and patient relations. There are differences between children, adults, and second language learners with regard to cue validity. The Feature Hierarchy and Feature Strength Hypothesis also examine linguistically encoded cues/features such as person, gender, and number (Carminati, 2005).

VanPatten developed his First Noun Principle with reference to work done on child first language acquisition as well as adult first and second language acquisition. In this chapter we reviewed a large body of work that supports the First Noun Principle. One limitation of this research is that it has not adopted a developmental approach. There is a lack of longitudinal or cross-sectional data that would trace learners' development from heavy reliance on the first noun strategy to accurate processing of preverbal object nouns and pronouns. Another limitation of this research is its focus on third person forms. We do not as yet have work to show how learners process first and second person forms. Finally, the majority of the work has focused on accusative case clitics, with only one work combining accusative and dative case clitics (VanPatten, 1984). In the next chapter we present the research we have carried out on processing object pronouns in Spanish that addresses some of these limitations.

Part Three

L2 Development of Spanish Object Pronouns: Form, Placement, Omission, and Processing

5

A Concept-Oriented Analysis of Form-Function and Function-Form Mappings for the L2 Production of Spanish Direct Object Pronouns

5.1 Introduction

In our review of previous literature investigating the L2 production of object pronouns in Chapter 3 we identified a variety of consistent findings. Early L2 learners show a preference for using full NPs or omission in place of clitic pronouns (Sánchez & Al-Kasey, 1999; Zyzik, 2004). Learning context appears to have an effect on production, such that omission of forms occurs more often among naturalistic learners than instructed learners (VanPatten, 1990). Deictic pronouns emerge in production before third person anaphoric forms (Andersen, 1984; Klee, 1989; VanPatten, 1990). The use of third person clitics begins with the masculine singular form *lo* (Andersen, 1984; Klee, 1989). The third person indirect object form *le* emerges before third person direct object forms (Zyzik, 2004; VanPatten, 1990). Finally, the pervasive challenge of using third person feminine direct object forms persists among advanced-level learners. Researchers posited various hypotheses to account for the L2 development of the direct object. Andersen (1984) and VanPatten (1990) asserted that a one-to-one principle guides interlanguage development; forms that encode only one meaning in the input will be mapped to the function of direct object first. Klee (1989) suggested that an "archmorpheme" exists in interlanguage—a default form (*lo*) that L2 learners use to compensate for their incomplete developing system. Finally, Zyzik (2004) proposed that a phenomenon she referred to as *L2 leísmo* also plays a role; L2 learners associate animate referents with the dative form *le* regardless of case. Based on such findings and assertions, we proposed a concept-oriented hypothesis characterizing the interlanguage development of the direct object in terms of pragmatic, lexical, and morphological stages.

We also noted several limitations of previous literature, which prevent us from having a cohesive image of interlanguage development. We noted a lack of analysis of specific third person direct object forms, thus preventing us from determining a sequence of development within the third person system. We also noted a lack of advanced-level learners, thus preventing us from tracking the development of late-acquired morphology. In terms of form-function mapping, we found that studies

either analyzed data from the perspective of form, or from that of function, but not both, thus preventing us from isolating the simultaneous development and restructuring of form-function mapping in interlanguage. Finally, comparing results across studies is difficult due to varying data-elicitation methods, proficiency levels, and research designs. Such limitations led to our call for a multifaceted analysis that would address such limitations.

In the present chapter we begin our exploration of the interlanguage development of Spanish object pronouns using a multifaceted analytic framework that addresses the shortcomings of previous research noted above. Specifically, we begin our analysis of production data using a function-form analysis that allows us to track the emergence of forms as a direct object in interlanguage throughout development, from beginning to advanced levels. We then conduct a form-function analysis, which allows us to track the distribution of forms to functions in interlanguage throughout development, thus allowing us to track the transition toward multifunctionality. Finally, we conduct an appropriate-use analysis, designed to reveal how changes in frequency of production affect developments in accuracy. Our use of the multifaceted analysis allows us to focus on the developmental dimension and uncover key events in the development of the target structure in L2 production.

5.2 The present study

Our study of L2 production data begins with an analysis of developing patterns of form-function mapping. In the present chapter we address the following research questions:

1. What forms do different levels of L2 learners and native speakers use to express the grammatical role of direct object?
2. What functions do different levels of L2 learners and native speakers express using direct and indirect object clitic forms?
3. What is the relationship between the frequency that different levels of L2 learners and native speakers use an object clitic form and its appropriate use in obligatory contexts?

5.3 Methods and procedures

5.3.1 Participants

The cross-sectional study examined the performance of 113 participants, consisting of instructed L2 learners of Spanish (n=98) and one native-speaking group (n=15). All participants participated voluntarily in the study. The full description of the participants appears in Chapter 1. The L2 learners of Spanish were placed into four developmental levels based on course enrollment, scores on a very short grammar test, the number of years they had studied Spanish, the number of months they

had spent studying or working abroad, and their use of Spanish in a professional context. Learners assigned to Level 1 (n=31) were enrolled in a third semester Spanish language class and had no experience studying abroad. Learners assigned to Level 2 (n=24) were enrolled in a fifth semester grammar review and composition course and had no experience studying abroad. Learners assigned to Level 3 (n=25) were enrolled in various courses in the major/minor curriculum. All Level 3 learners had spent at least one month abroad, with the average time spent in a Spanish-speaking country being 3.91 months, a semester. Levels 1, 2 and 3 are also distinguished by differential performance on the grammar test. The Level 4 learners are very advanced learners of Spanish who, at the time of data collection, were all teaching a beginning-level Spanish language course. They had been studying Spanish an average of 11.65 years, almost double the time of all the other levels. The average number of months spent abroad in a Spanish-speaking country was 14.8 months, significantly more than the other groups. The Level 4 learners' experiences with Spanish was far superior to those of the other levels.

5.3.2 Research instrument

Film retell tasks have been used in a number of previous studies to elicit object pronouns in Spanish (Sanz, 1997; VanPatten & Sanz, 1995; Zyzik, 2004) as well as other aspects of L2 linguistic development (Bardovi-Harlig, 1995, 1998; Chafe, 1981; Klein and Perdue, 1992). Inspired by these studies, Malovrh (2008) created a silent film, *La Tortilla Rag*, specifically for the purpose of eliciting contexts for the use of all direct and indirect object pronominal forms in the study of production.

The film depicts two individuals (a man and a woman) making a Spanish tortilla (a potato omelet) and is divided into two parts, the first being 4 minutes long and the second 3 minutes and 26 seconds. (See Appendix B for the sequencing of events in the film and a breakdown of the intended target-structure to be elicited in each scene.) Each part of the film carefully includes specific food ingredients whose grammatical genders would elicit the four object pronouns *lo*, *la*, *los*, and *las*. Part one, for example, shows eggs ("los huevos"), garlic ("el ajo"), an onion ("la cebolla"), and potatoes ("las papas"). Each food item is handled at least twice by the man and also by the woman in order to maximize the elicitation of the target structures and to counterbalance the contexts for anaphoric reference when the grammatical subject is masculine and feminine. Part two of the video is a continuation of the storyline, but shows different food items: grapes ("las uvas"), pineapple ("la piña"), peas ("los guisantes"), cheese ("el queso"), wine ("el vino"), and butter ("la mantequilla"). The food items were carefully chosen to represent either mass nouns, which will not likely be pluralized, such as "cheese," "garlic," "pineapple," "butter," and "wine," as well as nouns that would most likely be plural, such as "grapes," "peas," "potatoes," and "eggs."

In addition to the elicitation of direct object pronouns, the film is also designed to elicit indirect object pronouns, reflexive clitic pronouns, and the reflexive *se* pronoun, all of which are part of the third person clitic pronominal system. For example, at various moments throughout the film, the man and the woman hand each other an

item, thus generating dative contexts for sources or beneficiaries. In addition, there are scenes where the actors hug or shake hands, or in which an individual washes his/her hands, as a means to elicit the reciprocal and reflexive *se*. A pilot study was conducted to ensure that the film elicited the targeted structures and to determine how much time participants would need to provide the retell. The results of the pilot test included developing a lexical bank for participants and a procedure for eliciting a first person retell.

5.3.3 Data collection

All data for the present study were collected in a language laboratory. Each individual was seated at a computer station with their own monitor and headset. Two intact classes of each undergraduate level reported to the language laboratory on the day specified by their instructor and spent the entire fifty-minute period participating in the study. One class of postgraduate students participated. After reading and signing the consent form, the participants were given 3 minutes to complete the 11-item grammar test. Then they were provided with a list of supportive vocabulary to assist them throughout the film retell tasks (see Appendix C). The list consisted of nouns and verbs in Spanish along with their English translation, which would be necessary to retell the events of the film. With regard to the nouns, none of the Spanish equivalents in the lexical bank were accompanied by articles, the intention of which was to avoid priming the L2 learners with the homophonous target structures *lo*, *la*, *las*, and *los*. Then the participants watched the film. After watching the first part of the film, they were instructed to summarize all of the events that took place in it orally in Spanish by speaking into the headset. No time limit was given. When participants completed the task, they were then instructed to retell the events that took place in part one of the film by placing themselves in the film, as though they were one of the two actors in the story. The first retell elicited a third person narrative whereas the second elicited a first person narrative. The procedures were repeated for part two of the film. The participants then filled out a background questionnaire and then participated in the processing study (described in Chapter 7).

5.3.4 Data coding

Data were coded for forms used to encode the grammatical role of direct object, the different grammatical functions realized by all direct object pronominal forms, placement of clitic pronouns relative to a (non)finite verb, the obligatory context for morphological agreement of pronominal forms, and the semantic categories of animacy and transitivity. Although all L2 learner production was transcribed, including repetition, meta-cognitive think-aloud comments, and self-corrected utterances, only the final utterances in a response were analyzed. In other words, when an utterance was begun, then abandoned, and then begun again, only the self-corrected portion of the utterance was coded and analyzed. Each analysis provided different dependent variables, and not all independent variables were included in all analyses.

In this section, we provide a description of the analyses that respond to each research question.

5.3.4.1 Function-form analysis

The objective of the first research question is to identify the distribution of the various forms used to encode the grammatical role of direct object using a function-form analysis. A function form analysis provides a distribution of the different forms used to encode the direct object. The expressions identified in L2 and native production as forms encoding the role of direct object are described in Table 5.1. They are: full nominal phrases (NP), clitic pronouns, stressed pronouns/subject pronouns, demonstrative pronouns, clitic pronoun + NP, and zero anaphora (i.e., omission of any structure).

Direct objects coded as "clitic pronoun" and "clitic + NP" were further coded for the type of clitic used and its respective form. For example, if the dative clitic form *le* was used in direct object contexts, it was recorded as a direct object clitic pronoun of the form *le*. Furthermore, if the direct object context was encoded with the clitic *se*, it was coded as a direct object clitic pronoun of the form *se*. The pronoun was also coded for the animacy of the referent. Table 5.2 provides the coding distribution of clitic forms to the direct object grammatical role. The resulting analysis yielded a score for the frequency with which a particular form was used in a direct object context.

Table 5.1 Coding scheme for description of forms to the grammatical role of direct object

Form	Description
NP	The use of a full noun phrase
Clitic pronoun	The use of a clitic pronoun after its referent had already been introduced as topic
Stressed/subject pronoun	The use of a stressed pronoun, with or without the preposition 'a'
Demonstrative	The use of a demonstrative pronoun after the topic had already been introduced
Clitic + NP	The use of a clitic pronoun and its referent full NP
Omission	The omission of any form as direct object

Table 5.2 Coding scheme for distribution of clitic forms to direct object contexts

Functions	Clitic form(s) encoding direct object
Direct object	Masculine singular (*lo*) Feminine singular (*la*) Masculine plural (*los*) Feminine plural (*las*) First person singular (*me*) First person plural (*nos*) Singular dative (*le*) Plural dative (*les*) *se*

5.3.4.2 Form-function analysis

For the second research question, the coding of the different linguistic functions encoded by direct and indirect object clitics involved identifying each of the direct object forms and recording its linguistic function. A form-function analysis reveals the degree to which specific forms are mapped with nativelike functions subsequent to their emergence in interlanguage.

The object pronouns included in the form-function analysis include *me* and *nos* which are both direct and indirect object clitic pronouns, the direct object clitic pronouns *lo*, *la*, *los*, *las*, and the indirect objects *le* and *les*. The forms were also coded for homophony with the third person direct object clitics being +homophony and the other –homophony. The frequency of each function performed by each form was calculated in order to provide the distribution of form to function in L2 and native-speaker production.

5.3.4.3 Appropriate use of clitic forms

In order to account for nativelike use, as well as non-nativelike overuse of specific forms, the present study employed an "appropriate-use" measure, which is based on Pica's (1983) targetlike-use (TLU) analysis, but does not assume that the selection of a pronoun over a full NP, for example, is nativelike or non-nativelike.[1] To address our third research question, we determined the accuracy of pronominal forms based only on the clitic forms that were produced, and determined whether or not their inflections, relative to their antecedent, were appropriate.

5.4 Results

5.4.1 Function-form analysis

The function-form analysis involved identifying all contexts for the grammatical role of direct object and then recording the form used by the participants to encode that function. Consequently, it revealed the extent to which different structures are preferred at which level of L2. The strategies of each group of learners were compared to each other and to those of a native-speaking group in order to identify how communicative strategies change over time and if they develop toward nativelike use. A total of 2,858 contexts were recorded from the data set. Table 5.3 provides the distribution of different forms realizing the grammatical role of direct object.

The data in Table 5.3 is not a representation of accuracy, but rather, represents the strategies used by each level to realize the role of direct object. The three most frequently produced structures for a direct object are a full NP, a clitic, and zero anaphora (omission). A structure was coded as a full noun phrase regardless of whether or not it was repetitive; there was no category for what previous researchers have considered "noun phrase overuse." An example of an utterance in the data set containing two full NPs is provided in (1).

Table 5.3 Distribution of forms encoding the role of direct object

Level	NP	Clitic	Clitic + NP	Zero	Stressed Pronoun	Dem Pronoun
1	599 (85%)	26 (3%)	0	71 (10%)	5 (1%)	1 (.1%)
2	387 (82%)	67 (12%)	3 (1%)	21 (4%)	3 (1%)	2 (.4%)
3	441 (71%)	134 (25%)	4 (.6%)	25 (4%)	2 (.3%)	13 (2%)
4	446 (74%)	132 (23%)	5 (.8%)	9 (1.5%)	0	4 (.6%)
N	289 (62%)	165 (36%)	3 (.2%)	4 (.8%)	0	4 (.8%)
Total	2,162	517	15	130	10	24

(1) *…limpian las papas, y después pela las papas…*
"…they clean the potatoes (NP), and then they peel the potatoes (NP)…"

As Table 5.3 indicates, the most common strategy for realizing the direct object by all levels was use of the full NP. The table also reveals that the percentage of use of the full noun phrase declined steadily as level rose, with a slight spike upward at Level 4. The production of a full NP is higher for L2 learners than for native speakers.

The category referred to as "clitic" consists of all tokens of a clitic pronoun used as a direct object, regardless of their (non)nativelike status as a direct object clitic pronoun. Therefore, (non)nativelike use of the clitic pronoun *se* as a direct object, which is the case in (2) below, was included in this category. As Table 5.3 indicates, the percentage of use of clitics as a direct object rose steadily from level to level although native speakers appear to produce more clitics than L2 learners.

(2) *…he comido papas con cebollas y la muchacha *ayudarse [him]…*
"…*I have eaten potatoes and onions and the girl to help *herself [him]…"

Less frequent than either a full NP or a clitic is the complete omission of any form in the role of direct object, which is exemplified in (3).

(3) *Pela papas y…um… *θ [las] pone en sartén…*
"He peels potatoes and…um…he puts in the pan…"

As Table 5.3 shows, omission of the direct object occurred most by Level 1 learners, and decreased steadily as level increased. Level 1 omitted a structure from direct object position 10% of the time, whereas Levels 2 and 3 did so 4% of the time, Level 4 did so 1.5% of the time, and the native speakers 0.8% of the time. The learners appear to be becoming more nativelike in their use of omission but they do perform differently from the native speakers.

The remaining three categories of response occur rather infrequently. The category "clitic + NP" consisted of only 13 tokens. A token was coded according to this category when it was used in conjunction with a full NP. An example of such a token is provided in (4).

(4) *Después las cortó las papas…*
"Then (them) he cut the potatoes…"

A token was coded as a stressed pronoun whether or not it was preceded by a preposition. The use of stressed pronouns was not frequent; 1% or less of all direct-object contexts produced by Levels 1, 2, and 3 was realized by this form. Neither Level 4 learners nor native speakers used a stressed pronoun. An example of an utterance using a stressed pronoun as a direct object is provided in (5).

(5) *…pero él estornudó y ella dio *él una toalla…*
"…but he sneezed and she gave he a towel…"

Like stressed pronouns, demonstrative pronouns were found in the data set, and they were used as a direct object infrequently, with only one group (Level 3) producing them in 1% of all direct-object contexts. Demonstrative pronouns were coded as such only when they were used pronominally, not as adjectives as in (6).

(6) *Es comida. Ella pone *eso [comida] en la plata…*
"It's food. She puts that on the plate…"

Table 5.4 provides the means and standard deviations for the three categories of producing full NPs, clitics, and omission across levels. These data were submitted to one-way Analyses of Variance (ANOVA) to uncover patterns in performance between the various levels.

Unlike Table 5.3, Table 5.4 collapses the categories of *clitic* and *clitic+NP* into one category, referred to as "clitic" because the production of *clitic+NP* indicates knowledge of a clitic. As a result, mean scores across the two tables are slightly different. The demonstrative pronoun and stressed pronoun categories were not included due to their low frequency in production. What is obvious from the mean frequencies is that as full NP production increases, clitic production increases and omission decreases.

The results of the ANOVA for the frequency of producing a full NP showed a significant main effect for Level ($F_{4,108} = 9.626$, $p = .000$). A post hoc Scheffé's revealed that Level 1 produced significantly more full NPs than did Level 2. There was no significant difference between Levels 3 and 4 for full NP production but that they produced significantly more full NPs than native speakers. These relationships are captured as follows: Level 1 > Level 2 > Level 3 = Level 4 > Native Speakers. The results of the ANOVA for frequency of clitic production showed a significant main effect for Level ($F_{4,108} = 19.347$, $p = .000$). Clitic production increases as level increases. A post hoc Scheffé's revealed the opposite pattern of performance as for full NP production.

Table 5.4 Mean frequency and standard deviation of production of NPs, Clitics, and Omission

Level	**NPs (%)**		**Clitics (%)**		**Omission (%)**	
	M	***SD***	***M***	***SD***	***M***	***SD***
1	87.84	9.13	2.91	6.78	10.1	9.3
2	84.29	13.85	11.21	11.92	4.4	7.5
3	75.15	13.79	21.9	15.5	4	5.3
4	76.5	11.46	21.33	13.55	1.5	4.1
Native	66.4	14.71	32.87	14.74	.9	4

That is, Level 1 < Level 2 < Level 3 = Level 4 < Native Speakers. The results of the ANOVA for the frequency of omission showed a significant main effect for Level ($F_{4,108} = 6.516$, $p = .000$). A post hoc Scheffé's revealed two groupings: Level 1 was distinguished from Levels 2, 3, 4, and the Native Speakers. That is, Level 1 omitted structure more frequently than the subsequent levels.

The statistical analyses clearly reveal development of the linguistic resources learners use to express a direct object. The most transparent form is the full NP whereas a much less transparent form is the clitic. Clitics increasingly take on the functional load of expressing a direct object for Level 3 and 4 learners who are distinguished from Levels 1 and 2 by their study abroad experience. Their experiences in Spanish-speaking countries would have provided them with opportunities to observe and participate in various language events and to interact with a variety of proficient speakers creating a need to communicate. Under these circumstances clitics become more frequency in learners' output.

The function-form analysis also examined production of individual clitic forms in direct object contexts. Table 5.5 provides the distribution of the frequency with which L2 learners and native speakers produced individual clitic forms in direct object contexts. The distribution of forms reveals that Level 1 learners' pronominal system contains all the forms no matter how infrequently they are produced, with the potential exception of *le(s)*. Although the direct object clitic pronouns *lo*, *la*, *los*, and *las* occur among all five groups of participants, the frequency of their use indicates that not all of the forms are equally accessible. The highlighted area in Table 5.5 reveals that Level 1 produced few tokens. By Level 2, tokens of *lo* and *los* increased sharply, while *la* and *las* continued to be infrequent. The data suggest that the masculine third person forms come into the system first. By Level 3, the production of *la* and *las* increased dramatically so that it appears that all four forms are equally accessible. The Level 3 learners have study abroad experience.

The low frequency of the forms *me*, *nos*, and *le*/*les* is a reflection of the analysis of direct object contexts, not indirect object contexts. As we will see in the form-function analysis in the next section, L2 learners certainly use these forms frequently in their production but the film retell task elicited a smaller number of contexts in which to use *me*, *te*, *nos*, and *le*/*les* as direct objects. Second, the number of tokens for *les* was so small that they were collapsed into the category of *le(s)*. The low frequency of use of *le*/*les* suggests that the presence of L2 *leísmo* is unlikely in the data-set (Zyzik, 2006); out

Table 5.5 Distribution of clitic pronominal forms to direct object

Level	*me/nos/te*	*lo*	*los*	*la*	*las*	*le(s)*	*se*	Total (row)
1	3 (12%)	5 (19%)	6 (23%)	1 (4%)	9 (35%)	0	2 (7)	26
2	2 (3%)	16 (27%)	27 (46%)	5 (8%)	5 (13%)	10 (16%)	1 (1)	70
3	9 (7%)	35 (26%)	27 (20%)	23 (17%)	37 (27%)	5 (3%)	0	135
4	4 (3%)	48 (38%)	22 (17%)	23 (18%)	30 (23%)	5 (3%)	0	132
N	20 (11%)	44 (25%)	24 (14%)	33 (19%)	49 (28%)	6 (3%)	0	176
Total	37	148	106	85	130	26	3	

of 2,858 tokens of direct object contexts, only 26 of them were encoded by the indirect object forms *le/les* (0.9%), 19 of which were used with animate referents and 7 with inanimate referents. With regard to the clitic *se*, the data in Table 5.5 indicate its rare overgeneralization to direct object contexts only among Levels 1 and 2.

5.4.2 Form-function analysis

The distribution of individual forms to grammatical roles should reveal the development of multifunctionality of forms in the developing systems of L2 learners. Similar to the results of the function-form analysis presented in the preceding section, the form-function analysis does not measure nativelike accuracy of form-function mapping. Rather, it reveals the emergence and development of the mapping of forms to the grammatical role of direct object and all other roles for which they are used. The form-function analysis quantified the distribution of forms to functions within each level of L2 learners and the native speakers to show what they do with linguistic forms. A total of 3,218 tokens of the forms *me*, *te*, *nos*, *lo*, *la*, *los*, and *las* were coded for their distribution to grammatical functions.

5.4.2.1 The distribution of me/nos/te *to grammatical roles*

The distribution of the first person forms *me* and *nos* and the second person form *te* were collapsed into one category of *me/nos/te* because the nature of the tasks elicited few tokens of *te* (*n*=8) and *nos* (*n*=25). As can be seen in Table 5.6, the different functions realized by *me/nos/te* included the grammatical roles of direct object, indirect object, reflexive, and subject. Because a large number of tokens were used as dative psych-experiencers, they were grouped into the additional category, but were still considered to be indirect object pronouns. Furthermore, the distribution of *me/nos/te* reveals their use in contexts in dative-experiencer constructions and reflexive contexts, which distinguishes these forms from the third person direct object forms. The distribution of *me/nos/te* to specific functions demonstrates two common features found across all levels: the forms are always used with an animate referent and they are always produced in the appropriate person.

As Table 5.6 indicates, the predominant use of *me/nos/te* by all levels was as some type of object pronoun; only 15 tokens out of a total of 228 are not objects. The frequency of using the forms as indirect objects was greater than that of direct objects among all learner levels. The second part of the retell task required that the

Table 5.6 Form-function distribution of *me/nos/te* across levels

Function	Level 1	Level 2	Level 3	Level 4	Native
DO	3 (12%)	2 (15%)	9 (15%)	4 (8%)	20 (25%)
IO	16 (64%)	9 (69%)	1 (2%)	29 (58%)	2 (2%)
Psych. Exp.	1 (4%)	-	18 (31%)	8 (16%)	17 (21%)
Reflexive	1 (4%)	2 (15%)	21 (36%)	8 (16%)	42 (52%)
Subject	4 (16%)	-	10 (19%)	1 (2%)	-
Total	25 (100%)	13 (100%)	59 (100%)	50 (100%)	81 (100%)

participants summarize the events of the film as though they were one of the actors in it. This resulted in a high frequency of dative experiencer and ditransitive constructions such as those exemplified in (7) and (8), respectively.[2] Finally, the differences between the native speakers' and learners' production is notable. The native speakers produce *me/nos/te* as direct objects and as reflexives to a much greater extent than the learners. So the learners' distribution of these forms to functions is not nativelike.

(7) *Me gusta mi compañero.*
"I like my companion."
(8) *Mi novio me dio una toalla.*
"My boyfriend gave me a towel."

There were fewer transitive constructions in which to use the clitics *me/nos/te* as direct objects, such as that exemplified in (9).

(9) *…pero el hombre me ayuda…*
"…but the man helps me…"

Learners in Levels 1, 3, and 4 used *me/nos/te* in the grammatical role of subject at a rate of 16%, 19%, and 2%, respectively, but all of those tokens were in the form *me*. It should be noted that at Level 3 six of the ten tokens came from one participant.

5.4.2.2 The distribution of lo/los/la/las *to grammatical roles.*

Our first examination of the third person direct object clitic forms is to view the forms as a group. In subsequent analyses we will examine the four pronouns individually. The third person direct object clitic forms perform various grammatical roles; they are +homophony. Their distribution to grammatical roles is presented in Table 5.7 across the levels of L2 learners and native speakers. The data presented in Table 5.7 shows a developmental difference between Levels 1 and 2 versus Levels 3 and 4 which once again reflects the greater language experiences of the latter two groups. At Levels 1 and 2, the third person forms carry the function of definite article with very little production of direct objects. Only the Level 3 and 4 learners produce the third person forms in the same functions as native speakers do: direct object, definite article, and relative pronouns (we refer hereafter to complimentizer phrases in relative pronoun constructions simply as relative pronouns). Although very infrequent, Level 2 and 3 learners use the forms to perform the non-nativelike functions of object of a preposition and stressed pronoun. Relative pronouns do not enter learners' speech until Level 3 but they appear at this level in a nativelike distribution. The distribution of direct objects steadily increases across the levels of learners but falls just short of the native speaker level. The distribution of definite articles steadily decreases across levels of learners but remains just higher than the native speaker level.

5.4.2.2.1 The distribution of third person direct object clitic pronouns to grammatical roles by Level 1 learners.

The distribution of third person direct object clitic pronouns in the production of Level 1 learners included only two different grammatical roles: direct objects and

Table 5.7 Distribution of third person forms (*lo/los/la/las*) to grammatical functions across levels

Function	Level 1	Level 2	Level 3	Level 4	N
DO	21 (3%)	51 (9%)	122 (18%)	123 (21%)	150 (29%)
Def. Art.	797 (97%)	528 (91%)	543 (80%)	450 (77%)	349 (68%)
Rel. Pro.	-	-	15 (2%)	14 (2%)	16 (3%)
Obj. of Prep.	-	1 (.2%)	1 (.1%)	-	-
Stressed Pro.	-	1 (.2%)	-	-	-
Total	818	581	681	587	515

definite articles. Table 5.8 shows that the distribution is strongly toward definite articles for *los*, *la*, and *las*, creating many contexts in which to have used them as articles. It is noteworthy that *la* is produced as a direct object only once, contrasted with 301 uses as a definite article. The use of *la*, *los*, and *las* appears to be multifunctional, but was certainly dominated by their mapping as definite articles. Despite their low frequency of use as direct objects, that use has emerged in the L2 production of this level of learner.

The striking aspect of the Level 1 learners' language development is the very low production of *lo* (*n*=7) but its relatively high use as a direct object (71%). It appears to be the one form associated with the role of direct object. The tokens of *lo* as a definite article were instances in which the form was used in non-targetlike contexts. In (10) it was used in place of the feminine-singular definite article *la*, and in (11) in place of the masculine singular definite article *él*.

(10) *…*corta *lo toalla…*
"…*He cuts the towel…"
(11) *…pelo *lo ajo…*
"…I peel the garlic…"

In four of the five instances uses of *lo* as a direct object, the pronoun was placed after a finite verb as in (12).

(12) *La mujer pela un huevo pero ella rompe* lo…*
"The woman peels an egg but she breaks it…"

Table 5.8 Distribution of third person forms to grammatical functions, Level 1

Function	***lo***	***los***	***la***	***las***
DO	5 (71%)	6 (2%)	1 (1%)	9 (5%)
Def. Art.	2 (29%)	322 (98%)	301 (99%)	172 (95%)
Rel. Pro.	-	-	-	-
Obj. of Prep.	-	-	-	-
Stressed Pro.	-	-	-	-
Total	7 (100%)	328 (100%)	302 (100%)	181 (100%)

5.4.2.2.2 The distribution of third person direct object clitic pronouns to grammatical roles by Level 2 learners

The distribution of third person direct object clitic pronouns to functions by Level 2 included three different grammatical contexts: direct object, definite article, and object of the preposition. The distribution is presented in Table 5.9. Little development between Levels 1 and 2 is evident but the changes we find are as follows. First, the use of *lo* as a direct object is almost exclusive; non-direct object uses are only two tokens. Also important is that many of the tokens of *lo* are used in place of feminine singular and plural third person direct object forms, thus indicating reliance on *lo* as a prototypical object pronoun. Second, while *los*, *la*, and *las* are predominantly used as definite articles (81–99% of uses), *los* has more strongly emerged as a direct object pronoun. This change indicates the emergence of masculine forms precedes that of feminine forms. Third, we now find the pronouns used as objects of a preposition. The two instances are provided in (13) and (14), respectively.

(13) *…estuve enojado sobre *lo…*
"…I was angry about *it…"
(14) *Hay dos sartenes y pone mantequilla *a los.*
"There are two frying pans and he/she puts butter *to them."

5.4.2.2.3 The distribution of third person direct object clitic pronouns to grammatical roles by Level 3 learners

Table 5.10 presents the distribution of forms to functions in the production of the Level 3 L2 learners. There are some notable developments between Levels 2 and 3. First, and most significant, the relative pronoun function of *lo* has not only emerged but is firmly established in the Level 3 learners' production (27%). Their distribution of forms to functions now appears nativelike (see Table 5.12). This function of *lo* indicates that Level 3 learners are gaining functions for the forms in their linguistic repertoire but it also indicates their use of more complex syntactic patterns as in (15). The relative pronoun function of *lo* may be appearing as part of an unanalyzed chunk in the phrase *lo que pasó*, as in *Eso es lo que pasó* ("That is what happened").

(15) *…después de mujer hace todo lo que tenemos que hacer…*
"…after woman does everything that we have to do…"

Table 5.9 Distribution of third person forms to grammatical functions by Level 2

Function	***lo***	***los***	***la***	***las***
DO	16 (88%)	29 (18%)	1 (1%)	5 (4%)
Def. Art.	1 (6%)	131 (81%)	287 (99%)	109 (96%)
Rel. Pro.	-	-	-	-
Obj. of Prep.	1 (6%)	-	-	-
Stressed Pro.	-	1 (1%)	-	-
Total	18 (100%)	161 (100%)	288 (100%)	114 (100%)

The second development is a lack of development; there are no changes in the distribution of *los* but it is used once as an object of a preposition as in (16).

(16) *…hay dos sartenes en que…en *los *puesto la mantequilla…*
"…there are two pans in which…in them put the butter…"

Third, the direct object function of *la* and *las* has increased greatly among Level 3 learners but is far less than the direct object function of *lo*. Finally, the occasional use of *lo* as a definite article continued, but it began to appear as an unanalyzed chunk as in (17). It also appeared four times in the expression *lo mismo* ("the same thing"), most likely as an unanalyzed chunk.

(17) *Lo siento.*
"I'm sorry."

5.4.2.2.4 The distribution of third person direct object clitic pronouns to grammatical roles by Level 4 learners

Table 5.11 provides the distribution of forms to functions by the Level 4 learners. There are few developments to note as learners progressed from Level 3 to Level 4. Even so, the most notable addition to the distribution of forms to functions is that *los* has taken on the function of relative pronoun, albeit only once. Both *lo* and *los* are used only in nativelike functions. The use of *la* and *las* at Level 4 is quite similar to that of Level 3, which is that they are used primarily as definite articles. A notable shift in the use of *lo* as a definite article is that the Level 4 learners are consistently using *lo* as a neuter pronoun as in (18).

(18) *…todavía están en lo de la tortilla…*
"…they are still involved with that of the tortilla…"

Table 5.10 Distribution of third person forms to grammatical functions by Level 3

Function	***lo***	***los***	***la***	***las***
DO	35 (63%)	27 (18%)	23 (7%)	37 (22%)
Def. Art.	5 (10%)	119 (81%)	287 (93%)	132 (78%)
Rel. Pro.	15 (27%)	-	-	-
Obj. of Prep.	-	1 (1%)	-	-
Stressed Pro.	-	-	-	-
Total	55 (100%)	147 (100%)	310 (100%)	169 (100%)

Table 5.11 Distribution of third person forms to grammatical functions by Level 4

Function	***lo***	***los***	***la***	***las***
DO	48 (75%)	22 (17%)	23 (1%)	30 (23%)
Def. Art.	3 (5%)	109 (82%)	237 (99%)	101 (77%)
Rel. Pro.	13 (20%)	1 (1%)	-	-
Obj. of Prep.	-	-	-	-
Stressed Pro.	-	-	-	-
Total	64 (100%)	132 (100%)	260 (100%)	131 (100%)

5.4.2.2.5 The distribution of third person direct object clitic pronouns to grammatical roles by native speakers

Table 5.12 provides the distribution of form-function mapping in the production of native speakers. Both native speakers and L2 learners use *lo* predominantly as a direct object, while the they use *los*, *la*, and *las* predominantly as definite articles. Among the tokens of direct objects, the most commonly produced form was *lo*, appearing in 69% of its usage. The least used direct object form for both native speakers (16%) and L2 learners is *la*. There are, however, significant developmental changes among learners' use of *la*. Level 1 and 2 learners only produced one token each of *la* as a direct object. Only after study abroad experience do learners produce more tokens, 23 each at Levels 3 and 4.

Having examined the distribution of third person direct object forms to functions among levels of L2 learners and native speakers, we can address the question: Do second language learners develop toward a nativelike distribution of the third person forms? It appears that the learners arrive at a nativelike distribution of *lo* at Level 3. The frequency with which the pronoun *los* functions as direct object and definite article does not change from 2 to 3 to 4, and is out of proportion to the native speakers' frequencies. The most development, arguably, happens with *la* and *las*. From an extremely low number of tokens of the direct object function produced at Levels 1 and 2, the learners then produce more at 3 and 4. But still, the native speakers produce a higher percentage of *la* and *las* as direct objects than the learners do. Overall, we assert that there is development toward a nativelike distribution of functions but that is not nativelike even among the very advanced learners. The feminine gender, +homophony pronouns remain a developmental issue.

5.4.2.3 Distribution of third person indirect object clitic pronouns le/les *to grammatical function across levels*

We continue examining third person forms in this section but examine the functions assigned to the third person indirect object clitic pronouns l*e/les*. We are interested in the feature of animacy. Zyzik (2004) identified what she referred to as *L2 leísmo*, in which L2 learners associate the indirect object forms *le/les* with animate referents. To explore the role of animacy we provide the distribution of *le* and *les* to grammatical functions in Table 5.13. Due to a small number of tokens produced, we collapsed the two forms and treat them as one.

Table 5.12 Distribution of third person forms to grammatical functions by native speakers

Function	***lo***	***los***	***la***	***las***
DO	44 (69%)	24 (27%)	33 (16%)	49 (32%)
Def. Art.	7 (11%)	65 (73%)	175 (83%)	102 (68%)
Rel. Pro.	13 (20%)	-	3 (1%)	-
Obj. of Prep.	-	-	-	-
Stressed Pro.	-	-	-	-
Total	64 (100%)	89 (100%)	211 (100%)	151 (100%)

As Table 5.13 reveals, the tokens of *le/les* increase across the levels with the production of the Level 4 learners matching that of the native speakers. Each level of learner performs differently from the others. Level 1 learners produced only 3 tokens, all as indirect objects. Level 2 learners produced many more tokens with the majority as direct objects. Level 3 learners uniquely overuse the forms as a subject and a reflexive pronoun. The Level 3 learners' distribution of the forms to object functions is mostly as indirect objects. It is only the Level 4 learners and the native speakers who overwhelmingly produce *le/les* as indirect objects with a few tokens produced as direct objects. Except for the two productions as a subject and reflexive pronoun, *le/les* is produced exclusively as an object pronoun.

We now examine more closely the function of *le/les* as direct object and consider the role of animacy. In Table 5.14 we present the data that shows the animacy of the referent when *le/les* was used as a direct object. Although the number of tokens is small, the developmental pattern is clear. The association of *le/les* with +animate referents does not characterize early acquisition but increases with level such that the Level 4 learners and native speakers perform identically at 100% +animate referents. An example is provided in (19).

(19) *Le ayudo [a él] distribuir las uvas…*
"I help him distribute the grapes…"

If *le/les* are associated with +animate referents, are *lo* and *la* associated with –animate referents? In Table 5.15 we present the data that shows the animacy of the referent when *lo* and *la* were used as a direct object. The data reveal that *lo* is associated with feature –animate by the learners and the native speakers. Only rarely is the referent of *lo* +animate. The data also reveal that *la* is mostly associated with –animate referents, but that the higher level learners and native speakers do produce utterances with +animate referents of *la*. Examples of lo and la used with +animate referents are given in (20) and (21), respectively.

(20) *Mi esposo estornuda y lo ayudo…*
"My husband sneezes and I help him…"

Table 5.13 Distribution of *le/les* to grammatical functions across levels

Function	Level 1	Level 2	Level 3	Level 4	Native
IO	3 (100%)	7 (41%)	9 (56%)	29 (88%)	26 (84%)
DO	-	10 (59%)	5 (32%)	5 (12%)	6 (16%)
Subject	-	-	1 (6%)	-	-
Reflexive	-	-	1 (6%)	-	-

Table 5.14 +/– Animacy feature in the production of *le/les* as direct object

	Level 1	Level 2	Level 3	Level 4	Native
+Animate *le/les*	-	4 (40%)	4 (80%)	5 (100%)	6 (100%)
–Animate *le/les*	-	6 (60%)	1 (20%)	0	0

Table 5.15 +/– Animacy feature in the production of *lo* and *la* as direct objects

	Level 1	Level 2	Level 3	Level 4	Native
+Animate *lo*	1 (20%)	0	1 (3%)	2 (4%)	0
–Animate *lo*	4 (80%)	16 (100%)	34 (97%)	46 (96%)	44 (100%)
+Animate *la*	0	0	2 (9%)	7 (30%)	5 (15%)
–Animate *la*	1 (100%)	1 (100%)	21 (91%)	16 (70%)	28 (85%)

(21) *Ella trata de cortar la piña pero no puede. El hombre la ayuda…*
"She tries to cut the pineapple but she can't. The man helps her…"

The 4 tokens of +animate *lo* consist of four different verbs: *ayudar* "to help"; *decir* "to tell"; *ofrecer* "to offer"; and *señalar* "to signal." The variety of lexemes indicates that the +animate feature is not restricted to a single verb. Similarly, the 14 tokens of *la* occur with 8 different verbs: *acompañar* "to accompany"; *ayudar* "to help"; *conocer* "to know"; *decir* "to tell"; *dejar* "to leave"; *mirar* "to look at"; *regañar* "to scold"; *servir* "to serve."

For lower level L2 learners *le/les* form part of their linguistic repertoire for expressing direct objects. As level increases, *le/les* become restricted in use to +animate referents. The direct object clitic pronouns *lo* and *la* are for the most part used with –animate referents. As level increases, +animate referents of *la* do occur and occur in a variety of linguistic contexts.

5.4.3 Appropriate-use analysis of direct object clitic forms

The function-form analysis informed us that learners and native speakers express direct objects mostly as full NPs and secondarily as clitics (see Table 5.4). The number of clitics produced increases with level such that Level 1 < Level 2 < Level 3 = Level 4 < Native Speakers. The form-function analysis informed us of what function clitic pronoun forms perform in the learners' and native speakers' production. We know from the form-function analysis that the form *lo* was used much more frequently as an direct object pronoun than the other third person forms, specifically, 63% to 88% of its uses was as a direct object. What we now examine is whether the direct object clitic forms are being used appropriately with regard to the morphological inflections for person, number, and gender. Is a masculine singular pronoun, for example, morphologically appropriate in all contexts in which it is used? To what extent is the form overused?

Table 5.16 provides the means and standard deviations for each for all clitics combined and for the first and third person forms separately (due to the fact that they are acquired at different times). To gauge development from level to level we conducted three one-way ANOVAs. The results of the ANOVA showed a significant main effect for Level on the appropriate use of the combined first and third person direct object clitic pronouns ($F_{4,85} = 5.473$, $p = .001$).[3] A post hoc Scheffé's revealed no significant differences in appropriate pronoun use between Levels 1, 3, and 4. The scores of Level 2 were significantly lower and those of the native speakers significantly

higher. The pattern is Level 2 < Level 1 = Level 3 = Level 4 < Native Speakers. The results of the ANOVA on the appropriate use of third person only pronouns revealed a significant main effect for Level ($F_{4,64}$ = 4.999, p = .001).[4] A post hoc Scheffé's revealed the same pattern of performance across levels as we found for the combined forms: Level 2 < Level 1 = Level 3 = Level 4 < Native Speakers. The results of the ANOVA on the appropriate use of first person only pronouns revealed no significant effect for Level and the post hoc Scheffé's found no significant differences between the levels, more evidence of the early acquisition of the deictic pronouns ($F_{4,56}$ = 1.422, p = .239).[5]

The significantly lower performance of the Level 2 learners, resulting in a U-shaped curve of development, leads to two questions: Is the accuracy of the Level 2 learners really lower than that of the Level 1 learners? and, Do the Level 1 learners really perform to the same level of accuracy as the Level 3 and 4 learners who have studied abroad? To gain a perspective on the performance of Levels 1 and 2 we must also consider the number of tokens of direct object pronouns they produce. The figures presented in Table 5.7 show that the number of tokens of third person pronouns by level is as follows: Level 1=21; Level 2=51, Level 3=122, Level 4=123, and Native Speakers=150. The Level 1 learners produced few tokens. As seen in Table 5.5, they produced only one token of *la* and five of *lo*. What little they produced, they produced with 80% accuracy. The number of tokens produced at Level 2 is more than double that at Level 1. With that increase in production comes a decrease in accuracy. Alternatively, we could set aside the production of Level 1 as being too little on which to truly base an analysis, as Zyzik (2004) did. Setting aside the low production of Level 1, then the developmental pattern we see for the appropriate use of combined first and third person direct object clitics and third person only direct object clitics is Level 2 < Level 3 = Level 4 < Native Speakers. In other words, the Level 2 learners' performance is not really lower than that of the Level 1 learners. And, the Level 1 learners do not really perform to the same level of accuracy as the Level 3 and 4 learners who have studied abroad.

Table 5.17 provides the appropriate-use scores for each form in each proficiency level (combining *me/nos/te* due to infrequent production). The appropriate use of *me/nos/te* is very high even at Level 1, but the tokens produced by learners is quite low: Level 1=3; Level 2=2; Level 3=9; Level 4=4; and Native Speakers=20. Even though the

Table 5.16 Appropriate use of direct object clitic pronouns by level

Level	**1st & 3rd Person (%)**		**1st Person Only (%)**		**3rd Person Only (%)**	
	M	***SD***	***M***	***SD***	***M***	***SD***
1	87.5	35.36	100	-	80	44.72
2	58.12	41.21	100	-	52.53	40.70
3	68.87	38.21	100	-	60.22	39.06
4	89.15	20.92	100	-	86.44	22.7
Native	97.55	6.35	100	-	96.4	7.48

rates of appropriate use showed no statistically significant difference between any of the levels, the learners do not produce quantitatively to the degree of native speakers.

What is most interesting to consider from the figures presented in Table 5.17 is whether learners use a default or base form for the expression of the direct object clitic. As noted above, Level 1 learners only produced 21 third person direct object clitic pronouns. Those were distributed as follows: *lo*=5, *los*=6, *la*=1, and *las*=9. Let us consider, therefore, the Level 2 data. At Level 2, the appropriate use of *lo* is only 57% and is based on 16 tokens, 7 of which were morphologically inappropriate. At Level 2 the appropriate use of *los* is only 43% and is based on 27 tokens, 15 of which were morphologically inappropriate. So, at Level 2 we would assert that the masculine forms are equally default forms for the learners. They are both overused and the consequence is that few tokens of the feminine forms are found in the learners' production: *la*=5 and *las*=5. The continued use of *lo* as a base form over *los* is more evident at Level 3. The appropriate use of *lo* is essentially the same at Levels 2 and 3 (57% and 55%, respectively) but the Level 3 performance is based on 35 tokens, just over double that produced at Level 2. The learners are producing more tokens of *lo* and more of them are inappropriate; the form is overused. The number of tokens of *los* produced at Levels 2 and 3 is the same (n=27) but the rate of appropriate use has increased by 20%. So, the learners have discerned more about *los* than *lo*. A remarkable development at Level 3 is the appropriate use of *la* and *las* at 83% and 92%, respectively. These rates of appropriate use are based on 23 and 37 tokens, respectively. In other words, Level 3 learners produce approximately as many tokens of masculine and feminine forms, but the use of the masculine forms remains more inappropriate. They are overused. An example of the overuse of *lo* to a non-targetlike context is provided in (22).

(22) *…luego cortaron una piña la mujer trató de cortarlo*…*
"…then they cut a pineapple the woman tried to cut it…"

The beginning L2 learners' appropriate use of *los* began at 50%, dipped slightly to 43% at Level 2, then raised steadily with the subsequent proficiency levels. The appropriate use of *la* began at 50% for Level 1, rose to 100% for Level 2, then dipped to 83% for

Table 5.17 Appropriate use of direct object clitic pronouns (%) and the number of tokens produced

Level	***me/nos/te***	***lo***	***los***	***la***	***las***
1	100%	80%	50%	0%	100%
	(3)	(5)	(6)	(1)	(9)
2	100%	57%	43%	100%	60%
	(2)	(16)	(27)	(5)	(5)
3	100%	55%	63%	83%	92%
	(9)	(35)	(27)	(23)	(37)
4	100%	86%	64%	85%	100%
	(4)	(48)	(22)	(23)	(30)
N	100%	91%	100%	94%	100%
	(20)	(44)	(24)	(33)	(49)

Level 3, and then rose with level. The appropriate use of *las* began with 100% at Level 1, dipped to 60% at Level 2, and then rose steadily with proficiency levels. We demonstrate the relationship between frequency of the use of a clitic as a direct object versus appropriate use in Figure 5.1 The figure graphically displays a pattern in learners' development in which, first, the use of a pronoun and its appropriateness are close (Level 1), then they diverge (Level 2), and finally they align (Levels 3 and 4).

The learners' developing systems initially rely on the masculine forms to express direct objects. Their systems must accommodate new forms, in particular the feminine direct object clitic pronouns. Then, at the point where frequency of use and appropriate use follow a similar trajectory we can say that the learners' developing systems have restructured.

5.5 Discussion

The bi-directional analysis used in this study aimed to focus on a specific aspect of the acquisition process. The function-form analysis identified the forms used by different developmental levels of L2 learners and native speakers to realize the role of direct object. The analysis revealed the various linguistic means used as direct objects and the interplay of those means over time so that stages of development could be identified. The form-function analysis identified the distribution of direct and indirect object clitic forms to functions in the output of L2 learners and native speakers. The analysis revealed the multiple functions realized by these forms, the development of new functions realized by certain forms, and the changes in use of the different forms to realize different functions over time. We also performed an appropriate-use

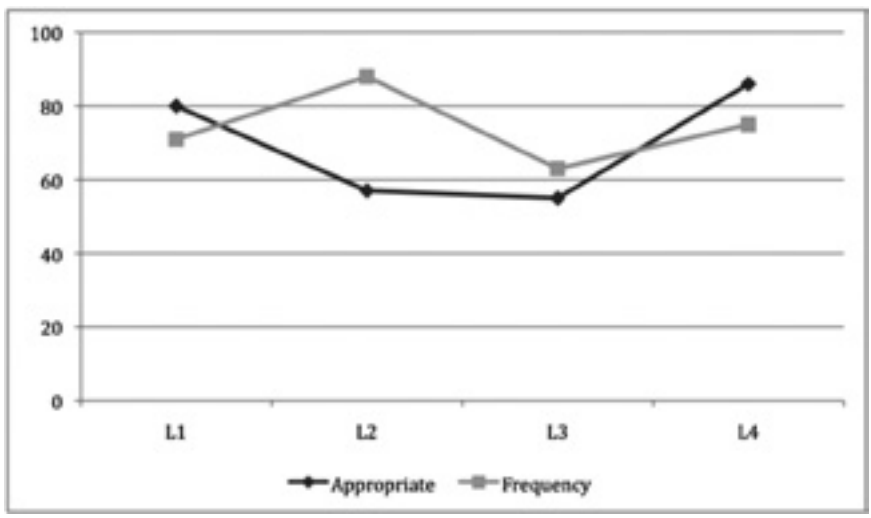

Figure 5.1. The frequency of the use of *lo* as a direct object compared to its appropriate use across L2 levels

analysis to determine to what degree the forms used to perform the function of direct object were morphologically appropriate (i.e. formally accurate). The analysis revealed developmental patterns in learners' use of all pronouns, first person pronouns and third person pronouns, and the use of a default or base form to perform the function of direct object. We will discuss the findings of each of these analyses as they are tied to our three research questions. For the purpose of this discussion we use the term "advanced learners" to refer to the learners in Level 3, i.e., those who have study abroad experiences, "advanced levels" refers to Levels 3 and 4, and "very advanced learners" refers to the learners in Level 4, the postgraduate students who are also teaching Spanish language classes.

5.5.1 Research Question 1: What forms do different levels of L2 learners and native speakers use to express the grammatical role of direct object?

A function-form analysis was conducted in order to address the first research question. There are six principal findings from this analysis.

1. The preferred expression for a direct object by L2 learners and native speakers alike is, by far, a full NP, then a clitic and, thirdly, to a much lesser extent, a null clitic (omission).
2. The developmental trajectory for L2 learners is a shift in the interplay of linguistic resources such that clitic production increases as NP production and omission decrease.
3. Advanced learners produce more clitics and fewer NPs than do beginning learners, but not to native speaker levels. The pattern of performance is represented thus for clitic production: Level 1 < Level 2 < Levels 3 = 4 < Native, and the opposite for NP production: Level 1 > Level 2 > Levels 3 = 4 > Native.
4. Omission of a direct object pronoun decreases as learner level increases (9.25% to 2.06%) with the very advanced learners omitting the direct object pronoun only as often as native speakers. In this aspect of the acquisition of object pronouns learners attain targetlike performance. The pattern of performance is represented thus: Level 1 > Level 2 > Level 3 > Level 4 = Native.
5. Level 1 learners' developing systems contain all the pronominal forms except *le*/*les* for direct and indirect objects. The forms are produced very infrequently.
6. The two masculine forms (*lo*/*los*) carry the functional load of third person direct object in early stages of acquisition. That is, they appear with much greater frequency in the learners' output than the feminine forms. Variations in the frequency with which learners produce masculine and feminine forms indicates that the latter are less accessible in the beginning stages. The forms are equally accessible for advanced learners.

From a functionalist, concept-oriented perspective, we view language development in terms of a shift in functional load from producing transparent forms to more opaque forms. The most transparent form is a full NP and is the preferred form for learners

and native speakers alike. Its use presents the greatest communicative transparency and, in cases of anaphora, a greater level of redundancy to mark co-reference. Clitics, in contrast, are less transparent and less redundant markers of co-reference that require more processing resources. Omission, the use of which steadily declines across the levels of learners, represents the least transparent and least redundant expression of a direct object and is rarely attested among our group of native speakers and very advanced learners. We see the interplay of linguistic resources over time as clitic production increases while NP production and omission decrease.

Our pool of L2 learners are all characterized as instructed second language learners. One advantageous role that formal instruction may be playing is that our Level 1 learners possess an (almost) full inventory of pronominal forms. Early stage naturalistic learners do not possess a full inventory of forms, particularly the third person forms (Andersen, 1983, 1984; Klee, 1989). Although *le*/*les* is unattested among our Level 1 learners, previous research has found that a learner whose class enrollment was below that of our Level 1 learners produced the form *le* quite frequently but not the form *las* as our learners did (VanPatten, 1990). A key early event in the acquisition of object pronouns is to develop a full inventory of pronominal forms.

From a functionalist, concept-oriented perspective, we view the development toward greater clitic production and fewer omissions as a result of communicative need driving development—that is, the need to produce language for effective communication, to be understood easily by an interlocutor. Only our Level 1 learners omit a direct object pronoun more than they produce clitics, as did Zyzik's (2008) learners. Omission of referent at this developmental level places a communicative burden on the interlocutor to recover the referent. A clitic is a more effective communicative device for learners. A key early event in the acquisition of object pronouns is to produce a clitic rather than omit one.

We assigned learners to different developmental levels based, in part, on study abroad experience. The Level 2 and 3 learners are enrolled in equivalent courses but all Level 3 learners have experience in Spanish-speaking countries. The average time spent abroad by this group is almost four months. The Level 4 learners have even greater experience in Spanish-speaking countries, an average of fifteen months. We showed in Chapter 2 that a naturalistic setting provides learners a greater number of proficient speakers with whom to interact, a focus on meaning during communication, a greater number of language events to either observe or participate in, and exposure to more discourse-level input. The latter is particularly important for the expression of anaphoric reference. We see the benefits of experience abroad in our results. The two groups with study abroad experience outperform the groups without it in producing more clitics, fewer NPs and fewer cases of omission. Also, we found a difference between these groups in terms of the accessibility of all four third person direct object pronoun forms. The two masculine forms (*lo*/*los*) carry the functional load of a third person direct object in early stages of acquisition. The distribution of the feminine forms (*la*/*las*) to the role of direct object is nativelike only for the advanced learners, those who have experience abroad. A key event in the acquisition of object pronouns is the equal accessibility of masculine and feminine forms.

Revealing when, and to what extent, L2 learners used clitic pronouns was only one aspect of the first research question. The other aspect addressed the extent to which

they used specific clitic pronouns as proficiency levels increased. The function-form analysis revealed that each of the direct object clitic pronouns under analysis in the present study (*me*, *te*, *nos*, *lo*, *los*, *la*, *las*) was used by each level of participant, though to varying degrees. All levels also produced the dative forms *le* and *les* as a direct object, the nature of which will be discussed below. Finally, there were a few instances of using the clitic pronoun *se* as a direct object by Levels 1, 2, and 3.

The most consistently produced forms were the first person forms *me* and *nos*, either as direct or indirect objects, which indicated that those forms had been mapped to the function of object clitic pronouns by the lowest level of participants prior to the data collection. The use of the third person forms as direct object clitic pronouns, however, was more sporadic, in that there was not a clear and steady increase in the percentage of produced forms from one level to the next. Rather, development consisted of several dips in the ascending curve. Level 1 relied most on the masculine singular form *lo*, regardless of the number and/or gender of its referent. Level 2 demonstrated a substantial increase in the production *lo* and *los* from that of Level 1, while the production of the feminine forms, relative to the masculine, continued to be limited. By Level 3, the L2 learners in the present study began to produce each of the third person forms more frequently and more consistently.

5.5.2 Research Question 2: What functions do different levels of L2 learners and native speakers express using direct and indirect object clitic forms?

A form-function analysis was conducted in order to address the second research question. There are seven principal findings from this analysis.

1. The functions performed by deictic pronoun forms (*me*/*nos*/*te*) are those of objects (direct and indirect) for L2 learners and native speakers alike, although we found idiosyncratic use of *me* as a subject among a small number of learners.
2. The functions performed by anaphoric third person pronoun forms (*lo*/*los*/*la*/*las*) are direct object, definite article, and relative pronoun for L2 learners and native speakers alike. We found only three instances of an anaphoric pronoun form used by a learner as the object of a preposition or a stressed pronoun.
3. The developmental trajectory for L2 learners is a shift in the interplay of linguistic resources such that as their proportionate use of the third person forms as definite articles decreases, their proportionate use as direct objects increases. A parallel development is the appearance of the relative pronoun function in the production of advanced learners and its use in nativelike proportions.
4. The form *lo* predominantly performs the function of direct object across all levels of learners and native speakers (63%–88%) whereas the forms *los*/*la*/*las* predominantly perform the function of definite article (68%–99%).
5. The forms *le*/*les* only perform object functions except for one instance in which it is used as subject.
6. The developmental trajectory for L2 learners is to shift from using the forms *le*/*les* only as indirect objects to using them both as a direct and indirect object to

restricting their use as direct objects to +animate referents at very advanced level, predominantly using them at the advanced level as an indirect object.

7. The forms *lo* and *la* when functioning as a direct object predominantly express –animate referents. The developmental trajectory is for advanced learners to express +animate referents with *la* as native speakers do.

The deictic pronoun forms *me*/*nos*/*te* were used consistently as object clitics by all learner levels with a preference toward their use as indirect objects, in contrast to the native speakers who produced them mostly as direct objects. Many of the constructions in which learners used *me*/*nos*/*te* were as dative experiencers with *gustar*-type verbs. We can say, therefore, that Andersen's (1990) one-to-one principle and the principle of formal determinism constrain the development of these forms; the forms always represent an object pronoun in input, and, consequently, L2 learners produced them as object pronouns. The one exception to this strict functioning as an object occurred with *me*, which was sporadically used as a subject pronoun.

The anaphoric third person pronoun forms *lo*, *los*, *la*, and *las* eventually appeared in learners' output with the same functions as native speakers produced: definite article, direct object, and relative pronoun. The relative pronoun function was the last to enter learners' production at the advanced levels. Even Level 1 learners produced all four forms with both definite article and direct object functions. But the Level 1 learners very strongly associated *lo* with its function as a direct object and *los*, *la*, and *las* with their function as definite article. That forms were taking on both functions is an indication of multifunctionality. That there were so few forms in the non-preferred function indicates that this is incipient multifunctionality. The two developments at Level 2 were that learners more strongly associated *lo* with its direct object function and produced many more tokens of *los* as a direct object. Multifunctionality in the learners' developing systems appears to be taking shape with the masculine forms. The feminine forms still functioned predominantly as definite articles. Multifunctionality continued to develop with the pronoun *lo* because the Level 3 (and Level 4) learners produced it with a relative pronoun function. Only the Level 4 learners produce *los* as a relative pronoun and in only one instance. The direct object function of the feminine forms appeared in the production of the Level 3 learners. At the same time as their systems added the function of relative pronoun to *lo*, they solidified the multifunctionality of the feminine forms. Except for three instances in which learners produced two objects of a preposition and one stressed pronoun, the functions they assigned to *lo*, *los*, *la*, and *las* were the same ones as the native speakers assigned.

We also traced the development of multifunctionality in L2 learners' speech by examining the forms *le*/*les*. Level 1 learners produce very few tokens and used them exclusively as indirect objects (VanPatten, 1990). The Level 2 learners began to associate the forms with a direct object function, almost equally with the indirect object function. The advanced learners, like the native speakers, associated *le*/*les* more with the indirect object function than the direct object one. The key event in the development of *le*/*les* is to associate them with both direct and indirect object functions. Another key event is to associate *le*/*les* with the feature +animate. The Level 2 learners produced *le*/*les* with both + and –animate referents. The Level 3 learners moved to a

much higher proportion of +animate referents whereas the Level 4 learners and the native speakers exclusively produced +animate referents. Animacy is also a feature that figures into the acquisition of other third person forms. The forms *lo* and *la* were initially almost exclusively associated with –animate referents and advanced learners and native speakers predominantly associate *lo* and la with –animate referents. But a key event in the development of object pronouns is to use *la* with +animate referents. Only the advanced learners, like the native speakers, associated +animate with *la*.

5.5.3 Research Question 3: What is the relationship between the frequency that different levels of L2 learners and native speakers use an object clitic form and its appropriate use in obligatory contexts?

The appropriate-use analysis of the direct object clitic forms was carried out to address this research question. The analysis yielded four principal findings.

1. The developmental trajectory for the appropriate use of all direct object clitic pronouns and third person direct object clitic pronouns followed a U-shaped curve with the learners not attaining nativelike levels of appropriate use.
2. The first person direct object clitic pronouns showed nativelike appropriate use from the earliest level examined and it was maintained by the advanced levels.
3. L2 learners of all levels do not attain nativelike production (i.e. number of tokens) of *me*/*nos*/*te*.
4. The developmental trajectory for the use of default or base forms to express a direct object is to shift from an equal reliance on the two masculine forms *lo*/*los* to a reliance on the masculine singular form *lo* as default forms to the alignment of the appropriate use and frequency of use of the form *lo*.

The finding of U-shaped development was due to three aspects in the performance of the Level 1 learners. First, the Level 1 learners produced few forms so there was not as much language to use appropriately. Second, they produced a variety of forms so that they did not inappropriately rely on a base form. And third, they were fairly accurate with the forms they produced. As we saw with the Level 2 learners, producing more forms leads to more inappropriate use. That Level 1's rate of appropriate use (i.e., number correct divided by total number produced) was not statistically significantly different from that of the Level 3 and 4 learners is deceptive. If we set aside Level 1's performance then we could represent the development of appropriate use of object pronouns as follows: Level 2 < Level 3 = Level 4 < Natives. Once again, the two groups with experience in Spanish-speaking countries are performing better than other learners. It is noteworthy that the learners' appropriate use did not reach the level of the native speakers'. Key events in the development of appropriately using object pronouns is the accommodation of more forms produced followed by restructuring of the pronoun system.

Our finding that the deictic first person clitic forms are 100% accurately used as direct objects from our Level 1 supports previous findings for the earlier production

of these forms over the third person anaphoric forms (Andersen, 1984; Klee, 1989; VanPatten, 1990). The deictic forms are clear in the input in that they can not appear as a full NP in some contexts but as a clitic pronoun in others. They are always pronouns in the input to which the learners are exposed and always pronouns in their output. Even though accuracy or appropriate use is at 100%, the learners do not attain nativelike production of the deictic forms because the native speakers generated far more contexts for using the first person forms than did the learners.

An important perspective that the appropriate-use analysis gave us was to consider it against learners' suppliance of a form—that is, its frequency of use and the tokens supplied. Klee (1989) suggested that the form *lo* functioned in interlanguage as an "archmorpheme"—that is, a single default form to perform the function of direct object. By comparing appropriate use to frequency of use and tokens supplied, our data suggest that both *lo* and *los* are used early on as default forms. Both forms are oversupplied to the detriment of the suppliance of feminine forms. While the tokens of *los* and its frequency of use remained steady, its appropriate use increased. While the tokens of *lo* and its frequency of use increased, its appropriate use decreased. Then, at the advanced levels, a key event in the acquisition of object pronouns took place. The frequency of use and appropriate use of *lo* aligned. When this alignment takes place, learners produce feminine forms with high degrees of accuracy.

5.5.4 Explaining the L2 development of the Spanish direct object

Functionalists analyze interlanguage for the range of linguistic devices learners use to express a meaning (concept), the interplay of ways to express it, and the balance among those means of expression as they change over time (Bardovi-Harlig, 2007). Functionalists characterize the path of interlanguage development as a shift from pragmatic to lexical and then to a morphological stage of development. This path of development in the acquisition of object pronouns in Spanish is one from one-to-one form-meaning mapping to multifunctional form-meanings mapping. The pragmatic stage is the most rudimentary and may place the communicative burden on the interlocutor, the use of the most transparent means of expression, and/or rely on universal principles. The levels of learners we examined are beyond a truly pragmatic stage of development, although we can infer what constitutes the pragmatic stage. First, omission of the direct object places the greatest communicative burden on the interlocutor to recover the referent. Second, the most transparent means of expression available to the second language learners is the use of a full NP as the object. Third, the highest feature in the Feature Hierarchy is person (Greenberg, 1963), particularly first person, which are the forms early stage learners use.

The second stage is the lexical stage. In the lexical stage second language learners must develop the full inventory of object pronouns and produce clitics (instead of full NPs or omission). An important development during the lexical stage is the expansion of the developing system. Also characteristic of the lexical stage is to restrict the use of forms to preferred functions and to overuse certain forms to the detriment of others. The morphological stage is the final stage of development, but an active stage. For

the acquisition of object pronouns this stage is characterized by the development of multiple functions for those forms that perform them—in other words, restructuring. During the morphological stage, the frequency with which a form is used in interlanguage aligns with its appropriate use, thus allowing other forms to be employed. At this stage, morphologically distinct forms (e.g., masculine and feminine) become equally accessible in interlanguage. Importantly, the feature of animacy, that has restricted the use of certain forms in earlier stages, becomes used to further refine the use of certain forms.

5.6 Conclusion

The present study identified three stages of development of the L2 acquisition of Spanish direct object. Throughout all stages, multifunctional development of form-function mapping was identified as the psycholinguistic strategy guiding interlanguage development and, in line with a concept-oriented approach, theorizes that communicative need drove development. Interestingly, the present study determined that multifunctionality also develops in stages; using one third person form multifunctionally did not indicate that all third person forms were used multifunctionally. In this regard, we see how the development of form-function mapping provides us with a window through which interlanguage development can be tracked. Communicative need motivates the L2 learner to find the appropriate forms available in the input to encode a specific function, while the sequence in which new forms emerge in interlanguage is constrained by the development toward multifunctionality. In this regard, the present study identified non-homophonous pronominal forms as emerging before the homophonous. In addition, it identified the feature of animacy as having an influence on the interlanguage of early-stage L2 learners in their use of particular clitic forms. Finally, it revealed the relationship between interlanguage development and accuracy, in that we saw how the restructuring of interlanguage affects the L2 learners' appropriate use of clitics, relative to their antecedent.

6

Morphological, Semantic, and Syntactic Predictors of the L2 Production, Placement, and Omission of Spanish Object Pronouns

6.1 Introduction

The concept-oriented analysis in the previous chapter revealed three stages of interlanguage development, as L2 learners first used pragmatic strategies to encode the target structure, then lexical, and then morphological. With additional analyses, we were able to capture the restructuring of form-meaning connections in interlanguage (in the form-function analysis) and observe its effect on the appropriate use of clitic forms. We assert, however, that neither the bi-directional analysis nor the appropriate-use analysis provide sufficient information to explain L2 performance. While the effect of homophony on interlanguage development substantiates previous hypotheses, it would be naïve to conclude that the story of how the Spanish direct object develops in interlanguage is complete. As our review of literature in Chapter 3 showed, there is much more to be considered when we pursue the question of why some forms emerge in interlanguage before others. Phenomena relating to the interface of syntax and semantics, for example, are well documented as playing a role in development, as are pragmatic factors. In addition, we have yet to consider how our L2 learners develop with regard to accurate preverbal placement of clitic pronouns and object omission.

In the present chapter we incorporate into our multifaceted approach measures of accurate forms produced as grammatical objects, their placement relative to a (non) finite verb, and object omission, and the extent to which accuracy is predicted by morphological, syntactic, and semantic features. We measure the effect and predictive power of specific features on the accurate production and placement in preverbal contexts, and on object omission. Unlike the previous chapter, the present one focuses on accuracy of clitic form and placement in the contexts of direct *and* indirect objects, and does not consider the overgeneralization of clitic forms to other grammatical categories. It also relies on statistical analyses in the form of chi-square tests and logistic regressions in order to measure the isolated effect of specific variables and their predictive power.

6.2 The present study

The research questions we address in the present chapter derive from results of previous literature regarding the use of default morphological forms (Franceschina, 2001; McCarthy, 2008), placement of object clitics relative to a (non)finite verb (Bruhn-Garavito and Montrul, 1996; Liceras, 1985), object omission (Zyzik, 2008), and late-acquired features at the syntax/semantics interface (Ortiz-López and Guijarro-Fuentes, 2009). Specifically, we look at the semantic features of animacy and transitivity, the morphological features of person, number, gender, case, and homophony, and the syntactic feature of preverbal obligatory placement, in order to gain a sense of how and when development according to such variables manifests among the same L2 learners analyzed in the previous chapter. With regard to object omission, we have seen that ditransitive verb construction and the definiteness, specificity, and animacy of its referent may all play a role in the L2 learner's expression (Ortiz-López and Guijarro-Fuentes, 2009; Sanchez and Al-Kasey, 1999; Zyzik, 2008). We have also seen that animacy appears to play a role in the selection of dative clitic forms over accusative forms. With regard to morphology, we have seen that the use of default forms persists within the third person system. While the variables we analyze do not encompass all of the factors underlying the varying saliency of forms in input, they do represent various linguistic domains that, when measured together, could yield a predictive model of performance with multiple dimensions. The research questions guiding the present chapter are:

1. What is the effect that the morphological features of person, number, gender, case, and homophony, the semantic features of animacy and transitivity, and the syntactic feature of OV and VO/OV placement have on different levels of L2 learners' and native speakers' appropriate use of object clitic forms?
2. Which morphological, semantic, and syntactic features predict different level of L2 learners' and native speakers' appropriate use of object clitic forms?
3. What is the effect that the morphological features of person, number, gender, case, and homophony and the semantic features of animacy and transitivity have on different levels of L2 learners' accurate placement of object clitic forms in $O_{pro}V$ contexts?
4. Which morphological and semantic features predict different levels of L2 learners' accurate placement of object clitic forms in $O_{pro}V$ contexts?
5. What is the effect of the semantic features of animacy and transitivity on different levels of L2 learners' and native speakers' omission of a direct object in OV and VO contexts?
6. Which semantic features predict different levels of L2 learners' and native speakers' omission of direct objects in OV and VO contexts?

6.3 Methods and procedures

6.3.1 Participants, research instrument, and data collection

The participants in the present study consist of L2 learners of Spanish (*n*=75) and native speakers (*n*=15) who were also part of our pool of participants in the previous chapter. The reason for the reduced subject population here is that not all of our original participants produced object clitics. Many, particularly low-level learners, expressed the object with full NPs or omission. The breakdown of participants in the present chapter, therefore, consists of 16 learners at Level 1, 18 at Level 2, 24 at Level 3, 17 at Level 4, and 15 native speakers. The learners were assigned to one of four levels based on the results of a grammar test, years of Spanish study, study abroad experience, and professional use of Spanish. The research instrument for the present study was also used in the study presented in Chapter 5. It was the specially designed silent video, *La Tortilla Rag* (Malovrh, 2007), presented in two parts. After viewing each part, the participants recorded two oral retells. The first retell was a third person summary of the film. The second asked them to adopt the perspective of one of the film's two actors and retell the events in the first person. Each participant viewed the film at a computer in a computer laboratory and recorded their retells using a headset.

6.3.2 Data coding

The first of our three dependent variables is accurate form. Each use of an object pronoun was identified and the form of the pronoun was either accurate or not given the features of its referent. The linguistic context (i.e. the referent) in which the object pronoun was generated was coded for the morphological variables of Case (accusative/dative), Person (1st/3rd), Number (singular/plural), Gender (masculine/feminine), and Homophony (+/–). The semantic context in which the object pronoun was produced was coded for Animacy (+/–) of the referent and the Transitivity (ditransitive/transitive) of the verb. For example, we coded the independent morphological variables for the utterance in (1) as accusative case, third person, singular, feminine, and +homophonous. Its semantic features are inanimate and transitive. If the form supplied in this linguistic context was *la* then it was accurate. Any other form supplied was inaccurate.

(1) *La cortó [la piña].*
"She/he cut the pineapple."

The syntactic context in which the object pronoun was produced was coded as Word Order. Formal accuracy was coded as occurring in an OV context with obligatory preverbal placement or in a VO/OV context with either obligatory or optional postverbal placement. The example in (1) is an OV word order as is the example in (2). The example in (3) is a VO/OV context.

(2) *La va a cortar [la piña].*
"She/he is going to cut the pineapple."

(3) *Va a cortarla [la piña].*
"She/he is going to cut the pineapple."

The second of our dependent variables is accurate placement in obligatory $O_{pro}V$ contexts. For this analysis we only analyzed utterances such as (1) in which a finite verb required preverbal placement of an object pronoun. Utterances such as (2) and (3) allow optional preverbal placement, are ambiguous and so were not included in the analyses of placement. When learners produced a pronoun in preverbal position in obligatory contexts, we analyzed the referent for Person (1st/3rd), Number (singular/plural), and Gender (masculine/feminine). We analyzed the verb to determine Case (accusative/dative) and then determined Homophony (+/–). The semantic context in which the object pronoun was produced was coded for Animacy (+/–) of the referent and the Transitivity (ditransitive/transitive) of the verb. Placement does not refer to placing a masculine, singular pronoun in $O_{pro}V$ contexts. Rather, it refers to placing a pronoun (any pronoun) obligatorily in preverbal position; the linguistic context for generating the pronoun is our focus.

The third of our dependent variables is omission (null clitic) in both OV and VO contexts. Given the low rate of omission we were unable to distinguish between OV and VO contexts. We limited our analyses to direct object clitic pronouns (accusative case) only. We coded the semantic context in which omission occurred for Animacy (+/–) of the referent and the Transitivity (ditransitive/transitive) of the verb.

6.3.3 Statistical analyses

All statistical analyses were conducted using SPSS 19.0. Chi-square tests were conducted in order to determine if specific morphological, semantic, and syntactic features had a statistically significant main effect on the L2 learners' and native speakers' formal accuracy with direct and indirect object pronouns. These were followed by a binary logistic regression analysis in order to develop a predictive model of accurate production. Chi-square tests were conducted in order to determine if specific morphological and semantic features had a statistically significant main effect on L2 learners' accurate placement of direct and indirect object pronouns in obligatory $O_{pro}V$ contexts. These were followed by a binary logistic regression analysis in order to develop a predictive model of accurate placement. Finally, chi-square tests were conducted in order to determine if specific semantic features had a statistically significant main effect on L2 learners' and native speakers' omission of clitic pronouns in OV and VO contexts. These were followed by a binary logistic regression analysis in order to develop a predictive model of omission.

6.4 Results

6.4.1 Accurate form

A total of 743 linguistic contexts were coded for the dependent and independent variables. Table 6.1 provides the frequency with which accurate forms were produced

by level of learner and native speakers and by variable. Overall, we see U-shaped development of accurate forms starting at 86.7% at Level 1, then falling to 60.5% at Level 2, after which accuracy steadily improves. The Level 1 learners produce a limited number of pronouns. As seen in Table 6.3, the Level 1 learners had at least 2 small cells in each variable analyzed; statistical analysis was challenging at this level. U-shaped development is seen in each of the variables presented in Table 6.1. It is interesting to note that native speakers were not 100% accurate with all forms. We submitted the overall results to a one-way ANOVA with Level as the between group variable. The results revealed a significant effect for Level ($F_{4,85} = 4.577$, $p = .002$). A post hoc Scheffé's revealed that there were no significant differences between the Level 1, 2, and 3 learners' scores nor between the Level 4 learners' and native speakers' scores. There were two groups of scores: Level 1 = Level 2 = Level 3 < Level 4 = NS.

In Table 6.2 we present the results of the chi-square tests conducted on each variable. As can be seen in the table, most of the variables are highly significant ($p < .001$): Level, Case, Person, Number, Gender, Homophony, and Animacy. Word Order also reached a level of statistical significance ($p < .05$) but Transitivity did not. Overall then, the results indicate that higher levels of accuracy are associated with the following:

1. advanced learners and native speakers
2. dative case pronouns
3. first person forms
4. singular forms
5. masculine forms

Table 6.1 Summary of the frequency of accurate clitic pronoun form production by variable and level

Variable		**Level 1 %**	**Level 2 %**	**Level 3 %**	**Level 4 %**	**Native %**
Overall		86.7	60.5	79.8	87.7	96.2
Case	Accusative	83.3	52.5	73.9	83.4	94.7
	Dative	90.5	93.3	100	97	100
Person	1st	100	100	100	100	100
	3rd	76.9	55.2	73.7	85.2	95
Number	Singular	87.1	75	81.1	92.4	96.2
	Plural	85.7	44.4	77.6	77.9	96.2
Gender	Masculine	77.8	73.3	86.4	91.3	98.5
	Feminine	81.8	27.6	64.2	74.6	91
Homophony	+	80	50.8	72	82.9	94.2
	–	92	94.1	100	97.2	100
Animacy	+	100	94.4	100	95.1	100
	–	72.7	50	71.5	83.1	94
Transitivity	Ditransitive	76.5	62.9	85.7	80	93.2
	Transitive	92.9	58.5	77.4	90.8	97.5
Word Order	OV only	85.4	64.6	89.1	87.2	95.1
	OV/VO	100	36.4	53.3	89.3	100

6. –homophony forms
7. +animate referents

To put it another way, errors in the form of the object clitic pronoun are associated with the following:

1. early stage learners
2. accusative case pronouns
3. third person forms
4. plural forms
5. feminine forms
6. +homophony forms
7. –animate referents

The variable Word Order is difficult to characterize. Only the Level 1, very advanced learners and native speakers had little difficulty with both word orders examined. The Level 2 and 3 learners found postverbal placement far more difficult than preverbal placement. Our next analyses examine these variables at each of the levels in the study.

In Table 6.3 we present a summary of the results of the chi-square tests on each variable for each level of learner and native speakers. The morphological variables of Case, Gender, and Homophony were highly significant factors overall and we now see that they are significant factors affecting accurate form production at Levels 2, 3, 4 and among the native speakers. The pattern for Case is clear in that dative case pronouns were supplied significantly more accurately than accusative case pronouns at these levels. The same pattern is evident at Level 1 but the difference did not reach a level of statistical significance. The pattern for Gender is clear in that feminine masculine forms were supplied significantly more accurately at these levels. The pattern for Homophony is consistent in that the –homophony forms were produced significantly more accurately at these levels than the +homophony forms. The same is true at Level 1 but the difference did not reach a level of statistical significance.

Table 6.2 Summary of the results of the chi-square tests of accurate clitic pronoun form production by variable

Variable	x^2	***df***	**Small Cells?**	**Cramer's *V***
Level	66.478***	4	0	.299
Case	33.325***	1	0	.211
Person	33.932***	1	0	.214
Number	14.702***	1	0	.141
Gender	74.143***	2	0	.316
Case	33.325***	1	0	.211
Homophony	44.669***	1	0	.245
Animacy	49.468***	1	0	.258
Transitivity	2.842	1	0	.062
Word Order	5.729*	1	0	.088

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

The pattern for the morphological variable of Person is quite clear; the first person forms are supplied with 100% accuracy at all levels. The differences between first and third person forms is, however, statistically significant only at Levels 2 and 3. The pattern for the variable Number is consistent in that the L2 learners produced singular forms more accurately than they produced plural ones but the difference was statistically significant only at Levels 2 and 4.

The semantic variable of Animacy was highly significant in the overall analysis. In the analysis by Level we find that it is a significant factor among all levels of L2 learners and native speakers. The pronouns produced for +animate referents were produced significantly more accurately than for –animate referents. Transitivity was not a significant factor overall but it is significant at Level 4 where learners produced more accurate forms in transitive contexts.

The syntactic variable of Word Order reached a level of significance in the overall analyses. The participants' performance in the two word orders examined was not consistent. Level 2 and 3 learners supplied more accurate form in OV contexts, significantly so at Level 3.

The results of the chi-square tests provided the variables to be used in a binary logistic regression. This analysis generated a model containing the independent variables that predict accurate form production. There is a redundancy between the variables Gender and Homophony in that all +homophony forms are gender-marked and all –homophony forms are gender-unmarked. Due to the redundancy, the model excluded the variable Homophony with its lower chi-square value. The supporting statistics for the regression are provided in Appendix D. We summarize them in Table 6.4.

Overall, the variables that predict accurate production of object clitic forms are the Level of the participant, the Gender of the referent, and the Animacy of the referent. As we have already seen, the native speakers outperform the learners and the higher level learners outperform the lower level learners. Masculine forms are produced more accurately than feminine ones. In the previous chapter we found that masculine forms are the default ones. They are produced more accurately because they are produced in appropriate contexts as well as inappropriate ones to the detriment of producing a feminine form. The forms produced that refer to +animate referents are more accurate than for –animate referents. Among the +animate referents would be forms that learners found easy: first person forms, –homophony forms, and dative case forms.

Person was a significant overall factor affecting performance. Because the L2 learners were 100% accurate with first person forms, we decided to analyze in more detail their performance with third person forms. These forms show a developmental trajectory whereas the first person forms do not.

6.4.1.1 Accurate form in third person contexts only

Our analysis of third person contexts only resulted in one particular change to the independent variables being measured. The variables of Case and Homophony were collapsed into one category because they are completely redundant when analyzed only in third person contexts; non-homophonous forms are all dative case pronouns,

Table 6.3 Summary of the results of the chi-square tests of accurate clitic pronoun form production by variable and level

Variable	Level	x^2	*df*	Small Cells?	Cramer's *V*
	1	.495	1	2	.105
	2	8.419**	1	0	.333
Case	3	12.77***	1	0	.272
	4	7.839**	1	0	.192
	N	3.611*	1	1	.123
	1	5.059	1	2	.335
	2	6.658**	1	1	.296
Person	3	13.196***	1	0	.276
	4	6.062	1	1	.169
	1	.016	1	2	.019
	2	7.404**	1	0	.312
Number	3	.315	1	0	.043
	4	8.296**	1	0	.205
	N	.001	1	1	.002
	1	1.455	2	3	.18
	2	23.259***	2	0	.553
Gender	3	25.529***	2	0	.384
	4	18.141***	2	0	.293
	N	10.75**	2	3	.213
	1	1.385	1	2	.175
	2	10.342**	1	0	.369
Homophony	3	16.849***	1	0	.312
	4	9.119**	1	0	.207
	N	5.042*	1	1	.146
	1	7.238**	1	2	.401
	2	11.357***	1	0	.387
Animacy	3	17.836***	1	0	.321
	4	6.78**	1	0	.179
	N	5.328*	1	1	.150
	1	2.485	1	2	.234
	2	.148	1	0	.044
Transitivity	3	1.497	1	0	.093
	4	4.645*	1	0	.148
	N	2.579	1	1	.104
	1	.675	1	2	.123
	2	3.143	1	1	.203
Word Order	3	26.337***	1	0	.39
	4	.170	1	0	.028
	N	2.827	1	1	.109

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

and homophonous forms are all accusative case pronouns. With regard to number of participants, it reduced the total number of individuals yielding data to analyze to 82: 11 at Level 1, 18 at Level 2, 22 at Level 3, 16 at Level 4, and 15 native speakers.

Table 6.4 Predictors of accurate clitic pronoun form production, overall and across levels

Variable	Overall	Level 1	Level 2	Level 3	Level 4	Native
Level	X*	N/A	N/A	N/A	N/A	N/A
Case		X				
Person	X					
Gender	X*		X*	X	X*	X
Animacy	X*	X				
Transitivity					X*	X*
Word Order				X*		

Note. X = variable included in the model; * p<.05; N/A = not applicable

A total of 583 third person contexts were coded and analyzed. Table 6.5 provides a summary of the frequency of accurate third person forms by variable and level. We see U-shaped development starting at 76.9% accurate then dropping to 55.2% before increasing steadily. We submitted the overall scores to a one-way ANOVA with Level as the between group variable. The results revealed a significant effect for Level ($F_{4, 77}$ = 5.181, p = .001). A post hoc Scheffé's revealed three groupings of participants: Level 2 < Level 1 = Level 3 < Level 4 = NS. We note U-shaped development with the variables Transitivity and Word Order and within the other variables: accusative case, plural, feminine and –animate forms.

In Table 6.6 we present the results of the chi-square tests conducted on each variable. As can be seen in this table, four of the variables are highly significant (p < .001): Level, Case, Gender, and Animacy. The variables of Number, Transitivity, and Word Order did not reach a level of statistical significance. Overall then, the results indicate that higher levels of accuracy with third person clitic pronoun forms are associated with the following:

Table 6.5 Summary of the frequency of accurate clitic pronoun form production in third person contexts only by variable and level

Variable		Level 1 %	Level 2 %	Level 3 %	Level 4 %	Native %
Overall		76.9	55.2	73.7	85.2	95
Case/Homo	Accusative	80	50.8	72	82.9	94.2
	Dative	66.7	87.5	100	94.4	100
Number	Singular	66.7	67.7	70.1	89.8	94.2
	Plural	85.7	44.4	77.3	77.9	96.2
Gender	Masculine	77.8	73.3	86.4	91.3	98.5
	Feminine	81.8	27.6	64.2	74.6	91
Animacy	+	100	88.9	100	91.3	100
	–	72.7	50	71.5	83.1	94
Transitivity	Ditransitive	69.2	56.7	82.9	77.4	91.5
	Transitive	84.6	54.1	69.6	88.6	96.7
Word Order	OV only	72.7	58.9	84.4	83.5	93.2
	OV/VO	100	36.4	51.2	89.1	100

1. advanced learners and native speakers
2. dative case (–homophony) pronouns
3. masculine forms
4. +animate referents

The reverse is also true. Errors in the form of the third person clitic pronouns are associated with the following:

1. early stage learners
2. accusative case (+homophony) pronouns
3. feminine forms
4. –animate referents

These lists overlap completely with those that describe performance of both first and third person pronouns (see Table 6.2).

Table 6.7 provides a summary of the results of the chi-square tests of accurate clitic pronoun form in third person contexts by variable and level. None of the variables reached a level of statistical significance for Level 1 learners. The variable that significantly affected the most levels is Gender and the effect of Gender is consistent. Both L2 learners and native speakers supply third person masculine forms more accurately than they do feminine ones. The variable Animacy significantly affected performance of the Level 2 and 3 learners; both groups of learners supplied the forms for +animate referents more accurately than those for –animate referents. The variable Number significantly affected the performance of Level 2 and 4 learners; accuracy with singular third person forms was greater than with plural forms. The variables Transitivity and Word Order had limited effects.

The results of the chi-square tests provided the variables to be used in a binary logistic regression. This analysis generated a model containing the independent variables that predict accurate third person form production. The predictors of accurate third person forms are provided in Table 6.8, with supportive statistics from the binary logistic regression analyses provided in Appendix E.

Overall, the variables that predict accurate production of third person object clitic forms are the Level of the participant, the Gender of the referent, and the Animacy of the referent. With the exception of the high performance of Level 1, each subsequent

Table 6.6 Summary of the results of the chi-square tests of accurate clitic pronoun form production in third person contexts only by variable

Variable	x^2	***df***	**Small Cells?**	**Cramer's *V***
Level	60.794***	4	1	.323
Case/Homo	10.119***	1	0	.132
Number	2.527	1	0	.066
Gender	34.353***	2	0	.243
Animacy	13.823***	1	0	.154
Transitivity	1.486	1	0	.05
Word Order	1.289	1	0	.047

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

Table 6.7 Summary of the results of the chi-square tests of accurate clitic pronoun form production in third person contexts by variable and level

Variable	Level	x^2	*df*	Small Cells?	Cramer's *V*
Case/Homo	1	.462	1	3	.133
	2	3.827	1	2	.239
	3	3.04	1	1	.151
	4	3.054	1	0	.132
	N	1.66	1	1	.096
Number	1	1.321	1	2	.225
	2	3.656*	1	0	.234
	3	.87	1	0	.081
	4	4.672*	1	0	.163
	N	.368	1	1	.045
Gender	1	.508	2	4	.14
	2	16.308***	2	2	.493
	3	10.265**	2	1	.278
	4	10.765**	2	0	.247
	N	6.073*	2	3	.048
Animacy	1	1.418	1	2	.234
	2	4.756*	1	2	.267
	3	3.862*	1	1	.17
	4	1.827	1	0	.102
	N	1.882	1	1	.17
Transitivity	1	.867	1	2	.183
	2	.046	1	0	.026
	3	2.611	1	0	.140
	4	3.73*	1	0	.146
	N	2.272	1	0	.112
Word Order	1	1.418	1	2	.234
	2	1.893	1	1	.168
	3	16.622***	1	0	.354
	4	.949	1	0	.073
	N	3.418	1	1	.137

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

Table 6.8 Predictors of accurate clitic pronoun form production in third person contexts only, overall and across levels

Variable	Overall	Level 2	Level 3	Level 4	Native
Level	X*	N/A	N/A	N/A	N/A
Case					
Number					
Gender	X*	X*	X	X*	X
Animacy	X*				
Transitivity				X*	X*
Word Order			X*		

Note. X = variable included in the model; * p<.05; N/A = not applicable

level of L2 learner outperforms the previous, with native speakers outperforming the learners. The morphological factor of Gender is consistent throughout development, with feminine forms being supplied less accurately than masculine ones. Transitivity is a predictor of performance for the very advanced learners and native speakers. They are more accurate supplying a third person pronoun with a transitive rather than ditransitive verb.

6.4.2 Accurate placement in $O_{pro}V$ contexts

Our analysis of accurate placement in OV contexts consists of data produced by 72 of the 82 L2 learners analyzed in the previous section. There were fewer participants in our analysis of accurate OV placement because not all of the participants who produced clitics did so in obligatory preverbal contexts. The resulting breakdown of L2 learners, therefore, consists of 16 at Level 1, 18 at Level 2, 21 at Level 3, and 17 at Level 4. A total of 572 linguistic contexts were coded for the dependent and independent variables. Table 6.9 provides the frequency with which forms were placed accurately in preverbal contexts across the four levels of learners we examined. Native speakers were 100% accurate with placement and so were not included in any analyses. The figures reveal an increase in accurate placement from one level to the next, starting at 58.5% and ending at 99.4%. This is a consistent pattern within each of the variables examined. The performance of the Level 4 learners is noteworthy; they are extremely accurate placing a form in $O_{pro}V$ contexts. We submitted the overall scores to a one-way ANOVA with Level as the between group variable. The results revealed a significant effect for Level ($F_{3, 68} = 3.726$, $p = .015$). A post hoc Scheffé's revealed three groupings of learners: Level 1 < Level 2 = Level 3 < Level 4.

Table 6.9 Frequency of accurate clitic pronoun placement in $O_{pro}V$ contexts

Variable		Level 1 %	Level 2 %	Level 3 %	Level 4 %
Overall		58.5	81.5	85.9	99.4
Case	Accusative	30	78	82	98.9
	Dative	85.7	93.3	94.9	100
Person	1st	78.9	88.9	92.1	100
	3rd	40.9	80.4	83.3	99.2
Number	Singular	70	87.9	92	99.1
	Plural	27.3	75	77.4	100
Gender	Masculine	20	80.8	80.6	97.7
	Feminine	27.3	72.7	82.4	100
Homophony	+	25	77.1	81.7	98.9
	–	80	94.1	93.5	100
Animacy	+	82.6	94.1	91.5	100
	–	27.8	77.1	82.7	98.7
Transitivity	Ditransitive	47.1	68.6	80.4	100
	Transitive	66.7	96.7	89	99

In Table 6.10 we present the results of the chi-square tests conduction on each variable. As can be seen in the table, all variables but Person reached a level of statistical significance. The chi-square value for the variable Level is particularly high. Overall then, the results indicate that higher levels of accurately placing a form in an $O_{pro}V$ context is associated with the following:

1. learners beyond the beginning level
2. dative case pronouns
3. singular forms
4. –homophony forms
5. +animate referents
6. transitive verbs

To put it in the opposite perspective, errors in placing a form in $O_{pro}V$ context is associated with the following:

1. beginning level learners
2. accusative case pronouns
3. plural forms
4. +homophony forms
5. –animate referents
6. ditransitive verbs

The variable Gender reaching a level of statistical significance but its effect on performance is difficult to characterize. At Level 1 the learners place feminine forms a bit more accurately than they do masculine ones. The opposite is true for the Level 2 and 3 learners. The Level 4 learners are extremely accurate with both masculine and feminine forms.

In Table 6.11 we present a summary of the results of the chi-square tests conducted on each variable for each level of learner. The results of the chi-square tests reveal the most about the Level 1 learners whose overall accuracy with placement was only 58.5%. The only variable that is not significant at Level 1 is Transitivity. All other variables reached a level of statistical significance. Based on these results we can attest

Table 6.10 Summary of the results of the chi-square tests of accurate clitic pronoun placement in $O_{pro}V$ contexts by variable

Variable	x^2	***df***	**Small Cells?**	**Cramer's *V***
Level	101.124***	4	1	.42
Case	11.475***	1	0	.142
Person	2.474	1	0	.066
Number	15.914***	1	0	.167
Gender	9.771**	2	0	.131
Homophony	9.741**	1	0	.13
Animacy	11.428***	1	0	.141
Transitivity	12.045**	1	0	.145

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

that in the early stages, learners are more successful placing a form in the following contexts: dative case, first person, singular forms, feminine forms, –homophony forms, and +animate forms. None of the variables reached a level of statistical significance for the Level 4 learners because their accuracy ranged from 97.7% to 100%. Few variables reach a level of statistical significance for the Level 2 and 3 learners.

The results of the chi-square tests provided the variables to be used in a binary logistic regression. This analysis generated a model containing the independent variables that predict accurate placement of clitics in $O_{pro}V$ contexts. Once again, the variables of Gender and Homophony are redundant. The results of the logistic regression analyses are summarized in Table 6.12, with supporting statistics provided in Appendix F.

Overall, Level, Case, and Transitivity are the significant predictor variables for accurate placement. The advanced learners outperform the beginning level learners.

Table 6.11 Summary of chi-square tests of accurate clitic pronoun placement in $O_{pro}V$ contexts by variable and level

Variable	Level	x^2	*df*	Small Cells?	Cramer's *V*
Case	1	13.101***	1	0	.565
	2	1.802	1	1	.167
	3	3.705*	1	0	.17
	4	.719	1	2	.068
Person	1	6.078*	1	0	.385
	2	.375	1	1	.076
	3	1.701	1	0	.115
	4	.291	1	2	.043
Number	1	6.054*	1	1	.384
	2	1.79	1	0	.166
	3	5.509*	1	0	.207
	4	.335	1	2	.046
Gender	1	12.234**	2	3	.546
	2	2.932	2	3	.212
	3	3.425	2	1	.164
	4	2.645	2	3	.13
Homophony	1	12.159**	1	0	.545
	2	2.42	1	1	.193
	3	3.379	1	0	.162
	4	.798	1	2	.072
Animacy	1	12.508**	1	0	.552
	2	2.42	1	1	.193
	3	1.894	1	0	.122
	4	1.006	1	2	.08
Transitivity	1	1.576	1	0	.196
	2	8.471**	1	0	.361
	3	1.799	1	0	.119
	4	.548	1	2	.059

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

Table 6.12 Predictors of accurate clitic pronoun placement in $O_{pro}V$ contexts

Variable	Overall	Level 1	Level 2	Level 3	Level 4
Level	X*	N/A	N/A	N/A	N/A
Case	X*	X*			
Number				X*	
Homophony			X		
Transitivity	X*		X*		

Note. X = variable included in the model; * p<.05; N/A = not applicable

The dative case forms are placed more accurately and placement is better with transitive verbs. Case was a significant predictor at Level 1, Transitivity was significant at Level 2, Number was significant at Level 3.

6.4.3 Omission (null clitic)

Our analysis of omission included 2,856 contexts of direct objects deriving from the original pool of participants described in Chapter 1 and analyzed in Chapter 5. That is, our analysis of omission included all participants, regardless of whether or not they produced clitic pronouns, and therefore included the production of 15 native speakers and 98 L2 learners: 31 at Level 1, 24 at Level 2, 25 at Level 3, and 18 at Level 4. Table 6.13 provides the frequency with which omission occurred by level of L2 learner and native speaker and by the two semantic variables investigated. Overall we see a steady decrease in the frequency with which omission occurred. After Level 1, none of the participants omitted a form for a +animate referent, while there is steady decrease in the frequency with which omission occurred for a –animate referent. Across all participants, including native speakers, the highest frequency of omission occurred with ditransitive verbs—almost 21% among Level 1 learners. We submitted the overall results to a one-way ANOVA with Level as the between group variable. The results revealed a significant effect for Level ($F_{4, 108}$ = 6.516, p = .000). A post hoc Scheffé's revealed two groupings of participants: Level 1, Levels 2, 3, 4 and Native Speakers grouped together.

In Table 6.14 we present the results of the chi-square tests conducted on each variable. As can be seen in the table, two variables reached a very high level of statistical significance: Level and Transitivity. Animacy did not reach a level of statistical

Table 6.13 Summary of the frequency with which clitic pronoun omission occurred by variable and level

Variable		Level 1 %	Level 2 %	Level 3 %	Level 4 %	Native %
Overall		10.1	4.4	4	1.5	.9
Animacy	+	7.7	0	0	0	0
	–	10.2	4.6	4.2	1.5	.9
Transitivity	Ditransitive	20.8	8.8	11.7	3.4	4.7
	Transitive	4	2.7	1.5	1	0

significance. These results indicate that higher rates of omission are associated with lower levels of learners and ditransitive verbs. In other words, omission is less likely to occur with higher level learners and transitive verbs.

In Table 6.15 we present the results of the chi-square tests of omission of forms for each variable and across the levels examined. Transitivity emerged as a significant factor in all levels except the very advanced learners. Animacy was not a significant factor in omission of a form for any level of learner or native speaker.

The results of the chi-square tests provided the variables to be used in the binary logistic regression, yielding a model containing the independent variables that predict omission of a form. Table 6.16 provides the summary of the predictors of omission. The supporting statistics for the regression are provided in Appendix G. Overall, Level and Transitivity predict object omission. Transitivity predicted omission at all levels

Table 6.14 Summary of the results of the chi-square tests of clitic pronoun omission by variable

Variable	x^2	*df*	Small Cells?	Cramer's *V*
Level	78.152***	4	0	.165
Transitivity	134.561***	1	0	.217
Animacy	2.438	1	1	.029

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

Table 6.15 Summary of the results of the chi-square tests of clitic pronouns omission by variable and level

Variable	Level	x^2	*df*	Small Cells?	Cramer's *V*
Transitivity	1	49.839***	1	0	.267
	2	8.841**	1	0	.134
	3	30.952***	1	0	.224
	4	3.564	1	1	.072
	N	17.668**	1	2	.195
Animacy	1	.087	1	1	.011
	2	.819	1	1	.042
	3	1.051	1	1	.041
	4	.298	1	1	.022
	N	.135	1	2	.017

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

Table 6.16 Predictors of clitic pronoun omission, overall and across levels

Variable	Overall	Level 1	Level 2	Level 3	Level 4	Native
Level	X*	N/A	N/A	N/A	N/A	N/A
Transitivity	X*	X*	X*	X*		X

Note. X = variable included in the model; * p<.05; N/A = not applicable

except Level 4. In other words, ditransitive verbs are more likely to have an object pronoun omitted than transitive verbs, especially among lower level learners.

6.4.4 Summary of results for accurate form and accurate placement in $O_{pro}V$ contexts

We present a summary of significant results for accurate form and accurate placement in $O_{pro}V$ contexts in Table 6.17. The significant predictor variables are indicated with an asterisk. Presenting the results for both form and placement analyses in this table allows us to see patterns in the learners' linguistic behavior. For example, the morphological variables have significant overall effects on both form and placement. The difference between form and placement lies in the point in development where the variables have an effect on form production (Level 2 and above) and the pervasive effect of morphological variables across levels for form (including native speakers). In contrast, the morphological variables have the greatest effect on the earliest stage of development in placement (Level 1) and little effect on specific levels after. We observe the same pattern for the semantic variable Animacy. Animacy is a very pervasive effect on the development of accurate form production and is a predictor variable for accurate form production. Transitivity is not much of a factor in form production but is a predictor variable for placement. The syntactic variable of Word Order has an overall effect on form production but little level-specific impact. We carried out a separate analysis of the third person forms because the first person forms were supplied correctly 100% of the time by all participants. The overall results are very similar for third person pronouns as they are for first and third combined: Level, Case, Gender, and Animacy are significant factors overall. Level, Gender, and Animacy are the significant predictor variables.

Each of our variables is binary and so in Table 6.18 we present a summary of the instantiation of the variable, when it was a significant overall variable, and when it is

Table 6.17 Summary of significant results for accurate clitic pronoun form production and accurate clitic pronoun placement in $O_{pro}V$ contexts

	Form						**Placement**				
	all	**L1**	**L2**	**L3**	**L4**	**N**	**all**	**L1**	**L2**	**L3**	**L4**
Level	x*						x*				
Case	x		x	x	x	x	x*	x*		x	
Person	x		x	x				x			
Number	x		x		x		x	x		x*	
Gender	x*		x*	x	x*	x	x	x			
Homophony	x		x	x	x	x	x	x			
Animacy	x*	x	x	x	x	x	x	x			
Transitivity					x*		x*		x*		
Word Order	x			x*							

Note. * indicates that the factor was a significant predictor variable.

associated with higher levels of accuracy. The table highlights the greatest difference in the development of accurate form production and accurate placement: U-shaped versus linear development. The table also highlights the great consistency in how these variables affect performance. The exception is the variable Gender.

Our analyses include native speakers and we found for form production that the native speakers were not always 100% accurate. As a result, several variables emerged as significant for native speakers' performance. In Table 6.19, we present a comparison of how the native speakers and learners performed when a variable was significant for the native speakers. The table reveals that the variables affected the performance of the native speakers and L2 learners in the same way. We also found in our analysis of omission that native speakers were significantly affected by the variable Transitivity in that they omitted a clitic only with ditransitive verbs (ditransitive > transitive). Transitivity significantly affected the performance of each level of L2 learners and in the same way (ditransitive > transitive). The learners' performance on these variables reflects that of native speakers—that is, there is a qualitative similarity even though there is a quantitative disparity.

Table 6.18 Summary of the instantiation of significant overall variables for accurate clitic pronoun form production and accurate clitic pronoun placement in $O_{pro}V$ contexts

	Form	**Placement**
Level	U-shaped development falling short of NS levels	linear incremental development attaining NS levels
Case	dative case	dative case
Person	1st person	not significant overall but 1st person where significant
Number	singular forms	singular forms
Gender	masculine forms	feminine forms
Homophony	–homophony forms	–homophony forms
Animacy	+animate referents	+animate referents
Transitivity	not significant overall but transitive verbs where significant	transitive verbs
Word Order	vacillating pattern across levels but OV where significant	–

Table 6.19 A comparison of how the native speakers and L2 learners performed when a variable was significant for the native speakers for accurate clitic pronoun form production

	Case	**Gender**	**Homophony**	**Animacy**
Level 1	dative = accusative	masculine = feminine	– = +	+ > –
Level 2	dative > accusative	masculine > feminine	– > +	+ > –
Level 3	dative > accusative	masculine > feminine	– > +	+ > –
Level 4	dative > accusative	masculine > feminine	– > +	+ > –
Natives	dative > accusative	masculine > feminine	– > +	+ > –

6.5 Discussion

Our research questions for the present study address morphological, semantic, and syntactic variables and their effect on accurate form production, accurate placement of a pronoun in $O_{pro}V$ contexts, and omission (the production of a null clitic). Our results are summarized in Tables 6.17–6.19.

The first point to consider in understanding how accurate forms develop in learners' interlanguage is the U-shaped developmental curve, for all pronouns and for third person pronouns, too. We identified previously that a key event in interlanguage development occurs among our Level 2 learners—that is, their increased form production leads to decreased accuracy. Another point to consider is that the Level 2 learners' accurate form production was significantly affected by all the morphological variables we analyzed, in contrast to the Level 1 learners who were not sensitive to any morphological variables. The Level 1 learners' production is so constrained in quantity that whatever forms they used, they used accurately. The other key event associated with Level 2 is the development of a sensitivity to morphological variables. Sensitivity to morphological variables continues to characterize the performance of Level 3 and 4 learners. Each morphological variable we examined was a significant factor affecting overall performance. The third point to consider in our understanding of interlanguage development is the performance of the native speakers. As noted in Table 6.19, the native speakers demonstrated a sensitivity to several morphological variables: Case, Gender, and Homophony. The L2 learners (Level 2 and above) all demonstrated sensitivity to the same variables, and, most importantly, in the same direction. Fundamentally, the morphological characteristics of the developing system come in early and then the system develops toward greater accuracy. That is, the "shape" of the system is not changing as accuracy with form production increases. The object pronoun system takes its "shape" among learners whose language experience and exposure to Spanish are limited to the classroom. Evidently, classroom exposure and explicit instruction (as describe in Chapter 1) is sufficient for the system to take its "shape." Study abroad experience provides the opportunities for further development, but it is development toward greater accuracy in an established system. This perspective on the relationship between native speakers' production and L2 learners' production advances our knowledge of the acquisition of object pronouns. Previous research has focused on learners' more frequent use of full NPs as direct objects compared to native speakers (e.g. Sánchez and Al-Kasey, 1999). Our research offers a deeper insight into morphological factors that affect native speaker and learner production.

The semantic variable of Animacy significantly affected accurate form production for all four levels of learners and native speakers. Once again, the natives and non-natives were affected by Animacy in the same way. The forms they produced for +animate referents were significantly more accurate than those produced for –animate referents. In fact, Animacy emerged as one of three predictor variables for overall performance on form production. Whereas the Level 1 learners were not sensitive to morphology, they were to the semantics of the referent.

The syntactic variable of Word Order reached a level of statistical significance for overall accurate form production. Which word order pattern had the most accurate forms varied from level to level. Where word order was a significant factor within levels, more accurate forms were produced for the OV context.

The first point to consider in understanding how accurate placement of forms develops in learners' interlanguage is the linear developmental curve where the sharpest incline took place between Levels 1 and 2 (from 58.5% to 81.5%). Only the Level 1 learners were sensitive to all the morphological variables examined, Level 2 to none of them. The opposite pattern emerged for accurate form production. The Level 2 learners' rate of accurate form production was only 60.5% but they were placing form in $O_{pro}V$ contexts accurately (81.5%). Clearly, a key event in the acquisition of object pronouns by L2 learners of Spanish is to resolve their syntactic distribution to preverbal contexts fairly early on. This means that the position of the pronouns was stable as learners increased their accuracy with the forms of the object pronouns. The language experience of the Level 2 learners is limited to classroom exposure. Evidently, classroom exposure and explicit instruction on syntax are sufficient to develop this aspect of the pronoun system. These findings are supported by those of previous research. VanPatten (1990) found that his first-year L2 learner produced a preverbal clitic in 83% of his utterances, whereas Bruhn de Garavito and Montrul (1996) found that their intermediate-level L2 learners were 70%–80% accurate in placing object pronouns in preverbal and postverbal position. Instructed language learners stand in contrast to naturalistic learners; Andersen's Anthony produced no pronouns in preverbal position in one interview (Andersen, 1984) but only first person pronouns in preverbal position in another interview, omitting all the third person pronouns (Andersen, 1983). Klee's (1989) earliest stage learner produced only first and second person pronouns and omitted all third person pronouns except for two instances of *lo* out of 28 possible.

There are more similarities than differences between the variables that affect overall performance with accurate form production and accurate placement in $O_{pro}V$ contexts. As seen in Table 6.17, all the morphological variables affect accurate form production and all but Person affect accurate placement. The semantic variable of Animacy is common to both, but Transitivity affects placement only. As seen in Table 6.18, the way the different aspects of the morphological and semantic variables affect performance is almost identical, meaning that we see a strong connection between form and placement. The differences between form and placement come in the predictor variables. Level is a significant predictor variable for both form production and placement; as Level increases so does accuracy. Case and Transitivity are significant predictors of placement whereas Gender and Animacy are significant predictors of form production.

The variable Gender is the anomaly in this scenario of similarities. Masculine forms were produced more accurately but forms were placed more accurately in those contexts requiring feminine forms. As we saw in the previous chapter, the learners we examined overproduced or oversupplied masculine forms, a very consistent research finding (Franceschina, 2001; Klee, 1989; Sánchez and Al-Kasey, 1999; Torres, 2003; Zyzik, 2004)—that is, they used them where they should have but also where they

should not have, which, consequently, suppressed their production of feminine forms. As a result, when we calculated a percentage based on the number of masculine forms supplied in contexts that required a masculine form, we got a high percentage accurate. Our analysis of the placement of forms is a consideration of the context in which a form is placed. If the referent is feminine in gender and a pronoun was used (no matter its form), we counted that a pronoun was placed in a feminine gender context. In this scenario, the participants, overall, are placing more pronouns in feminine gender contexts than in masculine ones.

The third aspect of performance we analyzed was omission of a direct object clitic in the surface realization of an utterance (null clitics). The developmental trajectory is a steady decrease in the incidence of omission, although only 10% of the Level 1 learners' production was of a null clitic. This relatively low rate of omission is consistent with VanPatten's (1990) and Sánchez and Al-Kasey's (1999) findings. Other researchers have found higher rates of omission particularly among third person pronouns (Andersen, 1983; Klee, 1989; Torres, 2003; Zyzik, 2004). Level emerged in our analyses as a significant predictor variable for omission, but even more strongly associated with omission is the semantic variable Transitivity. First, it significantly affected performance for native speakers and all learners but those of Level 4. Second, the variable was included in the regression model for all groups but Level 4. Third, it was a significant predictor variable overall and for Levels 1, 2, and 3. In all cases of learners and native speakers, omission is associated with ditransitive verbs as was the case in Zyzik (2008). Semantically, the direct object is more recoverable from context in these constructions than with monotransitive verbs. Ortiz-López and Guijarro-Fuentes (2009) also found that L2 learners omitted clitics in the same contexts as did monolingual and bilingual speakers, i.e. when the referent was –specific. The key event in the acquisition of object pronouns by L2 learners of Spanish in terms of clitic omission is to demonstrate semantic sensitivity to transitivity from the outset.

6.6 Conclusion

The results of the statistical analyses presented in this chapter allowed us to propose that the key event in the acquisition of object pronouns by L2 learners of Spanish in terms of the use of a morphologically appropriate form is to develop a sensitivity to morphological features at the same time that their production of forms dramatically increases. Once L2 learners become sensitive to morphology they are sensitive to the same aspects of morphology to which native speakers are sensitive and in the same direction. Learners develop this sensitivity to morphology as a result of classroom exposure and explicit instruction. The results of the statistical analyses presented in this chapter allowed us to propose that the key event in the acquisition of object pronouns by L2 learners of Spanish in terms of accurate placement of a pronoun in $O_{pro}V$ contexts is to resolve the distribution of pronouns to this syntactic configuration early on. All the morphological variables we examined significantly affect the Level 1 learners' placement of pronouns, but none affect the Level 2 learners' placement. The

developing system is quite dynamic in Level 2 learners, who are exclusively instructed second language learners. They produce many pronouns. They become sensitive to the morphology of the forms they are producing in a way similar to native speakers. They become highly accurate placing pronouns in preverbal contexts. We also found a strong connection between accurate form production and accurate placement in the way different morphological and semantic variables affected both processes. The differences lie in the predictor variables. The results of the statistical analyses presented in this chapter allowed us to propose that the key event in the acquisition of object pronouns by L2 learners of Spanish in terms of clitic omission is to demonstrate semantic sensitivity from the outset. From the outset, L2 learners mostly omit a clitic with ditransitive verbs. The developmental trajectory of omission is to restrict its occurrence to ditransitive verbs only. In the following chapter we move our focus from language production to language processing—specifically, processing $O_{pro}VS$ strings and the morphological features that affect learners' success in identifying the agent of the action.

7

Linguistic Context and Linguistic Features in the L2 Processing of Clitic Pronouns in Spanish

7.1 Introduction

Fraser et al. (1963) noted that some of the children they studied interpreted passive sentences as if they were active. Slobin (1966) found that response time to reversible active sentences was slower than for nonreversible ones, whether these were active or passive. Bever (1970) confirmed Fraser et al.'s finding and so proposed the First Noun Strategy: "Any *Noun-Verb-Noun* (NVN) sequence within a potential internal unit in the surface structure corresponds to actor-action-object" (Bever, 1970, p. 298). Subsequent research has documented first noun strategy use among 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 second languages: Chinese (Miao, 1981), English (Gass, 1989), French (MacDonald and Heilenman, 1992; VanPatten and Wong, 2004), German (Culman et al., 2009; LoCoco, 1987), Italian (Gass, 1989), and Spanish (Lee, 1987; Malovrh, 2006; VanPatten, 1984). L2 learners' use of word order in processing led VanPatten to incorporate the first noun strategy as one of his foundation principles of L2 input processing (VanPatten, 1996). Although learners' use of this processing strategy affects the interpretation of a variety of linguistic structures such as passives in English and French, causative constructions in French, and object pronouns in Spanish, the research presented in this chapter focuses 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 simple finite verb. Because Spanish inflects the verb for person/number (as well as tense and aspect), Spanish has flexible word order regarding the placement of the subject so that both 1 and 2 are possible. These sentence patterns are $SO_{pro}V$ and $O_{pro}VS$, respectively.

(1) *Julio me llamará.*
Julio-SUBJ me-OBJ will call
"Julio will call me."

(2) *Me llamará Julio*.
Me-OBJ will call Julio-SUBJ
"Julio will call me."

We know that the OVS sentence pattern in (2) is late acquired in Spanish as both a first and second language. González (1997) examined the L2 acquisition of different sentence patterns in Spanish. She 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 in sentences with full NP subjects and objects. In fact, the OVS sentence pattern was the last one acquired. She also reported 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 and in fact it was the last acquired sentence pattern (Echevarría, 1978). Adult native speakers of Spanish have no difficulties processing the agent in OVS sentences. González (1997) reported that her native speaker control group were 98.3% accurate with this sentence pattern. By applying the first noun strategy to assign agent/object roles, learners obviously misinterpret the meaning of the sentences. Misinterpreting who did what to whom, they state that in (2) "Julio" will receive a call or that "I" will call. These misinterpretations have important acquisitional consequences. On the one hand, the learners' inventory of nominative pronouns includes both *yo* and *me*, whereas only *yo* is a nominative form. On the other hand, by continually processing *me* as nominative, learners are incorporating a non-native, inaccurate, form-meaning association in their L2 developing system. The purpose of the research we present in this chapter is not to establish that second language learners of Spanish use a first noun strategy to interpret agent/patient relations. We take that as a given; we know they do this. To acquire the pronoun system of Spanish in general, and accusative and dative case pronouns specifically, they must cease to rely on word order to establish agent/patient relations. They must move toward processing OVS and O_{pro}VS strings correctly. The forms in the input must be assigned accusative and dative functions, not a nominative one. And so, in terms of analyzing our processing data, we will score performance for incidence of accurate assignment of agent/patient relations. To what extent and which linguistic features promote learners correctly interpreting agent/patient roles in O_{pro}VS sentences?

7.2 The present study

The present study is motivated by the findings and limitations of the research reviewed in Chapter 4. Previous research has established that word order plays a large role in processing NVN strings (e.g. González, 1997; LoCoco, 1987) and in processing object pronouns in Spanish, particularly at beginning levels of language development (e.g. Lee, 1987; Malovrh, 2006; VanPatten, 1984). We have adopted a more developmental perspective in order to move the research base forward. Using a cross-sectional design, we focus primarily on more advanced learners, including a group of postgraduate students who teach the Spanish language. Previous research

has established that learners are sensitive to contextual factors such as topic familiarity (Houston, 1997; Malovrh, 2006) and intrasentential content to disambiguate reference (Malovrh, 2006; VanPatten and Houston, 1998). In the present study, we also include a contextual variable in which we co-reference the O_{pro} with either the subject or object of a preceding sentence. Previous research on processing has focused primarily on accusative case pronouns. The exception is VanPatten (1984), who found that learners processed dative case pronouns more accurately than accusative case ones. We examine both accusative and dative case pronouns in order to move the research base forward. Previous research has focused exclusively on third person pronouns. We therefore examine first, second, and third person pronouns. Little previous research has examined the effects of the morphological features of object pronouns on processing accuracy (Lee, 1987; Malovrh, 2006). To move the research base forward we examine learners' processing of both singular and plural forms. The forms are either different as in *me* and *nos* or carry the plural marker *–s* as in *lo* and *los*. We also examine the morphological feature of gender as masculine gender marking (*lo*), feminine gender marking (*la*), or no gender marking (*me*). VanPatten (1984) hypothesized that third person accusative case pronouns were more difficult to process than dative case pronouns because the former are multifunctional forms—that is, the Spanish third person accusative case pronouns are homophonous with Spanish definite articles. To explore this suggestion further, we include the variable of homophony in our analyses. The primary purpose of previous research has been to document the incidence of SVO processing among second language learners of Spanish and the factors that attenuate learners' use of word order to assign agent/patient relations. Our purpose is to examine the second language acquisition of object pronouns, as acquisition is a reflection of processing. To acquire object pronouns learners must engage in accurate, nativelike processing which, in our case, would be OVS processing. Our purpose, then, is to explore the conditions that contribute to L2 learners accurately assigning an object role to preverbally placed clitic pronouns.

The present study is guided by the following research questions:

1. How accurately do different levels of L2 learners assign the role of agent in O_{pro}VS strings?
2. Does co-referencing the O_{pro} in an O_{pro}VS string with a preceding noun in 1st or 2nd position affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?
3. Does the feature of case (accusative, dative) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?
4. Does the feature of person (1st, 2nd, 3rd) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?
5. Does the feature of number (singular, plural) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?
6. Does the feature of gender (masculine, feminine, unmarked) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?
7. Does the feature of homophony (+/–) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?

8. Which factors predict different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings?

7.3 Methods and procedures

7.3.1 Participants

All participants in the present study (N=72) were, at the time of the study, enrolled in Spanish courses at a large public university in the midwestern United States.[1] They are all non-native speakers of Spanish and native speakers of English. Our Level 1 participants were enrolled in a third semester (first semester of second year) Spanish language course (*n*=16). These learners would have studied formally object pronouns in their previous Spanish courses and in the course in which they were enrolled. These materials are described in Chapter 1. Our Level 2 participants were enrolled in a fifth semester grammar/composition course required for language majors and minors (*n*=20). A description of the instructional materials related to object pronouns is described in Chapter 1. The Level 2 learners all outperformed the Level 1 learners on a short grammar test. The most important characteristic of the Level 2 participants is that none had experience studying or working in a Spanish-speaking country. Our Level 3 participants were enrolled in various year upper level courses, which count toward the language major (*n*=25). The distinguishing characteristic of the Level 3 participants is that they, unlike the Level 2 participants, all had experience studying in a Spanish-speaking country; the group average was 3.91 months. They also outperformed the Level 2 participants on a short grammar test. Our Level 4 participants were postgraduate students enrolled in various degree programs (*n*=11) and at the time of the study were enrolled in a postgraduate seminar on language teaching. They all were teaching a beginning-level Spanish language course at the time of the study. The materials related to object pronouns that they taught are described in Chapter 1. Importantly, they had studied Spanish an average of 10 years and all had studied or worked abroad in Spanish-speaking countries. The average time abroad for the group was 12.36 months. The participants' characteristics are more fully described in Chapter 1.

7.3.2 Research instrument

The research instrument consisted of 61 items, the first 2 of which served only to familiarize learners with the task and, importantly, the time constraint of responding to each item within 6 seconds. The remaining 59 items consisted of 36 target items and 23 distracters. The target items were two sentence strings. The second sentence was structured so that it contained an O_{pro}VS string. Examples are provided in (3)–(10). We can summarize the construction of the research instrument according the distribution of items across our variables. Of the 36 target sentences, 21 contained accusative case pronouns and the other 15 dative case ones. The thematic role of

accusative case pronouns was that of patient. The thematic roles of the dative case pronouns were those of beneficiary, experiencer, and recipient. All agents, patients, beneficiaries, experiencers, and recipients were +animate and +human. The sentences are also reversible in that either entity could perform the action of the verb. There were 12 sentences with first person pronouns, 6 with a second person pronoun (singular only), and 18 with third person pronouns. We included only the second person singular pronoun because of wide dialectal variation in the second person plural forms. The instrument contained 21 singular pronouns and 15 plural ones. There were 6 pronouns overtly marked as masculine, 6 overtly marked as feminine, and 24 that were unmarked for gender. Finally, 18 object pronouns were +homophonous and the other 18 –homophonous.

We included in our study a contextual variable for which we created co-referential conditions between the target object pronoun that appears in initial position in the second string and another noun in the preceding sentence. There were two possibilities. We created a contextual condition in which the object pronoun was co-referential with the second noun in the first sentence. The result is that the grammatical subjects in the two sentences are co-referential and so we called this condition subject-oriented. We included 12 such sentences in the research instrument; sample sentences are found in (3)–(5). The research instrument is found in Appendix H.

subject-oriented context: O_{pro} = N2

(3) *María habla frecuentemente con su papá. Lo admira María mucho.*
María speaks frequently with her father. Him-OBJ admires María-SUBJ a lot
"María speaks with her *father* frequently. María admires *him* a lot."

(4) *María y Pía son mucho más sofisticadas que Tomás y Felipe. Los rechazaron María y Pía varias veces.*
María and Pía are much more sophisticated than Tomás and Felipe. Them-OBJ-MASC-PL rejected María and Pía-SUBJ several times
"María and Pía are much more sophisticated than *Tomás and Felipe*. María and Pía rejected *them* several times."

(5) *Diana es la compañera de cuarto de Beatriz. Le da Diana consejos prácticos.*
Diana es the companion of room of Beatriz. Her-OBJ gives Diana-SUBJ advice practical
"Diana is *Beatriz's* roommate. Diana gives *her* practical advice."

We created another condition in which the object pronoun was co-referential with the first noun in the context sentence. The result is that the two sentences have different grammatical subjects. We called this condition object-oriented and had 12 such sentences in the research instrument; sample sentences are found in (6)–(8).

object-oriented context: O_{pro} = N1

(6) *Pensamos salir esta noche. Nos invitó Pablo ir al cine.*
Θ intend–1st-PL 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."

(7) *Susan no está feliz en su matrimonio con Richard. Siempre la critica Richard.*
Susan no is happy in her marriage with Richard. Always her-OBJ criticizes Richard
"*Susana* is not happy in her marriage to Richard. Richard always criticizes *her*."

(8) *Diego es muy amigo de Sara. Le da Sara consejos prácticos.*
Diego is very friend of Sara. Him-OBJ gives Sara-SUBJ advice practical.
"*Diego* is a good friend of Sara's. Sara gives *him* sound advice."

We created a third contextual condition in order to provide a counterpoint to the previous two in that the object pronoun does not refer to a noun in the previous contextual sentence. We termed this the neutral condition and created 12 such sentences; sample sentences are provided in (8)–(10). This condition is only possible with deictic pronouns; anaphoric pronouns require a referent. We created 4 sentences with *me*, 4 with *te*, and another 4 with *nos*.

neutral context: O_{pro} = no referent

(8) *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."

(9) *Es necesario hacer todo el trabajo. Te mandará Esteban la tarea mañana.*
Θ is necessary to do all the work. You-OBJ will send Esteban-SUBJ the homework tomorrow
"It is necessary to do all the work. Esteban will send *you* the homework tomorrow."

(10) *Gabriela siempre sale y es muy gregaria. Nos invitó Gabriela ir al cine.*
Gabriela always goes out and is very gregarious. Us-OBJ invited Gabriela-SUBJ to go to the cinema
"Gabriela always goes out and is very gregarious. Gabriela invited *us* to go to the cinema."

A male, native speaker of Spanish recorded the sentences used in the research instrument, reading them clearly yet at a normal rate of delivery (neither fast nor slow). From this recording we created an original version of the research instrument and five other cut-and-edited versions of the same recording. For the original version we randomized the order of presentation of the targets and distracters. Once done, we reviewed the order of the items. 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). Using Audacity software, 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 in order to ensure that our findings would not be subject to unwanted effects for practice or order of presentation.

7.3.3 Data collection

Participation in the study was voluntary and only those who completed the human subjects consent form were included in the analyses. The data collection took place during regularly scheduled class time. The class did not meet in its regular classroom but was taken to a language laboratory to perform the experiment. The participants sat at individual computers and listened privately to the sentences through headphones. Each computer was loaded with one of the six versions of the instrument. In this way, we were able to use all six versions of the instrument in each individual class. The participants performed the version that was loaded on whichever computer they selected to sit at. The time on task was 9 minutes and 50 seconds. We note that the participants performed the oral production tasks described in Chapters 6 and 7 prior to performing the processing task.

7.3.4 Data coding

We present in Table 7.1 the list of pronouns used in the present study and how we coded each one 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 three context conditions.

7.3.5 Data elicitation task

We gave each participant an answer sheet that corresponded to the version of the research instrument they received. A sample of the answer sheet appears in Appendix I. The task learners performed was to answer a multiple choice question about each of the sentences they heard. We gave them six seconds to respond after hearing the end of the second sentence. For the target sentences, we asked them to identify who performed the action of the verb in the O_{pro}VS string. The wording of the prompt using the verb "do" in all instances emphasizes the performer of the action of the verb. The questions and options below correspond to sentences (3), (6), and (9), respectively.

Table 7.1 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

Who does the admiring?	a. María does	b. Her father does
Who did the inviting?	a. We did	b. Pablo did
Who will do the helping?	a. I will	b. Antonio will

The target sentences were in Spanish and the prompts in English. Because the answers are binary the learners will either indicate correctly that the agent is the person in postverbal position or incorrectly that the agent is the person in preverbal position. Answers would indicate the L2 learners' assignment of grammatical relations to each noun in the string.

Each answer was scored as either correct or incorrect. For our statistical analyses we tabulated correct answers in order to measure the extent to which learners at the different levels assigned the agent role not based on having used a word order processing strategy. That is, our research focuses on the circumstances under which learners correctly assign agent status to postverbally placed subjects and, by extension, the circumstances under which they incorrectly assign agent status to preverbally placed object pronouns.

7.3.6 Statistical analyses

Chi-square tests and logistic regression analyses were conducted using SPSS19 to reveal the factors that had a significant main effect on OVS processing and to identify significant predictors of OVS processing, respectively. The analyses were performed on all data, as well as individual variables, based on learner level. The number of responses analyzed was 2,454.

7.4 Results

We present in Table 7.2 a summary of the frequency of OVS processing by variable and level of learner. Overall, Level 1 and 2 learners engage in OVS processing only about 50% of the time, meaning that they engage in SVO processing the other 50% of the time. Because object pronouns are being assigned the role of agent as frequently or almost as frequently as their appropriate roles, the learners' developing systems are receiving conflicting information on the form-function mappings. That is, in 50% of the cases the developing system assigns the function of agent based on the position a form holds in an utterance rather than on its formal features. The Level 3 learners have spent, on average, 3.91 months abroad. This language experience has provided the impetus for the increase to 61% OVS processing. That is, the developing system is mapping morphologically specific forms to the object function more often than mapping a function to a form in initial position. The Level 4 learners engage in OVS processing 86.3% of the time, indicating much more stable form-function mapping for object pronouns. Object pronouns are predominantly assigned to their correct roles at this level, although not completely. We submitted the overall scores to a one-way ANOVA with Level as the between group variable. The results revealed a significant effect for Level ($F_{3, 68} = 11.113$, $p = .000$). A post hoc Scheffé's test revealed two groups

of learners such that Level 1 = Level 2 = Level 3 < Level 4. That is, there was no statistical difference in the scores of the Level 1, 2, and 3 learners, only between them and the Level 4 learners.

A pattern of performance can be seen across the variables, showing that the Level 1 and 2 learners perform similarly and to a much lower frequency of OVS processing than the Level 3 learners, who in turn do not perform to the level of the Level 4 learners. We see this pattern for the variables Context and Case, and then for singular, gender unmarked, and –homophony pronouns. The data also shows that for every variable the Level 4 learners considerably outperform the Level 3 learners. We do note, however, two instances that the Level 4 learners are processing the agent role correctly at less than 80%: third person forms and masculine forms. We will review this finding below.

In Table 7.3 we present the results of the chi-square tests for OVS processing by variable. As can be seen in the table, three variables are highly significant at the $p <$ .001 level: Level, Person, and Gender. The variables Homophony and Context also reached a level of statistical significance ($p < .01$ and $p < .05$, respectively). Overall, the variables Number and Case did not reach a level of statistical significance. These

Table 7.2. Summary of the frequency of OVS processing by variable and level

Level Variable	Level 1 (%)	Level 2 (%)	Level 3 (%)	Level 4 (%)
Overall	49.6	51.1	60	86.3
Context				
subject-oriented	58.8	56.9	62.4	85.6
object-oriented	45.1	48.6	57.8	84.6
neutral	45.4	47.7	61.6	88.6
Case				
accusative	46	54	60.9	87.9
dative	55.2	47	60.2	83.9
Person				
1st	56.1	63	67	94.4
2nd	44.6	50	73	96.6
3rd	47.3	43.5	53	77.5
Number				
singular	50.3	49.2	61.6	89
plural	48.9	53.7	59.3	82.4
Gender				
masculine	55.9	57.4	60.5	77.5
feminine	30.5	40.7	50.4	87.8
unmarked	53.2	52.1	63.4	88.1
Homophony				
+	43.1	49.1	55.5	82.7
–	53.2	52.1	63.4	88.1

results indicate that the highest frequency of OVS processing, i.e. processing success, is associated with the following:

1) very advanced learners
2) subject-oriented linguistic context (co-referential subjects)
3) first on first person forms then on second person forms
4) on masculine-marked and gender-unmarked forms
5) on –homophony forms

Viewing the results from the opposite perspective, the results indicate that the lowest frequency of OVS processing, i.e. processing difficulties, is associated with the following:

1) lower and intermediate level learners (the Level 2 learners go above 60% OVS processing only once and the Level 1 learners never do)
2) third person forms (the Level 3 learners show only 53% OVS processing)
3) on feminine-marked forms (the Level 3 learners show only 50% OVS processing)
4) on +homophony forms (the Level 3 learners show only 56% OVS processing)

Our next analyses examine these variables at each of the four levels of learners in the study.

In Table 7.4 we present a summary of the results of the chi-square tests on OVS processing by variable and level of learner. The variable Context reached a level of significance in the overall analysis but was a significant factor affecting OVS processing only for Level 1 learners. The results also indicate that Level 1 learners were more accurate processing sentence pairs that were subject-oriented (58.8%) than either object-oriented (45.1%) or neutral (45.4). That is, they were significantly more successful assigning the role of agent when the O_{pro} was co-referential with the second noun in the context sentence, meaning that the two sentences shared a grammatical subject. The Level 2 learners also more accurately processed subject-oriented sentences than other types, but not to a level of statistical significance. The data suggest that beginning at Level 2, learners developed the linguistic resources and flexibility to process the role of agent in a variety of linguistic contexts. The learners'

Table 7.3 Summary of the results of the chi-square tests for OVS processing by variable

Variable	x^2	*df*	**Small Cells?**	**Cramer's *V***
Level	198.944***	3	No	.285
Context	9.442*	2	No	.062
Case	.182	1	No	.009
Person	49.704***	2	No	.142
Number	.316	1	No	.011
Gender	20.445***	2	No	.091
Homophony	10.06**	1	No	.064

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

linguistic resources improve with experience abroad in that the Level 3 and 4 learners are not sensitive to the contextual variable.

The variable Case is not a significant factor in the overall analysis but is a significant factor for Level 1 and 2 learners. The Level 1 learners engaged in OVS processing more with dative case pronouns (55.2%) than with the accusatives (46%) but the opposite pattern was found for Level 2 learners. The case of the pronoun does not significantly affect assigning the agent role for Level 3 and 4 learners.

The variable of Person is a highly significant factor overall and is a significant factor in OVS processing for Level 2, 3, and 4 learners. Across the three levels we see that first and second person forms were processed more accurately than third person forms—that is, deictic forms emerged before anaphoric ones. The variable Person is not a significant factor affecting accurate processing for Level 1 learners, although they processed first person forms more accurately. The improvement in accurate processing of first person forms showed a steady increase across the first three levels of learners, ranging from 56.1% to 67%. Then there was a sharp increase in accuracy on first person forms from Level 3 to Level 4 learners, from 67% to 94%. The third person anaphoric forms show little change in accuracy across Levels 1, 2, and 3: 47.3%, 43.5%, and 53%, respectively. There is a sharp increase in accuracy between Levels 3 and 4, from 53% to 77.5% OVS processing of third person forms.

The variable of Number is not a significant factor overall nor for any level of learner. Singular and plural forms were processed equally well at all the levels. While we see some improvement between Level 2 and Level 3 learners, the greatest improvement occurred between the two more advanced groups where we see a 20%–30% increase in accurate processing for both plural and singular forms, respectively.

The variable Gender is a highly significant factor overall and appears as a significant factor for all four levels of learner. The feminine forms stand out for their low rate of accurate processing, only 30% for Level 1 learners reaching an accuracy rate of only 50% for Level 3 learners, despite their experience abroad. We know from previous analyses that learners prefer to use the feminine forms as definite articles in their production and only Level 3 and 4 learners produce them accurately as object pronouns. The data presented in this chapter show us the processing difficulties, in addition to production difficulties, learners experienced with feminine forms. The accuracy of processing the feminine forms made a dramatic increase from Level 3 to 4, going from 50.4% to 87.8%.

The variable of Homophony is a significant factor overall and significantly affects processing for Level 1 and 3 learners, but not for Level 2 and 4 learners. The results indicate that the –homophony forms were processed significantly more accurately than the +homophony across all the levels of learners but significantly so for Level 1 and 3 learners.

The results of the chi-square tests provided the variables to be used in binary logistic regression analyses. These analyses generated a model containing the independent variables that predict accurate OVS processing. The supporting statistics for the regression are provided in Appendix J. We summarize the results of the regression analyses in Table 7.5.

Table 7.4 Summary of the results of the chi-square tests for OVS processing by variable and level

Variable	Level	x^2	*df*	Small Cells?	Cramer's *V*
Context	1	8.933**	2	No	.127
	2	4.496	2	No	.083
	3	1.221	2	No	.041
	4	1.334	2	No	.05
Case	1	4.417*	1	No	.09
	2	3.028*	1	No	.068
	3	.037	1	No	.007
	4	1.661	1	No	.056
Person	1	4.566	2	No	.091
	2	19.67***	2	No	.174
	3	20.442***	2	No	.168
	4	37.71***	2	No	.256
Number	1	.107	1	No	.014
	2	1.275	1	No	.044
	3	.404	1	No	.024
	4	4.695*	1	No	.094
Gender	1	17.153***	2	No	.176
	2	6.525*	2	No	.1
	3	6.998*	2	No	.098
	4	6.868*	2	No	.114
Homophony	1	5.037*	1	No	.096
	2	.522	1	No	.028
	3	4.303*	1	No	.077
	4	2.904	1	No	.074

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

Overall we found that there are four variables that significantly predict OVS processing: Level, Context, Person, and Gender. Within the levels of learners we see some variability in which variables significantly predict OVS processing. The Level 1 learners appeared most sensitive to Context and Gender, the Level 2 learners to Person and Gender, the Level 3 learners to Person only, and the Level 4 learners to Person

Table 7.5 Predictors of OVS processing, overall and by level

Variable	Overall	Level 1	Level 2	Level 3	Level 4
Level	X*				
Context	X*	X*			
Case					
Person	X*		X*	X*	X*
Number					
Gender	X*	X*	X*		
Homophony					X*

Note. X = variable included in the model; * $p<.05$

and Homophony. These results indicate that we can predict processing success among the most advanced learners, in linguistic contexts in which grammatical subjects are co-referential, with first person pronouns, masculine-marked and gender-unmarked pronouns, and –homophony forms.

7.5 Discussion

7.5.1 Level

Our first research question is: How accurately do different levels of L2 learners assign the role of agent in O_{pro}VS strings? The Level of the learners emerged as an overall significant factor and the strongest predictive factor for OVS processing of object pronouns in Spanish. We discovered that only the most advanced level we examined, the postgraduates who had studied abroad and were teaching Spanish at the time of the research, predominantly processed O_{pro}VS strings accurately (86.3% of the time). This figure indicates to us that the object pronoun system has stabilized for very advanced learners. These learners have the linguistic resources and linguistic flexibility to find or wait to find an agent in postverbal position. They consistently assign object pronouns their appropriate roles (patient, experiencer, beneficiary, recipient); they assign an agent role or a nominative function only rarely.

We would characterize the object pronoun system of Level 1 and 2 learners as quite unstable in that accurate processing is 49.7% and 51.1%. These figures indicate that SVO processing is still occurring at about the same rate as correct OVS processing. This accuracy rate is consistent with the findings we reviewed in Chapter 4 (e.g. Lee, 1987; Malovrh, 2006; VanPatten, 1984; VanPatten and Houston, 1998) for learners that are approximately equivalent to our Level 1 learners. Our Level 2 learners represent a slightly more advanced level and yet their rate of OVS processing is still only 51%. These learners are as likely to map the agent function to a form based in its location in initial position as they are to map the object function to a form based on its morphological features. About 50% of the time, the developing system is told that *me*, for example, is nominative case, not dative or accusative; that the form functions as a grammatical subject. Alternatively, the developing system may have tagged *me* as a functional variant of *yo*, in terms of processing it when it appears in sentence initial position. We note that we found that some learners produced the form *me* as a subject pronoun.

We would characterize the pronoun system for Level 3 learners as beginning to stabilize with 60.6% OVS processing of O_{pro}VS strings. The Level 3 learners are just beginning to make the move away from word order-based SVO processing to engage in more frequent OVS processing. These data support our assertion that a key event in the acquisition of object pronouns in Spanish as a second language is to assign them the role of object in O_{pro}VS strings more frequently than to assign them the role of agent. The Level 3 learners are making the shift to greater OVS processing. Their rate of OVS processing is still below that of native Spanish-speaking children, aged 5–10 years, who correctly assign the role of object to a preverbal object 68% of the time (Echevarría, 1978).

It is clear that future research could focus on a spectrum of advanced and very advanced learners and examine a group of learners in between our Levels 3 and 4 in order to document the development of OVS processing as it moves from 60% to 85%. What characteristics do learners possess who accurately process O_{pro}VS strings 70%, 75%, and 80% of the time? We suspect that the length of experience abroad is a critical characteristic (Isabelli and Nishida, 2005). What linguistics factors affect their processing? Furthermore, our Level 4 learners were 86.3% successful. This is not nativelike attainment of 98.3% that González (1997) reported. What are the characteristics of learners who are 90%, 95%, and 100% successful processing O_{pro}VS strings? Do L2 learners ever develop nativelike OVS processing?

7.5.2 Context

Our second research question is: Does co-referencing the O_{pro} in an O_{pro}VS string with a preceding noun in pre- or postverbal position affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings? Context was a significant overall factor affecting OVS processing and also emerged as a significant predictor of performance for the Level 1 learners. Their incidence of OVS processing was higher when the grammatical subjects of the two sentences was co-referential; this is the pattern in the data for the other levels, too, although it did not reach a level of statistical significance. The results of previous research on contextual factors show that context promotes accurate processing among learners. VanPatten and Houston (1998) and Houston (1997) found that learners benefitted from context. Malovrh (2006) found that learners benefitted equally from placing context before or after the target. These three studies and now ours have all examined context in different ways, but we all find that learners are sensitive to it. Our finding for the Level 1 learners is consistent with Carminati's results (2005). Although her word order patterns are not identical to ours, she found a processing bias in favor of sentences similar to our subject-oriented ones and a processing cost associated with sentences similar to our object-oriented ones. Future research with language learners could adopt Carminati's reading time approach to determine if the advanced learners show a processing cost for object-oriented sentences rather than a difference in accurate role assignment.

That the other levels of learners were not affected by the contextual conditions leads us to hypothesize that contextual constraints become less important as learners develop greater second language experience. The more advanced learners have developed the linguistic resources and linguistic flexibility needed to process the pronoun no matter the conditions on co-reference and to process the agent in different syntactic patterns.

7.5.3 Linguistic features

The remainder of our research questions address whether various morphological features contribute to learners accurately interpreting O_{pro}VS strings. The morphological features we examined were Case, Person, Number, Gender, and Homophony.

Overall, our results revealed that all features except Number were significant overall factors affecting OVS processing in O_{pro}VS contexts and all except Number and Case were significant predictors of OVS processing for some level of learner.

7.5.3.1 Case

Our third research questions is: Does the feature of Case (accusative, dative) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings? Case was not a significant factor affecting overall performance in our investigation. The case of the pronouns was a significant factor only among our Level 1 and 2 learners, where at Level 1 they processed the dative case pronouns more accurately than accusative case ones but the opposite was true at Level 2. It is a contradiction difficult to explain. Previous research on first-year learners of Spanish found that learners processed third person dative case pronouns more accurately than they did accusative case ones (VanPatten, 1984) and that a first-year learner produced many more dative case contexts than accusative case ones (VanPatten, 1990). Our results partially support VanPatten's findings regarding case in that our Level 1 learners were also more accurate with dative case pronouns (55.2%) than with accusative case ones (46.0%). An important difference between our and VanPatten's (1984) findings is that we examined case across first, second, and third person forms; we did not focus exclusively on third person forms as he did. We also examined a greater number of morphological features than he did. Our findings suggest that the case of the pronoun is not as relevant as its person and gender marking for learners moving out of the early stages of development.

7.5.3.2 Person

Our fourth research question is: Does the feature of Person (1st, 2nd, 3rd) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings? Person was both a significant factor affecting overall performance and a significant predictor of performance overall and specifically at Levels 2, 3, and 4. With the highest x^2 values and the lowest p values, Person was the strongest *linguistic* indicator of performance. Person is considered more cognitively significant in resolving speaker/hearer relations than Number or Gender (Harley and Ritter, 2002) and, given our results, it is our assertion that person drives the acquisition of object pronouns in Spanish as a second language, in that aspects of person develop very early in interlanguage (first versus other persons) and other aspects very late (third person).

Person was not, however, a significant factor affecting performance among our Level 1 learners but their results fit the pattern. The accuracy score for first person forms was higher than for second and third person forms, 56.1% versus 44.6% and 47.3%, respectively, although the differences were not significant. The pattern that would emerge in the data is present in Level 1 learners' performance. Person emerged as a significant factor at Level 2, at which the first person forms were processed more accurately than the second person forms, which in turn were processed more accurately than the third person ones; 63% versus 50% and 43.5%, respectively. These results indicate that the first person form emerges first, which is consistent with our

and others' production data (e.g. Andersen, 1983; Klee, 1989; VanPatten, 1990). The development we then saw at Level 3 was the strong emergence of the second person form, showing a 23% improvement over the performance of Level 2 learners (from 50% to 73%). So at this level, frequency of OVS processing is characterized as first and second persons versus third person (53%). This pattern is also evident in Level 4 learners: 94.4% and 96.6% versus 78.8%. Importantly, it is only with Level 4 learners that accurate processing of the third person pronouns has risen well above 50%, from 53% for Level 3 learners to 77.5% for Level 4 learners. With an increase in accuracy of 24.5% over Level 3, something dramatic has happened in the developing system. The pattern of results is presented in Table 7.6. The results are consistent and neat in that in the earliest stages of acquisition, early stage learners are not processing the various forms differently. When the forms begin to become differentiated, first person emerges before second person, which emerges before third person. But even very advanced learners have more processing difficulties with third person anaphoric pronouns than they do with first and second person deictic pronouns. There are, then, two key events in the acquisition of object pronouns in Spanish as a second language that are related to person. First, learners differentiate the first person form from the others. Second, they differentiate deictic forms from anaphoric ones. But differentiating deictic and anaphoric forms requires the input and interaction available to learners who have experience in Spanish-speaking countries.

7.5.3.3 Number

Our fifth research question is: Does the feature of Number (singular, plural) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings? Number was not a significant factor affecting overall performance and only emerged as a significant factor for Level 4 learners, who processed singular forms more accurately (89%) than plural forms (82.4%). Both Lee (1987) and Malovrh (2006), on the other hand, found that Number was a significant factor that contributed to learners' use of the first noun strategy to misassign the thematic role of agent to third person accusative case object pronouns. Both found that plural forms were more likely to be misassigned than singular ones. Their findings affirmed Harley and Ritter's (2002) notion that singular is more basic than plural for the feature of number. Languages tend to have the singular form as the base or unmarked form and then mark it with some pluralizing morpheme (*-s* in Spanish and English). That our Level 4 learners are affected by Number may be an indication that they are moving toward more nativelike processing. Carminati (2005) found that the reading times of native speakers of Italian

Table 7.6. Pattern of results for Person by level

Level	Pattern of results for Person
1	1st = 2nd = 3rd
2	1st > 2nd > 3rd
3	1st = 2nd > 3rd
4	1st = 2nd > 3rd

were slower for sentences in which only number resolved reference as compared to those where person resolved reference. She also found that reading times were slower when only gender resolved reference as compared to those where number resolved reference. Her results affirmed the Feature Hierarchy of Person > Number > Gender. We did not gather reading time data on our subjects, but asked them to identify who performed the action. Future research on second language learners might incorporate reading time into the design but, as our results for identification of the agent underscore, identifying the agent is an issue even among advanced learners. That is, given the accuracy rates for the learners we examine, it is important that future research continue to have the learners overtly identify the agent.

7.5.3.4 Gender

Our sixth research question is: Does the feature of Gender (masculine, feminine, unmarked) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings? Gender was both a significant factor affecting overall performance and a significant predictor of performance. We also found that gender was a significant factor in accurate processing for all four levels of learners we examined. The masculine and unmarked pronouns were processed significantly more accurately than the feminine-marked pronouns for Level 1, 2, and 3 learners. We know from our research and that of others that masculine forms are the default production forms for a direct object (Franceschina, 2001; Klee, 1989; McCarthy, 2008; Torres, 2003; Zyzik, 2004). The use of masculine forms as the default object pronoun form is reinforced by learners' processing behavior. Early stage learners more frequently map the masculine forms to an object function. Learners are getting the masculine forms out of the input more than they are the feminine forms.

OVS processing of the feminine-marked forms for Level 1, 2, and 3 learners was remarkably low, ranging from 30.5% to 40.7% to 50.4%, respectively. The feminine-marked forms are the most difficult for Level 3 learners; they show the lowest frequency of OVS processing of any of the twelve morphological features we examined. There was a dramatic increase of 37.4% in accurate processing of feminine-marked pronouns between the Level 3 and 4 learners, with Level 4 learners correctly processing them 87.8% of the time. They processed the masculine forms correctly 77.5% of the time. This change in which form is processed more accurately may reflect that the masculine forms are no longer default production forms for this level of learner. Gender is the lowest feature of the Feature Hierarchy and masculine forms are considered the base forms for this feature. Our finding that learners experience great and persistent difficulty processing feminine forms is consistent with the Feature Hierarchy. A key event in the acquisition of object pronouns in Spanish is to process feminine-marked forms more frequently as objects than as subjects. But this aspect of acquisition is late-acquired, present only in the very advanced learners who have extensive experience abroad.

Malovrh (2006) did not find that mixing or maintaining the gender of the pronoun and the subject in the sentence was a contributing factor in learners' assignment of agent in O_{pro}VS strings. Lee (1987) found that for singular forms, learners were

significantly more accurate in processing when the gender of subjects and objects was different than when they were the same. Both studies examined third person accusative case pronouns, which are overtly marked for gender; neither examined pronouns that are unmarked for gender as we did. Our findings for gender diverge from those of previous research and the reason may be methodological. In the present study, we operationalized the variable gender quite differently than did previous research. We coded the form of the pronoun itself as masculine, feminine, or unmarked. We did not, because we could not, systematically manipulate the gender of other nouns in the sentences because we examined deictic as well as anaphoric pronouns. The example in (11) shows that the pronoun *te* "you," being an example of deictic not anaphoric reference, has no referent in the first contextualizing sentence.

(11) *Marta es muy generosa. Te mandará Marta la tarea mañana.*
Marta is very generous-FEM. You-OBJ will send Marta the homework tomorrow
"Marta is very generous. Marta will send you the homework tomorrow."

We hypothesize that a confluence of factors contributes to the low rate of accurate processing of feminine-marked forms. Their gender marking is a persistent processing difficulty but the feminine-marked forms are also among the third person forms whose accuracy rate among Level 3 learners was only 53%. They are also among the +homophony forms, discussed in the next section, whose accuracy rate for Level 3 learners was only 55.5%.

7.5.3.5 Homophony

Our sixth research question is: Does the feature of Homophony (+/–) affect different levels of L2 learners accurately assigning the role of agent in O_{pro}VS strings? We found that Homophony was a significant factor affecting overall performance and that it significantly affected the performance of Level 3 learners. At all levels the –homophonous forms were more accurately interpreted, significantly so at Level 3. Homophony did, however, emerge as a factor predicting the performance of the Level 4 learners.

VanPatten (1984) hypothesized that learners' lower performance on third person accusative case compared to dative case forms was due to their multifunctionality as both object pronouns and definite articles. The way in which we have coded the forms according to Case, Person, Number, Gender, and Homophony allows us to confirm his hypothesis on the one hand, and further develop it on the other. First, we can attest to the difficulty learners have processing third person forms; they are the last acquired. Second, it is not so much that the third person pronouns represent different cases but that the third person accusative case pronouns are homophonous. An additional processing challenge is that among the homophonous third person accusative case pronouns are the feminine-marked forms, the last-acquired gender marking.

7.6 Conclusion

The results of the logistic regression revealed that the significant predictors for OVS processing overall are Level, Context, Person, and Gender. Different combinations of factors characterize the levels. The significant predictors of OVS processing are Context and Gender for Level 1 learners, Person and Gender for Level 2 learners, Person for Level 3 learners and Person and Homophony for Level 4 learners. These findings allow us to identify key events in the development of OVS processing of preverbally placed object pronouns in Spanish.

We identified the shift in balance toward more OVS processing than SVO processing as a key event in the acquisition of object pronouns in Spanish as a second language. This shift did not happen for the learners whose only language experience was in the classroom. It happened for the learners with experience abroad. Only the very advanced learners showed a high rate of OVS processing. These learners have spent an average of 12.36 months abroad and so we hypothesize that without extended and extensive contact with Spanish, L2 learners will continue to rely on a word order-based processing strategy to interpret sentences. Learners find greater discourse-level input in naturalistic settings (Lafford, 2006), which is essential for creating anaphoric references for learners to process. Without exposure to discourse-level input, learners will continue to map the function of agent based on the position of a form in a sentence rather than on the formal features of that form.

We identified two key events in the acquisition of object pronouns in Spanish as a second language related to Person. First, learners differentiate the first person forms from the others. Classroom exposure and explicit instruction alone are sufficient for learners to make this differentiation. Second, learners differentiate deictic forms from anaphoric ones. But differentiating deictic and anaphoric forms requires the input and interaction available in Spanish-speaking countries. Classroom exposure and explicit instruction alone are insufficient for this aspect of pronoun acquisition to occur. Even though our Level 4 learners have extensive experience abroad, they still processed third person forms incorrectly 22.5% of the time.

We identified the shift to accurate processing of feminine-marked forms as a key event in the acquisition of object pronouns in Spanish as a second language. But this aspect of acquisition is very late-acquired, present only in the very advanced learners who have extensive experience abroad. The accuracy rates for learners in Levels 1, 2, and 3 ranges from only 30.5% to 50.4%. We hypothesize that learners' difficulties in producing feminine-marked forms stems from how few of them they process correctly as objects in the input. In the next chapter, we examine the connections between the development of accurate $O_{pro}VS$ processing, the production of accurate forms, and the placement of object pronouns in preverbal position. We will extend our analyses of the linguistic features examined in the present chapter on processing to our analyses of accurate production and preverbal placement. Do the same factors that affect processing also affect production and placement?

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8

Related Developments in Processing, Production, and Placement of Object Clitic Pronouns

8.1 Introduction

In Chapters 5 and 6 we analyzed learners' production and placement of object pronouns in Spanish. The analyses included examining form-to-function mappings as well as function-to-form mappings (Chapter 5) followed by examinations of formal accuracy and accurate placement in OV contexts (Chapter 6). In Chapter 7 we analyzed learners' processing of direct and indirect object pronouns in $O_{pro}VS$ contexts and the linguistic context and features that affect accurately assigning the grammatical role of agent. The 72 learners on whom we collected processing data are a subset of the 98 on whom we collected production and placement data. In this chapter we bring the three sets of data together in order to explore related developments and connections that may exist between processing grammatical/thematic roles, producing appropriate morphological features on pronouns, and placing object pronouns correctly in OV contexts.

8.1.2 Processing

The First Noun Strategy (FNS), also known as SVO processing, describes the situation in which first and second 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/semantic role is object/patient. SVO processing has 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 FNS 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), Japanese (Benati and Lee, 2010), and Spanish (Lee, 1987; VanPatten, 1984). These findings led VanPatten to incorporate the First Noun Principle into his model of input processing (VanPatten, 1996, 2004, 2007). This processing strategy affects a variety of linguistic structures such as passives in English,

French, and Japanese, causative constructions in French, and preverbally placed object pronouns in Spanish (VanPatten, 1996).

By (mis)assigning the role of agent to the first noun or pronoun encountered in a sentence as a default strategy, L2 learners establish form-meaning connections in their L2 developing system that are not always nativelike (VanPatten, 1996, 2004). Interpreting the preverbal object pronoun as the agent/subject indicates that learners are mapping a function (agent) to a form (object clitic) incorrectly. The mapping is based on the form's order of appearance rather than on its morphological features. If learners do not process the input correctly, then the intake is faulty. This situation presents an acquisitional challenge to L2 learners of Spanish when input consists of preverbally placed object pronouns and the agent/subject is found in postverbal position.

8.1.3 Production and placement

Previous research on the acquisition of object pronouns in Spanish, as well as our own research, has examined the interplay of clitic pronoun and full NP production. Our research has established that both L2 learners and native speakers prefer a full NP to expression of a direct object. All the levels of learners we have examined express some direct objects as clitic pronouns. As the level of the learner increases so does the number of clitic pronouns they produce and the percentage of their direct object expression that clitic pronouns represent, but L2 learners do not attain nativelike clitic production, neither in total number produced nor in the proportion between NP and clitic production (see our Tables 5.3 and 5.4 and Sánchez and Al-Kasey, 1999, summarized in our Table 3.13). Other research has documented learners' overuse of full NPs in contexts where the antecedent is in the immediate discourse, i.e. NP overuse in obligatory contexts for a pronoun (Klee, 1989; Sánchez and Al-Kasey, 1999; Torres, 2003; Zyzik, 2004).

Previous research, as well as our own, has documented the morphological variability characteristic of L2 learners' interlanguage. Our research revealed that greater accuracy with pronouns forms are associated with dative case pronouns, first person forms, singular forms, masculine forms, –homophony forms, and forms whose referents are +animate (our Table 6.2). Other research has also noted the early emergence of first person forms (Andersen, 1983, 1984; Klee, 1989; Torres, 2003; VanPatten, 1990). Some of the morphological variability documented in previous research is with inappropriate case-marking, for example, the use of indirect object forms in direct object contexts (Andersen, 1984; Liceras et al., 1997; VanPatten, 1990; Zyzik, 2006). Finally, a well-documented phenomenon in the acquisition of object pronouns in Spanish is learners' use of a default/base form—that is, a particular form that functions as a direct object no matter the features of the referent (Andersen, 1984; Franceschina, 2001; McCarthy, 2008; Zyzik, 2008).

Previous research, as well as our own, has examined learners' development of the syntactic patterns for placing an object pronoun. Learners appear to maintain the L1 word order, SVO for native speakers of English (e.g., Andersen, 1983, 1984; VanPatten,

1990) or SOV for native speakers of Quechua (Klee, 1989). L2 learners misplace the pronoun in postverbal position after a finite verb (Liceras, 1985; Zyzik, 2004) and in the middle of a periphrastic verb phrase (Liceras, 1985). Placement of a clitic pronoun in preverbal position emerges later (Bruhn-Garavito and Montrul, 1996; Liceras, 1985; Zyzik 2004).

8.2 The present study

Few previous studies have used both a processing and production task to explore learners' performance (McCarthy, 2008; Sánchez and Al-Kasey, 1999). These researchers used two different tasks to explore different aspects of learner performance and did not relate their performance across tasks. In the present study we explore developments in processing, production, and placement of object pronouns by examining these three processes with the same group of learners, representing developmental levels from beginning to very advanced learners. Our purpose is to uncover any relationships and connections between the three sets of processes. The present study is guided by the following research questions.

1. Is there a relationship between different levels of L2 learners' development of OVS processing, their accurate production of object pronoun forms, and their accurate placement of a pronoun preverbally in obligatory $O_{pro}V$ contexts?
2. Do the linguistic features that affect different levels of L2 learners' OVS processing also affect morphologically accurate oral production and placement of object pronouns preverbally in obligatory $O_{pro}V$ contexts?
3. Which factors predict different levels of L2 learners' development of OVS processing, their accurate production of object pronoun forms, and their accurate placement of a pronoun preverbally in obligatory $O_{pro}V$ contexts?

8.3 Methods and procedures

8.3.1 Participants

The 59 participants for this examination of processing, production, and placement are a subset of the 72 learners whose processing behaviors we analyzed in Chapter 7. They in turn were a subset of the 98 learners whose production and placement data were presented in Chapters 5 and 6. All participants for the present study (N=59) were, at the time of the study, enrolled in Spanish courses at a large public university in the midwestern United States.[1] They are all non-native speakers of Spanish and native speakers of English. Our Level 1 participants (n=16) were enrolled in a third semester (first semester of second year) Spanish language course. The materials on object pronouns they encountered in the classroom are analyzed in Chapter 1. Our Level 2 participants (n=17) were enrolled in a fifth semester grammar review and composition course required for the major and minor in Spanish. The Level 2 participants

outperformed the Level 1 participants on a short grammar test. None of these participants had experience studying in a Spanish-speaking country. The materials on object pronouns they encountered in the classroom are analyzed in Chapter 1. Our Level 3 participants (n=18) were enrolled in various upper division courses required for the major or minor in Spanish. The Level 3 learners outperformed the Level 1 and 2 learners on a grammar test. Another important characteristic distinguishing Level 2 and 3 learners is that the latter had spent an average of 4.01 months in a Spanish-speaking country. Our Level 4 (n=8) participants were postgraduate students enrolled in various degree programs. All were enrolled in a postgraduate seminar on language teaching and were teaching a beginning-level Spanish language class at the time of the study. They had extensive and extended experience in Spanish-speaking countries; on average they had spent 12.13 months abroad. The participants' characteristics are more fully described in Chapter 1.

8.3.2 Research instruments

Because our intention is to examine developments in processing, production, and placement in a parallel fashion, we had to exclude certain elements from the research instrument we used in the processing study described in Chapter 7. First, we do not consider the variable of Context in the present analyses because there is no matching contextual variable in the production and placement research instrument. As the variable of Context was significant only for Level 1 learners and Level 1 learners produced very few object pronouns, we do not consider this omission serious. Second, we eliminated from our present analyses the six sentences with the second person singular pronoun *te* "you" because the production research instrument did not elicit second person forms. The research instrument we used for the present study of OVS processing consisted of 61 items: two starter items to familiarize learners with the time constraints; 23 distracter items, 6 of which were the sentences with the second person singular form; and 30 target items. The variables were distributed across linguistic features as follows: Case (accusative = 18, dative = 12); Person (1st = 12, 3rd = 18); Number (singular = 15, plural = 15); Gender (masculine = 6, feminine = 6, unmarked = 18); and Homophony (+ = 18, – = 12). Each participant was given an answer sheet that contained a question for each item in the research instrument. They were to indicate which of the two possible answers given was correct. For the target items, their task was to identify the agent.

Production data were elicited using the seven-minute silent film entitled *La Tortilla Rag* (Malovrh, 2007), designed specifically for the elicitation of clitic pronouns via a retell task. The participants watched two people act out events and interact silently with each other as they prepared a dish. They viewed the film in two parts. They then retold what they had viewed after each part and retold it from two perspectives. This first retelling elicited third person pronouns in that the viewers retold actions others had performed. They then retold the events taking on the role of one of the on-screen participants—that is, they retold the events as if they were one of the participants. This narration elicited first person forms. They then watched the second part of the film

and repeated the two retell tasks. They were provided a lexical bank to facilitate the retellings.

8.3.3 Data collection

Participants first read and signed an informed consent form. They then watched the silent video on a personal computer screen, after which they provided the oral retells of the film by speaking into a headset and audio-recording their production digitally. After performing the retell tasks, the learners were directed to the processing instrument and answer sheet. Listening via the headset, they heard and answered the questions on an answer sheet for the 61 processing sentences.

8.3.4 Data coding

Because our intention is to examine developments in processing, production, and placement in a parallel fashion, we coded specific aspects of performance in the transcriptions of the audio-recordings. The processing sentences consisted of only accusative and dative case pronouns, not reflexives or objects of a preposition. We therefore isolated for examination accusative and dative case pronouns (direct and indirect objects) in the production and placement data. Having isolated these, we then turned our attention to the morphological markers learners encoded on these clitics. We manipulated the linguistic variables of Case, Person, Number, Gender, and Homophony in the processing study and so we coded the production and placement data for these linguistic variables. All object pronouns in the processing instrument had +animate referents and so we do not include Animacy in the present study. Whenever a clitic was produced we coded its morphological markers relative to its antecedent—that is, we established formal accuracy in terms of case, person, number, gender and noted whether the form required was homophonous. Importantly, these codings do not consider whether the choice to use a clitic as opposed to a full NP was nativelike, neither do they take into account the syntactic pattern the clitic appeared in, preverbal or postverbal. The results of these analyses we refer to as Production. For Production, if a learner produced a clitic pronoun, we determined its formal accuracy relative to its antecedent.

Next, we considered the syntax or placement of the pronoun. Because the syntax of the target processing sentences is $O_{pro}VS$ we analyzed the linguistic features of the context (referent) in which learners placed a pronoun in preverbal position in $O_{pro}V$ contexts. We identified all instances in which an object pronoun should appear obligatorily in preverbal position. In those instances in which the learners produced a pronoun, we coded the context (i.e., the referent) for the features of Person, Number, and Gender. We determined from the verb what case the pronoun should have. We determined from this whether the pronoun should be +/–homophonous. We did not consider the accuracy of the morphological features of the clitic actually produced. No matter the form, if the clitic pronoun was serving as a direct or indirect object in preverbal position, we coded it as accurate placement according to the features and

characteristics of the linguistic context. We did not consider where learners placed the subject; we collapsed SOV and OVS sentence patterns into one group. The results of these analyses we refer to as Placement.

8.3.5 Statistical analyses

Using SPSS19.0, we conducted ANOVA and chi-square tests to distinguish between performance by level of the learner and to determine the morphological features affecting nativelike processing, production, and placement of clitic pronouns. Chi-square tests and binary logistic regression analyses were conducted using SPSS19 to reveal the factors that had a significant main effect on OVS processing, production, and placement of clitic pronouns and to identify significant predictors of these three processes. We analyzed the overall performance of the group as a whole and the performance of each level of learner.

8.4 Results

8.4.1 Research question 1

We present our results in accordance with our research questions. The first of these is: Is there a relationship between different levels of L2 learners' development of OVS processing, their accurate production of object pronoun forms, and their accurate placement of them preverbally in $O_{pro}V$ contexts? We address this question with several analyses. In Table 8.1 we present information related only to direct object (accusative case) clitics that we extracted from tables presented in previous chapters. These figures show progression and development across levels. As the level of the learner increases, the learners are: (1) increasingly assigning direct object clitic pronouns patient status in $O_{pro}VS$ contexts; (2) realizing more direct objects as clitic pronouns in number and in percentage of production; and (3) creating more OV contexts for using direct object clitic pronouns and placing these with greater accuracy in preverbal position.

Table 8.1 Development across levels in processing, production, and placement of direct object clitic pronouns

Level	Processing	Production	Production	Placement
	% OVS of direct object clitics [a]	**% of direct objects realized as clitics**	**Number of direct objects realized as clitics**	**% accurate preverbal placement of direct object clitics in OV contexts** [c]
1	46.0	5	26	58.5
2	54.0	11	59	81.5
3	60.9	25	132	85.9
4	87.9	24[b]	127[b]	99.4

a. Taken from Table 7.2. b. Taken from Table 5.3. c. Taken from Table 6.9.

The performance of the Level 1 learners is notable. They realize very few direct objects as clitic pronouns (n=26) and clitic production represents only a small fraction of their production of direct objects (5%). As we saw in Chapter 5, Level 1 learners are repeating full NPs as direct objects (85%). Even though Level 1 learners place direct objects accurately in OV contexts just over 58.5% of the time, they create few OV contexts. At the same time that direct object clitic production and OV contexts generated is modest, these learners assign patient status to preverbal pronouns only 46% of the time. Their processing is more inaccurate than accurate, indicating that the primary function to which they are mapping the direct object pronouns is that of agent/subject.

In Table 8.2 we present the means for accuracy and standard deviations, with both accusative and dative case pronouns combined, for the three sets of processes investigated in the present study. It is important to remember that the Level 1 participants produced few clitic pronouns and few OV contexts in which to place them. In that light, their accuracy scores of 86.8% for production and placement are inflated. Keeping this in mind for Level 1 learners, we do see a steady increase in accuracy from Level 2 to 3 to 4 learners for processing, production, and placement. We submitted the scores to three separate ANOVAs with Level as the between group variable in each. The results of the ANOVA tests revealed a significant effect for Level in OVS processing ($F_{3,55}$ = 9.602, p < .000). A post hoc Scheffé's test revealed no significant differences in scores between Levels 1 and 2 nor between Levels 3 and 4. The difference between Levels 1 plus 2 and Levels 3 plus 4 was statistically significant (Level 1 = Level 2 < Level 3 = Level 4). The results of the second ANOVA revealed no significant effect for Level for accurate object pronoun production ($F_{3,55}$ = 1.649, p < .189). The results of the third ANOVA revealed no significant effect for Level for preverbal placement in $O_{pro}V$ contexts ($F_{3,55}$ = 2.072, p = .114). This group of learners placed pronouns in OV contexts quite accurately from the outset. The standard deviations show development across levels. They are largest for Level 2 and 3 learners for processing and for Levels 1, 2, and 4 for production and placement. Large standard deviations reflect variability in the performance of the group. The standard deviations of the Level 4 learners are much smaller, reflecting less variability and more uniformity toward the mean in that group's performance.

We note that this subgroup's overall performance is different than that of the groups examined in previous chapters. We found different groupings for OVS

Table 8.2 Mean accuracy scores and standard deviations for OVS processing, clitic pronoun form production, and clitic pronoun placement in $O_{pro}V$ contexts by level

Level	Processing		Production		Placement	
	%	St. Dev.	%	St. Dev.	%	St. Dev.
1	52.1	9.16	86.8	35.37	86.8	44.04
2	53.1	20.61	76.8	34	79.7	25.89
3	60.9	23.9	88.3	29.9	93.4	17.04
4	88.7	8.85	93.6	11.9	100	0

processing for the group examined in Chapter 7. In their group, the performance of the Level 3 learners grouped with that of the Level 1 and 2 learners, but in the present study, the Level 3 learners group with the Level 4 learners. In the present study there is no significant effect for Level on accurate form production but we found a significant effect previously such that the Level 4 learners outperformed the other levels that formed a single group. Previously we found three groupings of learners for placement (Level 1 < Level 2 = Level 3 < Level 4), but in the present study, this group of learners place pronouns in preverbal contexts quite accurately from the outset.

We also note that this group of learners' mean scores for OVS processing are very similar to those of the larger group whose results we presented in Chapter 7. (See Table 7.2. The differences in mean scores are due to having included *te* "you" in the analyses in Chapter 7 but not in the analyses in the present chapter.) We note a large difference in the production scores of the Level 2 learners. As seen in Table 6.1, the Level 2 learners in the larger group had a mean score of 60.5% for accurate form production whereas the present group performed much better (76.8%). Both Level 2 scores, however, show U-shaped development. We note a large difference in the Level 1 learners' placement scores. As seen in Table 6.9, the Level 1 learners placed pronouns in $O_{pro}V$ contexts accurately only 58.5% of the time whereas the present group was highly accurate (86.8%).

This group of Level 1 and 2 learners are processing object pronouns correctly only about 50% of the time. They are assigning agent/patient relations at slightly better than chance level. Their mapping of forms in the input to functions is unstable. Their placement of object pronouns in preverbal position is, however, quite stable; there was no significant effect for Level on placement. Overall, the Level 3 learners' performance is noteworthy. They map object forms to object functions more correctly than incorrectly (60.9%). At the same time, they are producing morphologically accurate pronouns 88.3% of the time and placing pronouns in preverbal contexts 93.4% of the time. Although there are no statistically significant differences between these Level 2 and Level 3 learners' performance, the developmental dividing line is between Levels 2 and 3. The latter group experienced an average of 4 months in a Spanish-speaking country and we will see in subsequent analyses the effect of this language experience.

8.4.2 Research question 2

Our second research question states: Do the linguistic features that affect different levels of L2 learners' OVS processing also affect accurate oral production and placement of object pronouns in $O_{pro}V$ contexts? The features we examined were: Case, Person, Number, Gender, and Homophony. To address this question we conducted a series of chi-square analyses on each of these features overall for OVS processing, accurate production of formal features, and accurate placement of pronouns in $O_{pro}V$ contexts. Subsequently, we conducted a series of chi-square analyses on each feature by level for processing, production, and placement. We begin with the overall results.

8.4.2.1 Overall results for OVS processing, accurate production of formal features, and accurate placement of pronouns in $O_{pro}V$ contexts

Summaries of the results of overall chi-square tests are presented for OVS processing in Table 8.3, for accurate clitic pronoun form production in Table 8.4, and for accurate clitic pronoun placement in $O_{pro}V$ contexts in Table 8.5. Level is a significant factor for all three processes such that overall accuracy of processing, production, and placement increases as level increases. Case is not a significant factor affecting processing but it does play a significant role in production and placement such that dative case pronouns are produced and placed more accurately than accusative ones. Person is a highly significant factor in overall accurate processing and production but not a significant factor in placement. The results are consistent that first person forms are processed and produced significantly more accurately than third person forms. They are also placed more accurately but not to a level of statistical significance. Number is a significant factor in producing and placing object pronouns such that plural forms are more accurate than singular ones. Gender is a significant factor across all three sets of processes such that the masculine forms are processed, produced, and placed significantly more accurately than the feminine ones. Homophony is an overall significant factor in the processing, production, and placement of pronouns; accuracy is significantly higher when pronouns are non-homophonous as opposed to homophonous.

These results for overall effects suggest strong connections between processing, production, and placement of object pronouns. Overall, the same linguistic features

Table 8.3 Summary of results of overall chi-square tests for OVS processing

Variable	x^2	*df*	Small Cells?	Cramer's *V*
Level	111.928***	3	No	.251
Case	1.225	1	No	.026
Person	38.298***	1	No	.147
Number	.045	1	No	.005
Gender	19.897***	2	No	.106
Homophony	7.327*	1	No	.064

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

Table 8.4 Summary of results of overall chi-square tests for accurate clitic pronoun form production

Variable	x^2	*df*	Small Cells?	Cramer's *V*
Level	9.688*	3	1	.301
Case	13.284***	2	1	.188
Person	18.417***	1	No	.214
Number	14.146***	1	No	.110
Gender	22.067***	2	No	.346
Homophony	12.766***	1	No	.214

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

Table 8.5 Summary of results of overall chi-square tests for accurate clitic pronoun placement in $O_{pro}V$ contexts

Variable	x^2	*df*	Small Cells?	Cramer's *V*
Level	21.746***	3	1	.216
Case	14.153***	2	1	.151
Person	2.785	1	No	.088
Number	18.218***	1	No	.201
Gender	10.833**	2	No	.153
Homophony	10.749**	1	No	.132

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

that affect processing also affect production and placement. Production and placement are, however, affected by features that do not affect processing. The results indicate that higher levels of accuracy in processing, production, and placement are associated with the following:

1. advanced and very advanced learners who have experience abroad
2. masculine-marked and gender-unmarked forms
3. –homophony forms

Higher levels of accuracy in production and placement are also associated with the following:

1. dative case pronouns
2. singular forms

Higher levels of accuracy in processing and production are also associated with:

1. first person forms

8.4.2.2 Results by Level for OVS processing, accurate production of formal features, and accurate placement of pronouns in $O_{pro}V$ contexts

To further explore our second research question, we performed a series of chi-square analyses for each feature within each learner level. By examining each level separately we aim to provide a more detailed developmental perspective. Are the overall trends in the data found at each level? Summaries of the results of chi-square tests by level are presented in Table 8.6 for OVS processing, for accurate clitic pronoun form production in Table 8.7 and for accurate clitic pronoun placement in $O_{pro}V$ contexts in Table 8.8.

As seen in Table 8.6 the variables of Person and Gender show the greatest number of level-specific effects for OVS processing, which supports the findings of the chi-square tests for overall performance. The variables of Number, Case, and Homophony each show one level-specific effect. Person is a significant factor affecting the performance of all four levels of learners. The pattern of performance is consistent with the first person forms being more accurately processed than the third person forms. Gender is a significant factor affecting the performance of the Level 1, 2, and 3 learners. The masculine forms are processed more accurately for each level of learner.

Table 8.6 Summary of the results of the chi-square tests for OVS processing by variable and level

Variable	Level	x^2	*df*	Small Cells?	Cramer's *V*
Person	1	3.179*	1	No	.086
	2	20.644***	1	No	.253
	3	12.998***	1	No	.131
	4	11.205***	1	No	.202
Number	1	.332	1	No	.028
	2	3.168*	1	No	.099
	3	.95	1	No	.035
	4	.045	1	No	.013
Gender	1	15.439***	2	No	.190
	2	7.194*	2	No	.149
	3	6.025*	2	No	.089
	4	1.163	2	No	.065
Case	1	1.642	1	No	.062
	2	.326	1	No	.032
	3	1.433	1	No	.044
	4	8.75**	1	No	.178
Homophony	1	6.238**	1	No	.121
	2	2.168	1	No	.082
	3	2.022	1	No	.052
	4	.721	1	No	.051

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

All five features we analyze showed a significant effect in the analyses of overall form production performance. They each show level-specific effects. As seen in Table 8.7, the variables of Number, Gender, and Homophony each showed two level-specific significant effects for clitic pronoun form production. The effect for Number was that Level 2 and 3 learners produced singular forms more accurately than plural ones. The effect for Gender was that Level 2 and 3 learners produced masculine forms more accurately than feminine ones. There was one level-specific effect for Case, with dative case pronouns produced more accurately than accusative case ones. There was one level-specific effect for Person, with first person forms produced more accurately than third person ones.

In the analyses of overall performance, four of the five features showed a significant effect for clitic pronoun placement in $O_{pro}V$ contexts. The level-specific effects for placement are presented in Table 8.8. Because the performance of the Level 4 learners was 100% accurate, there are no analyses possible for this level of learner. As can be seen in Table 8.8, the effect for Case is found for Level 1, 2, and 3 learners where at each level learners place a pronoun in contexts requiring dative case pronouns more often than in those requiring accusative case ones. An effect for Number was found for Level 2 and 3 learners such that they place a pronoun in contexts that require singular forms more often than in those requiring plural ones. An effect for Gender was found for Level 3 learners such that they place a pronoun in contexts that require masculine

Table 8.7 Summary of the results of the chi-square tests for clitic pronoun form production by variable and level

Variable	Level	x^2	*df*	Small Cells?	Cramer's *V*
Person	1	3.755	1	2	.314
	2	2.352	1	1	.185
	3	10.952***	1	No	.236
	4	1.169	1	2	.122
Number	1	1.701	1	2	.212
	2	4.151*	1	No	.245
	3	8.915**	1	No	.213
	4	.089	1	2	.034
Gender	1	.577	2	4	.123
	2	10.818**	2	1	.396
	3	12.286**	2	No	.25
	4	3.076	2	3	.199
Case	1	.052	1	2	.037
	2	2.75	1	1	.2
	3	9.761**	1	No	.223
	4	2.374	1	2	.174
Homophony	1	.543	1	2	.119
	2	4.559*	1	No	.257
	3	7.523**	1	No	.196
	4	.675	1	2	.093

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

forms more often than they do in contexts that require feminine ones. Finally, an effect for Homophony was found for Level 3 learners such that they place a pronoun in contexts requiring a –homophony form more frequently than in contexts requiring a +homophony form. There were no level-specific effects for Person, supporting the overall finding but, in general, first person forms are placed in $O_{pro}V$ contexts more frequently than third person ones.

8.4.2.3 Results by feature for processing, production, and placement

To further explore the relationship between processing, production, and placement of object clitic pronouns we present the mean scores for OVS processing, accurate production of formal features, and accurate placement of pronouns in $O_{pro}V$ contexts by level for each individual variable. The asterisk in the column header in the tables presented below indicates that the variable was a significant overall factor. The shading in the tables indicates the level(s) at which the variable showed a significant effect in the chi-square tests presented in the previous section.

We present the results of our analyses on Case in Table 8.9. Case was not a significant overall factor affecting processing but it was for production and placement. As can be seen in Table 8.9, processing accusative case pronouns is more accurate than that for dative case pronouns for the Level 4 learners. The accuracy of both sets of pronouns at this level is, however, quite high (+80%). Dative case pronouns are always

Table 8.8 Summary of the results of the chi-square tests for clitic pronoun placement in $O_{pro}V$ contexts by variable and level

Variable	Level	x^2	*df*	Small Cells?	Cramer's *V*
Person	1	.001	1	2	.004
	2	.174	1	1	.05
	3	3.205	1	1	.128
	4				
Number	1	.086	1	2	.048
	2	10.514**	1	No	.39
	3	7.514**	1	No	.196
	4				
Gender	1	3.69	2	4	.309
	2	3.452	2	2	.224
	3	11.356**	2	3	.241
	4		2		
Case	1	4.661*	1	4	.35
	2	4.071*	1	3	.243
	3	6.909**	1	2	.188
	4				
Homophony	1	.543	1	2	.119
	2	3.253	1	1	.217
	3	9.009**	1	No	.214
	4				

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

produced more accurately than accusative case ones, significantly so at Level 3. Level 1, 2, and 3 learners place a pronoun in contexts requiring a dative case pronoun significantly more often than they do in accusative case contexts.

We present the results for the variable Person in Table 8.10. The variable of Person is a highly significant overall factor affecting processing and production. Evident in this table is that the variable Person significantly affects the processing performance

Table 8.9 Mean scores (%) and significant chi-square results for the feature of Case for OVS processing, clitic pronoun form production, and clitic pronoun placement in $O_{pro}V$ contexts by level

Level	Case	Processing	Production***	Placement***
1	Dative	56	88.2	100*
	Accusative	49.6	85.7	76.2
2	Dative	51.2	90	95*
	Accusative	54.4	71.4	73.5
3	Dative	58.2	98.5 **	100**
	Accusative	62.6	83.2	90.1
4	Dative	81.8**	100	100
	Accusative	93.3	90.7	100

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

of all four levels of learners and in the same direction. The first person forms are processed more accurately than the third person forms. The same pattern is seen consistently for form production, significantly so among Level 3 learners. Level 2 learners' processing accuracy for first person forms is high and stabilizing but third person forms are well below 50% accurate. They only come above 50% accurate at Level 3. Placement of a form in $O_{pro}V$ contexts is more frequent for first person forms for Level 2 and 3 learners, but the differences are not significant. Placement of both dative and accusative case forms is very high (+79%).

As we have seen in previous chapters as well as in the present study, Person is a significant factor in the development of the pronoun system for both processing and production, but not placement. In Table 8.11, we show the frequency with which this group of learners produced first and third person object pronouns, both direct and indirect objects. Comparing Table 8.2 to 8.11, we can see that the decrease in accurate production at Level 2 is accompanied by a dramatic increase in pronoun production in general (42 to 85) but most notably the large increase in third person pronoun production (24 to 76). As noted in Chapter 6, the third person forms are the challenging forms and learners at this level use *lo* and *los*, the third person masculine, as their base or default form. Their overuse of the forms affects accuracy scores. Learners' production of the pronoun *lo*, for example, is highly frequent but its appropriate use is not. We have asserted that the rise of third person pronoun production among Level 2 learners is a key event in the acquisition of object pronouns. It indicates that the pronoun system is accommodating new forms, thus firmly establishing a complete inventory of forms. This complete inventory sets in motion restructuring processes. The evidence for restructuring the system is the explosion in pronoun production among Level 3. Production of pronoun forms triples from 85 to 265 at Level 3 with 176 of these being third person. Formal accuracy rises to 88.3% with 83.3% accuracy with third person forms. Level 3 is also the level at which accurate processing of the agent role has risen to 61% overall and 55.8% with third person forms. Placement in OV contexts is 93% accurate overall and 91.3% in third person contexts. We see stability in the pronoun system at Level 3 that is not present in

Table 8.10 Mean scores (%) and significant chi-square results for the feature of Person for OVS processing, clitic pronoun form production, and clitic pronoun placement in $O_{pro}V$ contexts by level

Level	Person	Processing***	Production ***	Placement
1	1st	57.5*	100	86.7
	3rd	48.7	78.3	87
2	1st	68.5***	100	85.7
	3rd	42.7	74.2	79
3	1st	68.9***	100 ***	98.3
	3rd	55.8	83.3	91.3
4	1st	96.4***	100	100
	3rd	83.4	92.2	100

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

previous levels, yet we still find a distinction between first and third persons. A key event in the acquisition of object pronouns in Spanish as a second language takes place at the very advanced level; processing the agent roles in sentences that contain third person object pronouns reaches a high level of accuracy (i.e. 83.4%).

We present the results of the analyses on Number in Table 8.12. Generally, the scores are higher for singular pronouns than for plural ones (in 9 of 12 comparisons). Number was not a significant overall factor affecting processing but it was significant for Level 2 learners who processed plural forms more accurately than singular ones. At the other levels, there is little difference between processing singular and plural forms. The differences range from .8% to 3.5%. Number was a highly significant overall factor for production and placement. Accuracy scores are higher for the production of singular forms for Level 1, 2, and 3 learners, significantly so for Levels 2 and 3. Learners at Levels 1, 2, and 3 always place a pronoun in contexts requiring a singular pronoun more often than in those requiring a plural one, significantly so among Level 2 and 3 learners.

We present the results of our analyses on Gender in Table 8.13. Gender is a significant overall factor affecting processing, production, and placement, and, as can be seen in the table, the pattern is clear and consistent. Whenever we find a significant level-specific effect for Gender, the learners perform better with masculine and unmarked forms than they do with feminine forms. How a gender-marked pronoun affects processing is different from how it affects production and placement.

Table 8.11 Frequency of production of first person compared to third person direct and indirect object clitic pronouns by level

Level	1st Person	3rd Person	Total
1	18/42 (43%)	24/42 (57%)	42
2	9/85 (11%)	76/85 (89%)	85
3	89/265 (34%)	176/265 (66%)	265
4	25/126 (20%)	101/126 (80%)	126

Table 8.12 Mean scores (%) and significant chi-square results for the feature of Number for OVS processing, clitic pronoun form production, and clitic pronoun placement in $O_{pro}V$ contexts by level

Level	Number	Processing	Production***	Placement***
1	Singular	53.5	92	88
	Plural	50.7	76.9	84.6
2	Singular	48.1*	85.4*	92.7**
	Plural	58	64.3	60.7
3	Singular	62.6	94**	97.4**
	Plural	59.1	80	87.5
4	Singular	89.1	93.1	100
	Plural	88.3	95	100

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

Processing the feminine forms is significantly more difficult for Level 1, 2, and 3 learners. At Levels 1 and 2, processing feminine forms accurately occurs only about a third of the time and at Level 3, accuracy has just reached above the 50% level. Then, suddenly, accurate processing of feminine forms is 90% for Level 4 learners. Producing the feminine forms is significantly less accurate at Levels 2 and 3. Placing a form in a context that requires a feminine form is more accurate for Level 1 learners, less accurate for Level 2 learners and significantly less accurate at Level 3, although pronouns are placed in both contexts quite frequently (+86%).

In Table 8.14, we present the results of our analyses of Homophony, a factor that is significant in the overall analyses of processing, production, and placement. As can be seen in the table, the scores for +homophony forms are almost always lower than those for –homophony ones (in 10 of 12 comparisons). These differences are significant for processing only for Level 1 learners. The accuracy rates for processing for +homophony forms at Levels 1and 2 are below 50%. Only at Level 3 does accurate processing of +homophony forms come above 50%. The accuracy rates for producing +homophony forms is significantly lower than that for –homophony forms for Level 2 and 3 learners. While placement of a pronoun in a context requiring a +homophony form is always less accurate than that for –homophony forms, the difference is significant only for Level 3 learners. Overall, we can assert that +homophony forms are a challenge to learners until the highest levels of language proficiency are attained.

8.4.3 Research question 3

Our third research question states: Which factors predict different levels of L2 learners' development of OVS processing, their accurate production of object pronoun forms, and their accurate placement of a pronoun preverbally in obligatory $O_{pro}V$ contexts?

Table 8.13 Mean scores (%) and significant chi-square results for the feature of Gender for OVS processing, clitic pronoun form production, and clitic pronoun placement in $O_{pro}V$ contexts by level

Level	Gender	Processing***	Production***	Placement**
1	Masculine	56.2*	80	60
	Feminine	33.3	83.3	91.7
	Unmarked	56	88.2	100
2	Masculine	57.6*	85.7**	76.2
	Feminine	37.7	54.2	70.8
	Unmarked	51.2	90	95
3	Masculine	63.6*	91.3**	93.5**
	Feminine	52.5	78.1	86.3
	Unmarked	58.2	98.5	100
4	Masculine	88.7	100	100
	Feminine	92.7	88.1	100
	Unmarked	81.8	100	100

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

Table 8.14 Mean scores (%) and significant chi-square results for the feature of Homophony for OVS processing, clitic pronoun form production, and clitic pronoun placement in $O_{pro}V$ contexts by level

Level	Homophony	Processing*	Production***	Placement**
1	-	57.1**	90.5	90.5
	+	44.9	82.4	82.4
2	-	56.4	91.7*	91.7
	+	48	68.9	73.3
3	-	63	96.1**	100**
	+	57.9	83.2	89.1
4	-	87.4	96.6	100
	+	90.7	91.8	100

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

The results of the chi-square tests provided the variables to be used in a series of binary logistic regression analyses. These analyses generated a model containing the independent variables that predict OVS processing, accurate form production, and the placement of a form in $O_{pro}V$ contexts. We summarize the findings in Table 8.15. The supporting statistics for the regressions are provided in Appendix K.

Overall, the Level of the learner is a significant predictor of OVS processing, accurate clitic form production, and placement of a pronoun in an $O_{pro}V$ context.

Table 8.15 Predictors of OVS processing, accurate clitic pronoun form production, and accurate clitic pronoun placement in $O_{pro}V$ contexts

	Level	Case	Person	Number	Gender	Homophony
Processing						
overall	X*		X*		X*	
Level 1					X*	
Level 2			X*		X*	
Level 3			X*			
Level 4		X*	X*			
Production						
overall	X*	X	X		X*	
Level 1		X				
Level 2					X*	
Level 3			X			
Level 4						
Placement						
overall	X*	X*		X*		
Level 1		X				
Level 2				X*		
Level 3						X
Level 4						

Note. X = variable included in the model; * $p<.05$

As the level of the learner increases so does the frequency of OVS processing, the rate at which accurate forms are produced, and the frequency with which pronouns are placed in $O_{pro}V$ contexts. Overall, the gender of the pronoun is a significant predictor of OVS processing and accurate clitic form production. In both processes, the feminine forms present learners the challenge—that is, masculine and unmarked forms are processed and produced more accurately than feminine ones. Processing, producing, and placing object pronouns share no other significant predictors for overall performance. Person is uniquely a significant predictor of OVS processing. Case and Number are uniquely significant predictors of clitic pronoun placement.

8.5 Discussion

The purpose of the present study was to examine the second language acquisition of object pronouns in Spanish via developments in three sets of processes: processing the role of agent in $O_{pro}VS$ strings, producing morphologically accurate object pronouns, and placing object pronouns accurately in obligatory contexts of preverbal position. We sought to determine if there were related developments in processing, production, and placement and if the same linguistic features affect the three sets of processes. Using an experimental set of 30 sentences we mapped the degree to which various levels of learners correctly assigned the semantic role of agent in utterances with a preverbally placed pronoun (OVS processing) or if they would rely on the first noun strategy, a word order-based processing strategy, and misassign the role of agent to the pronoun. Using the oral retellings of a silent movie designed to elicit object pronouns we analyzed the degree to which this same group of learners produced morphologically accurate object pronouns. We also analyzed the linguistic features of the contexts into which they placed an object pronoun in an obligatory preverbal position.

Our first research question is: Is there a relationship between different levels of L2 learners' development of OVS processing, their accurate production of object pronoun forms, and their accurate placement of a pronoun preverbally in obligatory $O_{pro}V$ contexts? We first reviewed some findings from previous chapters to address this question. We focused on the production and placement of direct objects in previous chapters. We found that the advanced learners produced many more direct objects as clitics than did the early stage learners and that the percentage of their direct object production that clitics represent dramatically increases. One related development in placement of direct objects is that the Level 2 learners become extremely accurate with placing object pronouns in preverbal position (+80%) that allows them to produce double the number of pronouns (n=59, or 11% of their direct objects) than the Level 1 learners did. A related development in processing is that Level 3 learners, who have experience abroad, process the role of agent more accurately (61%) than inaccurately. This level of learner maps the function of object to the object pronoun more frequently than they map the function of subject to the object pronoun. This development in processing allows the Level 3 learners to produce double the number of clitic object pronouns (n=132, or 25% of their direct objects) compared to the Level 2 learners. In

the present study, we examine both direct and indirect object pronouns. As we see in Table 8.3, the number of pronouns produced doubles from Level 1 to 2 (42 to 85) and triples from Level 2 to Level 3 (85 to 265). The Level 3 learners return from their study abroad experience producing many more object pronouns.

We previously identified the dramatic increase in the number of third person direct and indirect object forms produced by Level 2 learners as a key event in the acquisition of object pronouns in Spanish. This increase in production brought on a decrease in accuracy, thus the U-shaped development we have noted. We find the same pattern for the subset of Level 2 learners examined in the present study. The Level 1 learners in the present study produced 24 third person forms whereas the Level 2 learners produced 76. Even though production of the forms has dramatically increased, formal accuracy and placement of a pronoun into a third person context have not. The real constraining factor on development toward a nativelike system is that only 42% of the third person forms are processed accurately. The learners are producing more of these forms but when they encounter them in input, they more often map the form to a subject function.

We find the following to represent key events or developments in the acquisition of object pronouns in Spanish in terms of the three processes we compared in the present study:

1. a dramatic increase in Level 2 learners' production of all pronouns but especially their increased production of third person forms
2. a decrease in the formal accuracy of the pronouns Level 2 learners produce
3. a dramatic increase in Level 3 learners' production of all pronouns but especially their increased production of third person forms
4. an increase in the formal accuracy of the pronouns Level 3 learners produce
5. Level 3 learners' near-nativelike placement of a pronoun in OproV contexts (93.4%)
6. Level 3 learners assign the role of agent more accurately than inaccurately (61%)
7. Level 4 learners assign the role of agent to third person pronouns with a high degree of accuracy (83.4%)

These events indicate that learners can get the full inventory of object pronouns from classroom exposure and explicit instruction but experience abroad, with its opportunities for input and interaction, is needed to push interlanguage development toward nativelike attainment.

Our second research question is: Do the linguistic features that affect different levels of L2 learners' OVS processing also affect morphologically accurate oral production and placement of object pronouns preverbally in obligatory $O_{pro}V$ contexts? To address this question we first conducted chi-square tests on the overall results. We found that several factors significantly account for processing, production, and placement. They are: the Level of the learner, the Gender of the pronoun, and the Homophony of the pronoun. Higher levels of success in processing, production, and placement are associated with the advanced and very advanced learners who have experience abroad, masculine-marked and gender-unmarked pronouns and –homophony forms. Production and placement also have Case and Number as common factors that

significantly affect performance. Higher levels of success in production and placement are associated with dative case and singular pronouns. Processing and production also have Person as a common factor that significantly affects performance. Higher levels of success are associated with first person forms. Looking at the overall performance of this group of learners we can affirm that certain features affect learners' performance when processing, producing, and placing object pronouns. Producing and placing pronouns have even more features in common, as do processing and producing.

The results presented in this chapter (Tables 8.4–8.6) represent the performance data for one group of learners (N=59) who participated in both studies of processing and production. They are a subset of the learners whose processing data we presented in Chapter 7 (N=72) as well as a subset of the learners whose production and placement data we presented in Chapter 6 (N=98). An important question to address is: How does the performance of the subset of learners compare to that of the larger groups'? We have already noted that the mean scores across the three groups are highly similar, but that the Level 2 learners in the present study have a much higher score for accurate form production and that the Level 1 learners in the present study have a much higher score for accurate placement in $O_{pro}V$ contexts. These differences did not, however, affect the outcome of the chi-square tests for overall performance. The same four significant factors affecting OVS processing presented in Table 8.4 are also found in Table 7.3. The same six significant factors affecting accurate clitic pronoun form production presented in Table 8.5 can be found in Table 6.2. The same five significant factors affecting accurate placement in $O_{pro}V$ contexts presented in Table 8.6 can be found in Table 6.10. We can affirm that the same factors that account for the performance of disparate groups of learners performing different tasks also account for the performance of a single group of learners performing multiple tasks.

Because Level is a significant factor affecting OVS processing, accurate production of object pronoun forms, and their accurate placement preverbally in $O_{pro}V$ contexts, we conducted chi-square analyses for each level of learner for the five linguistic features. We found level-specific effects for Number, Gender, Case, and Homophony for processing, production, and placement. We found level-specific effects for Person for processing and production. To address our research question, we find the same linguistic features affecting different levels of learners across the three processes: OVS processing, accurate production of object pronoun forms, and their accurate placement preverbally in $O_{pro}V$ contexts. When we compare the level-specific results of this subset of learners (Tables 8.7–8.9) to those of the larger groups (Tables 7.3, 6.3, and 6.11), we find numerous level-specific differences. We would expect level-specific differences given the differences in mean scores for our Level 1 and 2 learners in production and placement. The level-specific differences do not, however, change the interpretation of the overall findings that the linguistic features we have examined show both overall and level-specific effects in processing, production, and placement.

We also presented the results of our analyses by feature. We can summarize the results as follows. The feature of Case is more important in accounting for the contexts in which learners place an object pronoun than for OVS processing or accurate form production. The Level 1, 2, and 3 learners place pronouns in contexts for dative case pronouns significantly more frequently than they do in contexts for accusative case.

This trend in the production data is to produce formally accurate dative case pronouns more frequently than accusative case ones. This aspect of L2 performance emerges at the very beginning of acquisition. VanPatten (1990) found in his case study that the learner produced more dative case pronouns than accusative case ones and was more accurate with them.

The feature of Person is more important in accounting for OVS processing than for accurate form production or the contexts in which learners place an object pronoun. All levels of learners process first person forms significantly more accurately than third person forms. This trend is also found in the production data, where Person was a significant overall factor affecting performance, and in the placement data. Our results are consistent with those of others who have also found that the first person forms emerge first in speech (Andersen, 1983; Klee, 1989; VanPatten, 1990). What our data confirm is that learners process the role of the first person forms more accurately—that is, they map the first person forms to the function of object in the input to which they are exposed more frequently than they do with third person forms. That the first person forms emerge first is consistent with the Feature Hierarchy (Greenberg, 1963) and the idea that Person has greater cognitive salience than other features such as Number and Gender (Harley and Ritter, 2000). Person is critical in resolving speaker/hearer relations. Native speakers of Italian resolve reference more quickly when the processing cue is Person (Carminati, 2005). The greater cognitive salience of Person explains why classroom exposure and explicit instruction are sufficient for L2 learners to distinguish between first and third person.

As we noted above, a key event in the acquisition of object pronouns in Spanish is for learners to develop a high level of accuracy processing third person pronouns. This happens only among the very advanced learners. These learners have on average 12 months experience abroad. The data suggest that a high degree of accuracy processing third person pronouns does not develop until learners have extensive experience with the second language. The very advanced learners have had the most extensive opportunities to observe and participate in language events. They have been exposed to greater amounts of discourse-level input necessary for producing third person anaphoric reference.

The feature of Number is more important in accounting for accurate form production and the contexts in which learners place an object pronoun than for OVS processing. The singular forms are accurately produced and forms are placed in contexts for singular forms more frequently than for plural forms. Generally, the singular forms are processed more accurately than plural forms, supporting previous research findings (Lee, 1987; Malovrh, 2006). Singular forms are said to be more basic than plural ones (Harley and Ritter, 2000). The singular forms tend to be the unmarked form whereas the plurals require some sort of morphological marker. The lack of an overall effect for Number on OVS processing may be due to the similar morphological markings in English, the native language of our participants, and Spanish. Both use an *–s* morpheme. Native speakers of English may be attuned to this marker from their native language (N. Ellis, 2007). This hypothesis can be tested by examining the performance of non-native speakers of English, whose L1 marks plural with a different morpheme.

The feature of Gender is an overall significant factor affecting performance for OVS processing, accurate form production and the contexts in which learners place an object pronoun. It is, however, more important in accounting for OVS processing and then accurate form production than for placing a form in $O_{pro}V$ contexts. The masculine-marked and gender-unmarked forms are processed significantly more accurately than feminine-marked forms. That is, L2 learners map the function of object to masculine-marked and gender-unmarked forms more frequently than to feminine ones. This pattern also characterizes the accurate form production of Level 2 and 3 learners. The processing data explain the production data. The learners are extracting from the input the masculine-marked forms. They map the function of object to the masculine forms more so than to feminine forms. Therefore, they produce masculine forms as the default object marker (Franceschina, 2001; Klee, 1989; McCarthy, 2008; Torres, 2003; Zyzik, 2004). It is the object form they have extracted from the input. The Level 1 and 2 learners are not mapping feminine forms to the object function very frequently. The Level 3 learners, who have an average of 4 months experience abroad, manage to map feminine forms to object function only 52.5% of the time. Their experience abroad has moved them to this level. But extended experience abroad seems to be needed to finally map feminine-marked forms to the object function with a high degree of accuracy, which we identified in Chapter 7 as a key event in the acquisition of object pronouns in Spanish. Masculine forms are said to be more basic than feminine ones (Harley and Ritter, 2000). The masculine forms represent the default forms and the feminine ones are the marked forms. In Spanish the masculine forms are considered the base forms for lexical entry into dictionaries.

The feature of Homophony is a significant overall factor affecting performance for OVS processing, accurate form production, and the contexts in which learners place an object pronoun. The trends in the data are perfectly consistent. Learners process, produce, and place –homophony forms more accurately and more frequently than they do +homophony forms. The –homophony forms have a feature that contributes to their higher scores; they are gender-unmarked. This latter feature contributes to more OVS processing, more accurate form production, and success in placing a pronoun in an $O_{pro}V$ context. This group of learners was highly successful from the outset, placing pronouns in contexts that required gender-unmarked forms (100% for Level 1 learners).

Our third research question is: Which factors predict different levels of L2 learners' development of OVS processing, their accurate production of object pronoun forms, and their accurate placement of a pronoun preverbally in obligatory $O_{pro}V$ contexts? The final set of statistical analyses we performed were binary logistic regressions in order to identify significant predictors of performance for OVS processing, accurate form production, and the contexts in which learners place an object pronoun. The one significant predictor common to all three processes under examination is the Level of the learner. The four levels are distinguished from each other in several ways. First, the results of a short grammar test distinguished between three levels of learner: $1 < 2 < 3 = 4$. Second, the average number of years studying Spanish distinguished between two levels of learner: $1 = 2 = 3 < 4$. Third, the learners' experience abroad (months) distinguished between three levels of learner: $1 = 2 < 3 < 4$. Finally, only the Level 4 learners

used Spanish professionally. The characteristics associated with increases in level are higher scores on a grammar test, greater number of years studying Spanish, more months of experience abroad, and professional use of Spanish. Of all these characteristics, experience abroad appears to be the critical one. We have noted repeatedly that the Level 3 learners' interlanguage system has restructured. We have noted parts of the interlanguage system that develop with only classroom exposure and explicit instruction. That Level is a significant predictor of performance means that as the level of the learners increases (in all the ways we identified), so does the frequency of OVS processing, the rate at which morphologically accurate forms are produced, and the frequency with which a pronoun is placed in an obligatory $O_{pro}V$ context.

Processing, production, and placement share no other significant predictor. The variable Gender, however, is a common significant predictor for OVS processing and accurate form production. Learners more accurately process and produce masculine-marked and gender-unmarked forms than they do feminine-marked forms. Only the Level 4 learners show no differences between the forms. The feminine gender-marked forms represent the greatest challenge in the acquisition of the object pronoun system. The variable Person is a significant predictor of OVS processing with first person forms more accurately processed than third person ones. The first person forms are also deictic forms, meaning that they have no antecedent in the linguistic context and are always realized as pronouns, never as a full NP. The consistent pronominal representation in the input, i.e. one form/one function, leads to their early appearance and development (VanPatten, 1990).

The variables of Case and Number are significant predictors of the contexts in which learners place pronoun in preverbal position. Learners place pronouns more frequently in dative case contexts and contexts which call for a singular pronoun. Previous research has also found that dative case pronouns appear first in learners' interlanguage (Andersen, 1984; Klee, 1989; VanPatten, 1990) and that very early-stage learners process third person dative case pronouns more accurately than accusative case ones (VanPatten, 1984). That learners place a pronoun more often in contexts for singular pronouns is related to their overuse of the masculine singular pronoun as a default object marker.

When we presented the results of the overall chi-square test for OVS processing, accurate clitic form production, and placement of a pronoun in an $O_{pro}V$ context, we asked the question whether the results for the subset of learners examined in the present study match those we found for two larger groups of learners whose performance we analyzed in previous chapters. We found a perfect match between the various groups of learners and the overall significant factors that affect learners' performance. We once again ask the question whether the factors that predict the performance of this subset of learners match those that predict the performance of larger groups. As seen in Table 7.5, the variables of Level, Person, and Gender predict OVS processing for a group of 72 L2 learners (in addition to the variable Context that we do not explore in the present study). These are the same three factors that we find predicting OVS processing for the 59 learners examined in the present study. As seen in Tables 6.4 for first and third person pronouns and Table 6.8 for third person pronouns only, the variables of Level and Gender predict accurate clitic pronoun form

production for a group of 67 L2 learners and 15 native speakers (in addition to the variable of Animacy that we do not explore in the present study). These are the same two variables that predict accurate clitic pronoun form production for the 59 learners examined in the present study. As seen in Table 6.12, the variables of Level and Case predict the frequency of placing of a pronoun in $O_{pro}V$ contexts for a group of 72 L2 learners. These two variables plus the variable Number predict the placement of a pronoun in $O_{pro}V$ contexts for the 59 learners examined in the present study. Even though some of the mean scores of the group of 59 were higher than those in other studies, the factors that account for their performance are the same.

8.6 Conclusion

The results of the statistical analyses allow us to reach the following conclusions. First, there is a relationship between different levels of L2 learners' development of OVS processing, their accurate production of object pronoun forms, and their accurate placement of a pronoun preverbally in obligatory $O_{pro}V$ contexts. Each of the processes is involved in a series of key events that lead toward nativelike attainment in processing, producing, and placing object pronouns. Second, the linguistic features that affect different levels of L2 learners' OVS processing also affect morphologically accurate oral production and placement of object pronouns preverbally in obligatory $O_{pro}V$ contexts. The common significant factors affecting processing, production, and placement are Level, Gender, and Homophony. The variable Person is common to processing and production. The variables Case and Number are common to production and placement. Third, of these variables Level is the common significant predictor of OVS processing, morphologically accurate production of object pronoun forms, and accurate placement of a pronoun preverbally in obligatory $O_{pro}V$ contexts. The data suggest that experience abroad is necessary to move the acquisition of object pronouns toward nativelike attainment.

Part Four

Conclusion

9

The Developmental Dimension in the L2 Acquisition of Object Pronouns in Spanish by Instructed L2 Learners

9.1 Introduction

We agree with Bardovi-Harlig (2007) and others that our adult learners have come to the acquisition of Spanish as a second language with underlying concepts already established. Through their previous cognitive and life experiences they possess the concepts of pronominal, anaphoric and deictic reference, person, number, etc. Their task as L2 learners is to find from the input to which they are exposed the Spanish-specific ways and means to express these concepts. In this chapter we will discuss interlanguage development with specific reference to object pronouns in Spanish. We address several issues. First, we address two characteristics of interlanguage: its systematicity and its variability. Second, we address the issue of ultimate attainment: are the learners' interlanguage systems nativelike? Finally, we address the dynamic nature of interlanguage, its developmental dimension, as we characterize the stages in the L2 acquisition of object pronouns in Spanish.

9.2 Summary of the research carried out

We carried out two laboratory experiments on a cross-section of adult second language learners of Spanish whose initial exposure to Spanish came from classroom experiences. These learners represented a broad spectrum of language experience and, consequently, language proficiency. Those whom we characterized as early stage learners (Level 1) were, at the time of our experiment, enrolled in a third semester Spanish language course, typically referred to as intermediate Spanish in a two-year basic language sequence. Those whom we characterized as very advanced (Level 4) were postgraduate students, enrolled in a seminar on language teaching, who had on average 12 months experience in Spanish-speaking countries. At the time of the experiment, they all taught an introductory Spanish language class—that is, this group used Spanish professionally. In between, we had two other groups of learners. One group consisted of learners enrolled in a fifth semester grammar and composition

course (Level 2) required for the major and minor in Spanish. None of these learners had experience abroad. The other group consisted of learners enrolled in a variety of upper level courses (Level 3). This group had on average 4 months experience in Spanish-speaking countries. These groups of learners were differentiated based on grammatical knowledge (1 < 2 < 3 = 4), years studying Spanish (1 < 2 = 3< 4), and experience abroad (1 = 2 < 3 < 4).

We elicited oral language samples and processing behaviors. To elicit speech samples that were sufficiently similar in content, length, and outcome to allow detailed comparisons, Malovrh (2008) produced a silent 7-minute video set to ragtime music called *La Tortilla Rag*, in which a man and a woman work together to prepare a Spanish potato omelet. The video elicits a wide range of pronominal functions because of the different ways in which the actors interact with each other. The learners first recounted what they had seen in a third person narrative. They then recounted the scenes from the perspective of one of the participants, yielding a first person narrative. To elicit processing behaviors, we created 36 sentence pairs in which we created deictic and intersentential anaphoric reference. The pronouns we used varied in terms of case, person, number, gender, and homophony. We first analyzed the data elicited through video retellings and presented the results of analyses that examined the forms learners used to express direct object function and the functions encoded by different pronoun forms (Chapter 5). We also examined the effect of morphological, semantic, and syntactic variables on accurate production of clitic object pronoun forms and the placement of a pronoun in $O_{pro}V$ contexts (Chapter 6). We then analyzed the learners' processing behaviors and presented the results of analyses that examined linguistic context and linguistic features that affect learners assigning the grammatical role of agent in $O_{pro}VS$ strings (Chapter 7). Subsequently, we examined the performance of a group of learners as they processed, produced, and placed object pronouns in $O_{pro}V$ contexts. Our purpose in these analyses was to relate developments across the three sets of processes. In Figure 9.1, we summarize the research questions that guided our work.

9.3 Interlanguage systematicity and variability

Two important characteristics of interlanguage are that it is systematic and variable. *Systematic* refers to the fact that interlanguage is rule-governed linguistic behavior.

Table 9.1 Summary of research questions

Production	1. What forms do different levels of L2 learners and native speakers use to express the grammatical role of direct object? 2. What functions do different levels of L2 learners and native speakers express using direct and indirect object clitic forms? 3. What is the relationship between the frequency that different levels of L2 learners and native speakers use an object clitic form and its appropriate use in obligatory contexts?

Production + Placement	1. What is the effect of the morphological features of person, number, gender, case, and homophony, the semantic features of animacy and transitivity, and the syntactic feature of OV and VO/OV placement on different levels of L2 learners' and native speakers' appropriate use of object clitic forms? 2. Which morphological, semantic, and syntactic features predict different levels of L2 learners' and native speakers' appropriate use of object clitic forms? 3. What is the effect of the morphological features of person, number, gender, case, and homophony and the semantic features of animacy and transitivity on different levels of L2 learners' accurate placement of object clitic forms in $O_{pro}V$ contexts? 4. Which morphological and semantic features predict different levels of L2 learners' accurate placement of object clitic forms in $O_{pro}V$ contexts? 5. What is the effect of the semantic features of animacy and transitivity on different levels of L2 learners' and native speakers' omission of a direct object in OV and VO contexts? 6. Which semantic features predict different levels of L2 learners' and native speakers' omission of direct objects in OV and VO contexts?
Processing	1. How accurately do different levels of L2 learners assign the role of agent in $O_{pro}VS$ strings? 2. Does co-referencing the O_{pro} in an $O_{pro}VS$ string with a preceding noun in pre- or postverbal position affect different levels of L2 learners accurately assigning the role of agent in $O_{pro}VS$ strings? 3. Does the feature of case (accusative, dative) affect different levels of L2 learners accurately assigning the role of agent in $O_{pro}VS$ strings? 4. Does the feature of person (1st, 2nd, 3rd) affect different levels of L2 learners accurately assigning the role of agent in $O_{pro}VS$ strings? 5. Does the feature of number (singular, plural) affect different levels of L2 learners accurately assigning the role of agent in $O_{pro}VS$ strings? 6. Does the feature of gender (masculine, feminine, unmarked) affect different levels of L2 learners accurately assigning the role of agent in $O_{pro}VS$ strings? 7. Does the feature of homophony (+/–) affect different levels of L2 learners accurately assigning the role of agent in $O_{pro}VS$ strings? 8. Which factors predict different levels of L2 learners accurately assigning the role of agent in $O_{pro}VS$ strings?
Processing + Production + Placement	1. Is there a relationship between different levels of L2 learners' development of OVS processing, their accurate production of object pronoun forms, and their accurate placement of a pronoun preverbally in obligatory $O_{pro}V$ contexts? 2. Do the linguistic features that affect different levels of L2 learners' OVS processing also affect morphologically accurate oral production and placement of object pronouns preverbally in obligatory $O_{pro}V$ contexts? 3. Which factors predict different levels of L2 learners' development of OVS processing, their accurate production of object pronoun forms, and their accurate placement of a pronoun preverbally in obligatory $O_{pro}V$ contexts?

Variable refers to the fact that interlanguage may contain different forms under different task circumstances. In this section, we will explore the systematic and variable nature of interlanguage.

We selected a set of morphological features and analyzed their effect on OVS processing, accurate clitic object pronoun form production, and the placement of a pronoun in an obligatory preverbal context (OproV). The morphological features were: Case (accusative/dative), Person (1st/3rd), Number (singular/plural), Gender (masculine/feminine/unmarked) and Homophony (+/–). We examined the performance of one group of learners' production and placement of pronouns (Chapter 6). We examined the performance of a subset of these learners processing object pronouns in preverbal position (Chapter 7). Then, we examined the performance of a subset of these learners processing, producing, and placing object pronouns (Chapter 8). In Tables 9.2–9.4 we summarize the results of our statistical analyses both overall and by level for the larger group and the smaller (subset) group. The columns with the overall results reflect interlanguage systematicity, whereas the shading in the level columns indicates its variability.

Table 9.2 Processing: Significant features overall and in larger group/smaller group

Feature	Overall	Level 1	Level 2	Level 3	Level 4
Case	n/n	y/n	y/n	n/n	n/y
Person	y/y	n/y	y/y	y/y	y/y
Number	n/n	n/n	n/y	n/n	y/n
Gender	y/y	y/y	y/y	y/y	y/n
Homophony	y/y	y/y	n/n	y/n	n/n

Note. n = the feature is not statistically significant. y = the feature is statistically significant.

Table 9.3 Production: Significant features overall and in larger group/smaller group

Feature	Overall	Level 1	Level 2	Level 3	Level 4
Case	y/y	n/n	y/n	y/y	y/n
Person	y/y	n/n	y/n	y/y	n/n
Number	y/y	n/n	y/y	n/y	y/n
Gender	y/y	n/n	y/y	y/y	y/n
Homophony	y/y	n/n	y/y	y/y	y/n

Note. n = the feature is not statistically significant. y = the feature is statistically significant.

Table 9.4 Placement: Significant features overall and in larger group/smaller group

Feature	Overall	Level 1	Level 2	Level 3	Level 4
Case	y/y	y/y	n/y	y/y	n/n
Person	n/n	y/n	n/n	n/n	n/n
Number	y/y	y/n	n/y	y/y	n/n
Gender	y/y	y/n	n/n	n/y	n/y
Homophony	y/y	y/n	n/n	n/y	n/n

Note. n = the feature is not statistically significant. y = the feature is statistically significant.

The results of our overall analyses demonstrate the systematic effect of these morphological features on interlanguage development—that is, the same features that were significant and not significant for the larger groups were also significant or not for the smaller group. This pattern in the various learners' performance was found for OVS processing, accurate form production, and placing a pronoun in OproV contexts—that is, in all aspects of interlanguage we investigated. In Tables 9.2–9.4 we shaded the cells in which the effect of the morphological feature varied. The effect of these morphological features at specific levels demonstrates the variability in interlanguage—that is, the feature was significant for one group but not the other. As can be seen in the tables, we found variability at all but one level for processing, production, and placement. The Level 1 learners' accurate production of forms was so severely constrained that no features were significant for any Level 1 learners.

9.4 Ultimate attainment

An important issue to consider in second language acquisition is whether learners develop a nativelike system; the issue is their ultimate attainment. We present a chapter-by-chapter summary of our findings in order to demonstrate where the learners we investigated performed to native-speaker levels. We use an * to indicate that the result presented is based on statistical analysis. We use shading to indicate an aspect of performance in which second language learners performed to native speaker levels.

In Chapter 5 we explored the forms and function of direct object. We first examined the forms learners and native speakers use to express the direct object function. We focused on the frequency of clitic production, full NP production, and clitic omission. The findings are summarized as follows.

1. Frequency of clitic production: Level 1 < Level 2 < Level 3 = 4 < NS*
2. Frequency of NP production: Level 1 > Level 2 > Level 3 = Level 4 > NS*
3. Frequency of clitic omission: Level 1 = Level 2 > Level 3 = Level 4 = NS*

Learners perform to native speaker levels only in terms of the frequency of clitic omission. Clitic omission decreases as level increases. Learners produce fewer clitics and more NPs than do native speakers. Also clear in these three findings is the language experience of the Level 3 and 4 learners who performed equally in how they expressed or omitted direct objects.

In Chapter 5 we also explored the distribution of forms to grammatical functions. The findings are summarized below. Learners fall short of native speaker levels in how frequently forms perform the direct object function. In other aspects of the distribution of forms to grammatical functions, learners eventually perform to native speaker levels.

1. The forms *me*/*nos*/*te* function as objects for learners and native speakers alike.
2. The forms *me*/*nos*/*te* function as direct objects more frequently for native speakers than for learners for whom they function mostly as indirect objects.

3. The form *lo* functions as direct object, definite article and relative pronoun for advanced learners, very advanced learners and native speakers.
4. The forms *los*/*la*/*las* function as direct objects more frequently for native speakers than learners for whom they function mostly as definite articles.
5. The forms *le*/*les* function as indirect objects and direct objects with the same frequency for very advanced learners and native speakers.
6. The forms *le*/*les* are associated with +animate direct object referents for very advanced learners and native speakers.
7. The form *lo* is associated with –animate direct object referents for all levels of learners and native speakers.
8. The form *la* is associated with +animate direct object referents for very advanced learners and native speakers.

We also performed an appropriate-use analysis in Chapter 5 for which we analyzed whether the direct object clitic pronoun supplied was morphologically appropriate in terms of person, number, and gender. The findings are summarized below:

1. 1st and 3rd person forms combined: Level 2 < Level 1 = Level 3 = Level 4 < NS*
2. 3rd person forms only: Level 2 < Level 1 = Level 3 = Level 4 < NS*
3. 1st person forms only: Level 1 = Level 2 =Level 3 = Level 4 = NS*

The striking aspect of learners' performance is that the first person forms are used appropriately and to native-speaker levels from the earliest level of learner we examined. The acquisitional challenge rests with the third person, multifunctional forms because learners do not attain nativelike appropriate use of these forms. We also included in the appropriate use analyses the number of tokens produced for each of the forms. Those finding are summarized below:

4. Native speakers produce more tokens of *me*/*nos*/*te* than learners (20 versus 2–9, respectively).
5. Very advanced learners produce as many tokens of *lo* as native speakers (48 and 44, respectively).
6. All but Level 1 learners produce as many tokens of *los* as native speakers (6 versus 22–27, respectively).
7. Native speakers produce more tokens of *la* than learners (33 versus 1–23, respectively).
8. Native speakers produce more tokens of *las* than learners (49 versus 9–37).

In general, we can say that native speakers produce more tokens of direct object pronouns than second language learners, including very advanced learners. The exceptions are the two forms that learners use as default direct object pronouns, *lo* and *los*.

We expanded the scope of our investigation in Chapter 6 to examine both direct and indirect object pronouns (i.e. accusative and dative case). In addition to Case, we also examined the effects of the morphological features of Person, Number, Gender, and Homophony. We examined the semantic features of Animacy and Transitivity and the syntactic factor of Word Order. The results for accurate clitic pronoun form production for all persons can be summarized as follows.

Accurate clitic object pronoun form production for all persons:

1. Overall performance: Level 1 = Level 2 = Level 3 < Level 4 = NS*
2. Significant factors affecting native speakers and Level 2–4 learners' performance in the same direction: Case, Gender, and Homophony
3. Significant factor affecting native speakers and all levels of learners' performance in the same direction: Animacy
4. Significant predictor of native speakers' and Level 4 learners' performance: Transitivity

In general, learners perform in nativelike ways in accurate clitic object pronoun form production. The Level 4 learners attain overall accuracy to a native speaker level. Insofar as the same morphological and semantic features that affect native speakers also affect learners, we can assert that the learners' performance is nativelike in a more qualitative way. All learners and native speakers are sensitive to +animate referents. Beginning with the Level 2 learners, whose exposure to Spanish is classroom only, learners develop the same sensitivity as native speakers to Case, Gender, and Homophony. Only the very advanced learners show a native-speakerlike sensitivity to Transitivity.

We also performed separate analyses on third person forms for direct and indirect objects, as we did in Chapter 5. The results can be summarized as follows.

Accurate clitic object pronoun form production for third persons:

5. Level 2 < Level 1 = Level 3 < Level 4 = NS*
6. Significant factor affecting native speakers' and Level 2–4 learners' performance in the same direction: Gender
7. Significant predictor of native speakers' and Level 4 learners' performance: Transitivity

Quantitatively, the Level 4 learners attain a nativelike level of accuracy with third person direct and indirect object pronouns. Qualitatively, they develop the same sensitivity to Transitivity as native speakers have. Also, beginning with Level 2 learners, they develop the same sensitivity as native speakers to Gender.

We also examined the placement of a pronoun in an $O_{pro}V$ context. We summarize those results as follows. Native speakers were not included in the statistical analyses because they scored 100%.

Placement of a pronoun in $O_{pro}V$ contexts:

8. Level 1 < Level 2 = Level 3 < Level 4*
9. Native speakers and Level 4 learners perform equally well (100% and 99.4%, respectively)
10. There are no significant factors affecting Level 4 learners' performance and, by extension, native speakers' performance

The Level 4 learners attain native-like level in placing a pronoun in $O_{pro}V$ contexts.

Finally, we examined the semantics of clitic omission. The results are summarized as follows.

Clitic omission:

7. Level 1 = Level 2 > Level 3 = Level 4 = NS*
8. Significant factors affecting native speakers' and Level 1, 2 and 3 learners' performance: Transitivity

As the level of the learner increased, clitic omission decreased to a nativelike level. From the outset, the learners showed the same sensitivity as native speakers to Transitivity, omitting a clitic with ditransitive verbs more than with transitive ones.

In Chapter 7 we turned our attention to learners processing the semantic role of agent in O_{pro}VS strings. We did not include a native speaker comparison group. We do know, however, that native speakers are 98.3% accurate in assigning agent/patient relations in OVS strings (González, 1997) and we take that figure as the basis of comparison. Our results indicated that the very advanced Level 4 learners engaged in OVS processing significantly more than the other learners. Informally, we assert that they do not, however, attain a nativelike level of performance, 86.3% versus 98.3%, respectively.

In many respects second language learners' developing system for object pronouns in Spanish resembles that of native speakers' system. The similarities are both quantitative in terms of frequency and accuracy and qualitative in terms of factors and features that affect performance. There are also certain respects in which learners' developing systems fall short of those of native speakers. Classroom exposure and explicit instruction are sufficient to establish the inventory of pronouns and their morphological characteristics. Experience abroad is needed to push acquisition forward. Yet, the developing systems of even very advanced learners with an average of 12 months experience abroad are not completely nativelike.

9.5 Summary of the key events in the L2 acquisition of object pronouns in Spanish

An important characteristic of interlanguage is that it is a dynamic system in which we see evolution in how forms map to functions and functions map to forms. Throughout our chapters, we identified key events in the L2 acquisition of object pronouns in Spanish brought to light as a result of our analyses. These key events represent developmental milestones in interlanguage development. We review, chapter by chapter, the key events we identified so that in the following section we can propose stages in the L2 acquisition of object pronouns in Spanish.

9.5.1 Chapter 5

The function-to-form analyses presented in Chapter 5 showed that the developmental milestone L2 learners must first reach is to actually produce a direct object in pronominal form. The developmental trajectory across levels is to decrease the production of full NP objects and to decrease omitting objects as pronominal object

production increases. Learners who produced no object pronouns had to be eliminated from several analyses. Another key event we identified was the developing system's accommodation of more forms, especially third person forms (Level 2), although all forms but *le*/*les* are present in the production of Level 1 learners. The developmental milestone is for learners to possess a complete inventory of object pronouns.

The form-to-function analyses also revealed key events in the L2 acquisition of object pronouns in Spanish. From the outset, the pronoun *lo* is predominantly used as a direct object, where as *los*/*la*/*las* are predominantly used as definite articles. Key events in acquisition are for these forms to perform other functions in interlanguage: *lo* as definite article and relative pronoun (Level 3) and *los*/*la*/*las* as object and relative pronouns. The forms *le*/*les* are always used to express object functions. A key development in interlanguage is to use *le*/*les* as direct objects as well as indirect objects. Subsequently, learners must restrict their direct object function to +animate referents. The Level 2 learners produced *le*/*les* with both + and –animate referents. The Level 3 learners moved to a much higher proportion of +animate referents whereas the Level 4 learners and the native speakers exclusively produced +animate referents.

Animacy is also a feature that figures into the acquisition of other third person forms. The forms *lo* and *la* were initially almost exclusively associated with –animate referents. But a key event in the development of object pronouns is to use *la* with +animate referents. Only the advanced learners and the native speakers associated +animate with *la*.

We also analyzed learners' frequency of use of forms versus their appropriate use in obligatory contexts in Chapter 5. We already noted that a key event occurred in acquisition of the Level 2 learners' accommodation of more pronoun forms in their production such that they produce a complete inventory of forms. The appropriate use analysis demonstrated that this event is accompanied by another, i.e., a decrease in accuracy, thus revealing U-shaped development. We already noted that *lo* functions primarily as a direct object. Our analyses revealed that learners rely on (overuse) *lo*/*los* as default forms and then on *lo* as a default form. Consequently, a key event in interlanguage development is for the appropriate use of *lo* and its frequency of use to align at the advanced levels. When this happens we see a parallel key development: the production of feminine forms with high degrees of accuracy.

9.5.2 Chapter 6

The analyses presented in Chapter 6 examined the effects of morphological, semantic, and syntactic variables on the production of direct and indirect object pronouns and the placement of a pronoun in $O_{pro}V$ contexts. We identified previously that two key events in interlanguage development occurred among our Level 2 learners—that is, the increase in the inventory of forms produced and the decrease in morphological accuracy. The developing system could grow bigger but could not, at the same time, grow more accurate. The analyses we presented in Chapter 6 point to other key events associated with Level 2 learners. The Level 2 learners' accurate form production was significantly affected by all the morphological variables we analyzed (person, case,

number, gender, and homophony) in contrast to the Level 1 learners who were not sensitive to any morphological variables. The key event is to develop sensitivity to morphology for form production, thereby establishing the base from which the developing system continues to evolve. Sensitivity to morphological variables continues to characterize the performance of Level 3 and 4 learners and, to a lesser extent, native speakers. The importance of developing morphological sensitivity in form production is underscored by the native speakers' performance. The native speakers' and Level 2–4 learners' form production were significantly affected by the same morphological variables (case, gender, homophony) and in the same direction (dative > accusative, masculine > feminine, –homophony > +homophony).

A key event in the acquisition of object pronouns by L2 learners of Spanish is to resolve their syntactic distribution to preverbal contexts early on in development. Doing so means that the position of the pronouns was stable as learners developed sensitivity to morphological form and increased their accuracy with the forms of the object pronouns. A key event in placing a pronoun in $O_{pro}V$ contexts is to cease being sensitive to morphological form—that is, the Level 1 learners' placement of a pronoun in $O_{pro}V$ contexts was significantly affected by all the morphological variables we analyzed (person, case, number, gender, and homophony) in contrast to the Level 2 learners who were not sensitive to any morphological variables. The lack of morphological sensitivity demonstrated that placement in preverbal contexts had been resolved.

We examined the semantic variables of Animacy and Transitivity. The key event in the acquisition of object pronouns by L2 learners of Spanish in terms of clitic omission is to demonstrate semantic sensitivity to transitivity from the outset with omission occurring more often with ditransitive verbs. Ultimately, omission is restricted to ditransitive verbs. Animacy was an important variable to consider in form production. It was a significant predictor of performance and affected the performance of all participants who produced more accurate forms for +animate referents. Even though the Level 1 learners' form production is quite constrained and limited, they showed sensitivity to Animacy from the start. Sensitivity to semantic factors precedes sensitivity to morphological ones.

The variable Transitivity was a significant predictor of overall placement of a pronoun in preverbal contexts. Learners placed more pronouns with transitive verbs than with ditransitive verbs. This and the finding regarding omission indicate that learners are sensitive to discourse factors. It is easier to recover an antecedent in ditransitive contexts.

9.5.3 Chapter 7

The analyses presented in Chapter 7 examined the effects of linguistic context and linguistic features in the L2 processing of clitic object pronouns in Spanish—specifically, assigning the role of agent in $O_{pro}VS$ strings. Overall, the most important of the key events was the shift in balance to more OVS processing than SVO processing. In other words, the key event is to map the function of object to a preverbal pronoun

more frequently than to map the function of subject. This event characterized the performance of the advanced learners who had experience abroad.

Linguistic context was a significant overall predictor of OVS processing, indicating that overall OVS processing was facilitated by subject harmony, significantly so among Level 1 learners. But a key event that took place early (Level 2) was for learners to cease being sensitive to the co-reference of nouns in the linguistic context. This event reflects the development of sufficient linguistic resources and linguistic flexibility not to rely on subject harmony for assigning the role of agent.

There were two key events in the L2 acquisition of object pronouns in Spanish related to the variable Person. Level 1 learners' processing, in contrast to that of the other three levels of learners, was not significantly affected by Person. The first key event associated with Person is to develop a sensitivity with first person forms (Level 2). The second key event is to develop sensitivity to the first and second person deictic forms (Levels 3 and 4). A third key event is not attested in our data: to process deictic and third person anaphoric forms with equal accuracy. Differentiating deictic and anaphoric forms requires the input and interaction available to learners who have experience in Spanish-speaking countries.

The last key event we identified for the development of OVS processing is related to the variable of Gender. Level 1, 2, and 3 learners map the function of object to feminine-marked forms in preverbal position 30.5% to 40.7% and 50.4% of the time, respectively. A key event in the L2 acquisition of object pronouns in Spanish is to process feminine-marked forms more frequently as objects than as subjects. This event takes place somewhere between our Level 3 and 4 learners for the latter processed the feminine-marked forms 87.8% accurately. But this aspect of acquisition is late-acquired, present only in the very advanced learners who have extensive experience abroad.

9.5.4 Chapter 8

We examined the linguistic behaviors of a subset of L2 learners who participated in both our processing and production studies. We analyzed these learners' performance processing the role of agent in O_{pro}VS strings, producing morphologically accurate object pronouns, and placing an object pronoun in obligatory contexts of preverbal position (O_{pro}V). We sought to determine if there were related developments in processing, production, and placement and if the same linguistic features affected the three sets of processes. The key events we identified indicate that L2 learners can get the full inventory of object pronouns and their placement in preverbal contexts from classroom exposure and explicit instruction, but extended and extensive exposure characteristic of experience abroad is needed to push interlanguage development toward higher levels of OVS processing and greater formal accuracy. The following represent seven key events or developmental milestones in the L2 acquisition of object pronouns in Spanish in terms of the three processes we compared in the analyses presented in Chapter 8.

1. A dramatic increase in Level 2 learners' production of all pronouns but especially their increased production of third person forms.

2. A decrease in the formal accuracy of the pronouns Level 2 learners produce.
3. A dramatic increase in Level 3 learners' production of all pronouns but especially their increased production of third person forms.
4. An increase in the formal accuracy of the pronouns Level 3 learners produce.
5. Near-nativelike placement of a pronoun in $O_{pro}V$ contexts by Level 3 learners (93.4%).
6. Assigning the role of agent more accurately than inaccurately (61%) among Level 3 learners.
7. Assigning the role of object to third person pronouns with a high degree of accuracy (83.4%) among Level 4 learners.

9.6 Stages of development in the L2 acquisition of object pronouns in Spanish

Based on the key events and developmental milestones, we now propose developmental stages in the L2 acquisition of object pronouns in Spanish. In Table 9.1 we present the results of our research, which is supported by the results of others, and propose the following development stages. In following with functionalist accounts of language development we propose three stages: Pragmatic, Lexical, and Morphological. The Lexical stage of development for object pronouns in Spanish is quite protracted and we clearly see a line of demarcation between learners with and without experience abroad. We therefore divided the Lexical stage into two.

Our research placed importance on examining not only language production but also language processing. We began with concept-oriented analyses, included appropriate-use analyses, and conducted a psycholinguistic processing experiment. In other words, we have a very rich data source on which to base our stages of development. In keeping with the perspectives that guided our research, we include four aspects of acquisition in each stage of development: processing, production, placement, and multifunctionality. With this table we fulfill the purpose of our research, which was to explore the developmental dimension in the L2 acquisition of object pronouns in Spanish by instructed second language learners.

Table 9.1 Stages in the L2 acquisition of object pronouns in Spanish

PRAGMATIC STAGE: Severe constraints -SVO processing dominates -SVO word order dominates in production and placement -full NPs are produced but no clitic object pronouns are produced -high rate of omission (null clitic) -lack of multifunctionality in the use of forms
LEXICAL STAGE A: Classroom exposure and explicit instruction PROCESSING -SVO processing is as frequent as OVS processing -OVS processing is affected by subject harmony conditions but only at the early part of this stage

-OVS processing is sensitive to certain morphological features
  1st person > 2nd person > 3rd person
  masculine-marked and gender-unmarked > feminine-marked
  –homophony > +homophony

PRODUCTION
-objects are increasingly being expressed with pronouns but to the detriment of formal accuracy
-the full inventory of pronouns present although the 3rd person forms are fewest
-*lo*/*los* function as default clitic form
-morphological sensitivity develops in pronoun production in the later part of this stage:
  dative case > accusative case
  1st person > 3rd person
  singular > plural
  masculine-marked and gender-unmarked > feminine-marked
  –homophony > +homophony
-high rate of omission (null clitic)
-sensitivity to animacy present in omission from outset

PLACEMENT
-syntactic distribution to preverbal slot develops early on
-morphological sensitivity in placement characterizes only the early part of this stage but recedes in influence by the later part of this stage

MULTIFUNCTIONALITY
-highly limited multifunctionality:
  me/*nos*/*te* function primarily as indirect objects
  lo functions primarily as direct object
  los/*la*/*las* function primarily as definite articles
-*le*/*les* function as both direct and indirect objects

LEXICAL STAGE B: Experience abroad
PROCESSING
-OVS processing is more frequent than SVO processing
-OVS processing is sensitive to certain morphological features:
  deictic > anaphoric reference
  masculine-marked and gender-unmarked > feminine-marked
  –homophony > +homophony
-OVS processing of feminine-marked forms reaches a high level of accuracy at the later part of this stage

PRODUCTION
-objects are increasing being expressed with pronouns and with increasing formal accuracy
-*lo* functions as a default clitic in the early part of this stage
-morphological sensitivity continues to characterize pronoun production:
  dative case > accusative case
  1st person > 3rd person

masculine and unmarked > feminine
–homophony > +homophony
-*le/les* become associated with +animate referents
-*la* becomes associated with +animate referents
-frequency of use and appropriate use of 3rd person forms align
-high degree of accuracy with feminine-marked forms
-frequency of omission (null clitic) becomes nativelike

PLACEMENT
-nativelike placement attained

MULTIFUNCTIONALITY
-*lo* functions as a relative pronoun in a nativelike way
-*los*/*la*/*las* function increasingly as direct objects not just definite articles
me/*nos*/*te* function increasingly as direct objects not just indirect objects

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MORPHOLOGICAL STAGE: System completeness
PROCESSING
-OVS processing in all $O_{pro}V$ contexts:
high degree of OVS processing with 3rd person forms
high degree of OVS processing with feminine-marked forms

PRODUCTION
-increased production of objects which are increasingly being expressed with pronouns
-formal accuracy characterizes all forms including:
accusative case
3rd person
plural
feminine-marked
+homophony
-*la* emerges with +animate referents
-clitic omission is rare and restricted to ditransitive verbs

PLACEMENT
-nativelike placement previously attained

MULTIFUNCTIONALITY
-*me*/*nos*/*te* function appropriately as direct and indirect objects
-*le*/*les* direct object function is restricted to +animate referents
-*lo* functions appropriately as direct object, definite article, and relative pronoun
-*los*/*la*/*las* function appropriately as direct object, definite article, and relative pronoun

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Appendix A

Grammar Test

SPANISH LANGUAGE WARM-UP EXERCISE

Read the story below once and circle the answer that best completes each sentence.

Como me gusta ayudar a otras personas y tengo bastante tiempo libre, (1) estoy / tengo / soy voluntaria en un hospital muy grande de la ciudad de Milwaukee. A veces es muy agradable (2) trabajo / trabajar / trabajando allí, pero también, de vez en cuando, tenemos problemas con (3) algún / alguna / alguno paciente difícil y con ciertos doctores arrogantes que se creen muy importantes. Con frecuencia para (4) pasando / pasar / pasado el tiempo, nos reunimos los voluntarios y nos contamos chistes. Un día, un paciente me (5) contó / contaría / conté éste que me pareció muy gracioso:

Dicen que un hombre que tenía cien años se murió y fue directamente al cielo. Allí (6) se / me / les encontró en una enorme cafetería con muchas personas que hacían cola para que les sirvieran la comida. De repente, un hombre vestido de blanco que acababa de llegar, pasó del último lugar hasta el primero sin hacer caso a los demás. El hombre recién llegado al cielo, (7) preguntó / preguntara / preguntaría muy enojado: "Pero, ¿quién es ese señor?" Otro que (8) esperó / esperando / esperaba pacientemente en la cola (9) le / lo / se contestó: "¡Hombre! Ese (10) es / sea / está Dios, pero a veces cree que es médico."

Todos nos reímos, (11) desde que / aunque / tanto que sabíamos que no todos los médicos son así.

Appendix B

Sequence of events in the film

Event	Episode	Focus	Description	Sec.	Ep.
1	1	scene-setting, kitchen, individuals (*se*)	Scene-setting, intro of each person entering kitchen. He and she shake hands, go to work.	10	4:05
2	1	Washing hands (*se; le*)	He washes hands w/ rag gives her rag, she washes hands.	9	
3	1	He washes potato (*la; le*)	He washes potato, she gives him rag, he dries potato.	15	
4	1	He – potatoes (*la*)	He peels potato, cuts it, chops it, puts it in pan.	25	
5	1	She – eggs (*lo; los; le*)	She cracks egg in bowl drops an egg, he hands her rag to clean up mess, she cleans up egg, she beats eggs.	29	
6	1	He gets out garlic (*lo*)	He smells garlic, peels it cuts it, chops it, puts in pan.	25	
7	1	She – onion (*la; le; se; las*)	She takes onion, cuts it, chops it. Onion makes her cry. He gives her rag, she wipes tears, she cuts onion, and puts in the pan.	36	
8	1	He – eggs (*los*)	He cracks eggs, mixes eggs.	17	
9	1	She – potatoes (la)	She cleans potato, peels, cuts, puts in pan	27	
10	1	He – onion (la; las)	He peels onion, cuts it, chops it, puts in pan	19	
11	1	She – garlic (lo)	She smells garlic, peels it, cuts it, chops it, puts in pan	17	
12	1	They hug (se)	They hug each other, exit screen, Jason hands her a rag to wipe tears	14	
1	2	He – cheese (lo)	He smells cheese, cuts cheese.	14	3:26
2	2	She – cheese (lo)	She smells cheese, cuts cheese	7	
3	2	He –cheese (lo)	He cuts it.	4	
4	2	They – cheese (lo)	They put cheese on plate	5	
5	2	They – peas (los)	They put peas on plate	12	
6	2	He – grapes (las)	He washes grapes, puts them in bowl	15	
7	2	She – grapes (las)	They put grapes in bowl	8	

8	2	They – grapes (las)	She washes grapes, puts them in bowl	6
9	2	She – grapes (las, le)	She eats grapes, he disapproves, tells her to stop, she doesn't listen.	11
10	2	She – pineapple (la)	She tries to cut pineapple, struggles, he tells her to do it harder	12
11	2	He – pineapple (la)	He cuts pineapple, chops it	11
12	2	They – pineapple (la)	They put pineapple in bowl, they eat a piece, like it.	10
13	2	They – butter (la)	They smear butter in pan	11
14	2	He sneezes (la; se; le)	He sneezes, gets butter on his nose. She gives him rag, he wipes butter off nose.	10
15	2	She – tortilla (la)	She puts fried potatoes in pan, pours egg batter over them	19
16	2	Hand shake (se)	They shake hands	4
17	2	She – tortilla (se; la)	She serves tortilla and sits	17
18	2	He – wine (lo; se)	He serves wine and sits	17
19	2	They toast	They toast each other and eat	10

Appendix C

Helpful Vocabulary

Video – Part I:

Potatoes	=	papas
Garlic	=	ajo
Eggs	=	huevos
Onion	=	cebolla
Towel	=	toalla
Rag	=	paño
Bowl	=	cuenca
Frying pan	=	sarten
Pieces	=	trozos / pedazos
To put	=	poner
To peel	=	pelar
To cut	=	cortar
To wash	=	lavar
To clean	=	limpiar
To give	=	dar
To dry	=	secar
To cry	=	llorar

Video – Part II:

Cheese	=	queso
Peas	=	guisantes
Pineapple	=	piña
Butter	=	mantequilla
Grapes	=	uvas
Wine	=	vino
Pieces	=	trozos / pedazos
To put	=	poner
To wash	=	lavar
To clean	=	limpiar
To cut	=	cortar
To sneeze	=	estornudar
To toast	=	brindar
To tell	=	decir
To eat	=	comer

Appendix D

Logistic regression statistics for significant predictors of accurate clitic form – Overall

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
level			4	.000	
level (1)	1.82	6.09	1	.003	6.17
level (2)	3.069	.446	1	.000	21.51
level (3)	1.829	.403	1	.000	6.23
level (4)	1.462	.414	1	.000	4.32
animacy (1)	-2	.964	1	.038	.135
person (1)	-18.189	3041.972	1	.995	.000
gender			2	.000	
gender (1)	-1.321	1.01	1	.191	.267
gender (2)	.119	.984	1	.904	1.126
Constant	-2.5	1.034	1	.016	.082

Note. –2 log-likelihood = 447.736, model x^2 = 161.184, *df* = 8, N = 743, *p* =.000, Nagelkerke R^2 = .349, Overall percentage = 87.6%

Logistic regression statistics for significant predictors of accurate clitic form – Level 1

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
animacy (1)	-40.592	15517.228	1	.998	.000
case (1)	-21.075	13333.084	1	.999	.000
Constant	19.689	13333.084	1	.999	3.555E8

Note. –2 log-likelihood = 20.016, model x^2 = 15.325, *df* = 2, N = 45, *p* =.002, Nagelkerke R^2 = .531, Overall percentage = 91.1%

Logistic regression statistics for significant predictors of accurate clitic form – Level 2

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
gender			2	.000	
gender (1)	1.716	1.11	1	.113	5.82
gender (2)	3.738	1.111	1	.001	42
Constant	-2.773	1.031	1	.007	.063

Note. –2 log-likelihood = 76.563, model x^2 = 25.401, *df* = 2, N = 76, *p* =.000, Nagelkerke R^2 = .385, Overall percentage = 77.6%

Logistic regression statistics for significant predictors of accurate clitic form – Level 3

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
gender			2	.051	
gender (1)	18.836	5745.791	1	.997	1.515E8
gender (2)	20.106	5745.791	1	.997	5.392E8
place (1)	-1.539	.438	1	.000	.215
Constant	-19.786	5745.791	1	.997	.000

Note. –2 log-likelihood = 127.739, model x^2 = 46.503, *df* = 3, N = 173, *p* =.000, Nagelkerke R^2 = .371, Overall percentage = 83.2%

Logistic regression statistics for significant predictors of accurate clitic form – Level 4

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
transit (1)	1.459	.488	1	.003	4.3
gender			2	.000	
gender (1)	1.401	.848	1	.098	4.06
gender (2)	2.908	.803	1	.000	18.32
Constant	-4.347	.8	1	.000	.01

Note. –2 log-likelihood = 130.429, model x^2 = 27.365, *df* = 3, N = 212, *p* =.000, Nagelkerke R^2 = .231, Overall percentage = 87.7%

Logistic regression statistics for significant predictors of accurate clitic form – Native

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
trans (1)	1.462	.714	1	.041	4.32
gender			2	.193	
gender (1)	17.157	4283.113	1	.997	28263302.35
gender (2)	19.126	4283.113	1	.996	2.025E8
Constant	-21.985	4283.113	1	.996	.000

Note. –2 log-likelihood = 59.997, model x^2 = 16.532, *df* = 3, N = 237, *p* =.001, Nagelkerke R^2 = .244, Overall percentage = 96.2%

Appendix E

Logistic regression statistics for significant predictors of accurate clitic form in 3rd person contexts only – Overall

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
level			4	.000	
level (1)	1.82	.609	1	.003	6.17
level (2)	3.069	.446	1	.000	21.51
level (3)	1.829	.403	1	.000	6.23
level (4)	1.462	.414	1	.000	4.32
animacy (1)	-2	.964	1	.038	.135
gender			2	.000	
gender (1)	-1.321	1.01	1	.191	.267
gender (2)	.119	.984	1	.904	1.13
Constant	-2.5	1.034	1	.016	.08

Note. –2 log-likelihood = 447.736, model x^2 = 105.11, *df* = 7, N = 583, *p* =.000, Nagelkerke R^2 = .269, Overall percentage = 84.2%

Logistic regression statistics for significant predictors of accurate clitic form in 3rd person contexts only – Level 2

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
gender			2	.001	
gender (1)	.934	1.146	1	.415	2.56
gender (2)	2.911	1.147	1	.011	18.38
Constant	-1.946	1.069	1	.069	.143

Note. –2 log-likelihood = 74.985, model x^2 = 17.164, *df* = 2, N = 67, *p* =.000, Nagelkerke R^2 = .302, Overall percentage = 74.6%

Logistic regression statistics for significant predictors of accurate clitic form in 3rd person contexts only – Level 3

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
gender			2	.051	
gender (1)	18.714	1420.356	1	.999	1.34
gender (2)	19.983	1420.356	1	.999	4.77
place (1)	-1.539	.438	1	.000	.215
Constant	-19.664	1420.356	1	.999	.000

Note. –2 log-likelihood = 127.739, model x^2 = 25.566, *df* = 3, N = 133, *p* =.000, Nagelkerke R^2 = .256, Overall percentage = 78.2%

Logistic regression statistics for significant predictors of accurate clitic form in 3rd person contexts only – Level 4

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
transit (1)	1.4	.494	1	.005	4.05
gender			2	.002	
gender (1)	8.93	.865	1	.302	2.44
gender (2)	2.385	.83	1	.004	10.86
Constant	-3.807	.838	1	.000	.02

Note. –2 log-likelihood = 128.52, model x^2 = 18.879, *df* = 3, N = 176, *p* =.000, Nagelkerke R^2 = .179, Overall percentage = 85.2%

Logistic regression statistics for significant predictors of accurate clitic form in 3rd person contexts only – Native

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
trans (1)	1.462	.714	1	.041	4.32
gender			2	.193	
gender (1)	17.499	7570.983	1	.998	39782729.54
gender (2)	19.468	7570.983	1	.998	2.85
Constant	-22.326	7570.983	1	.998	.000

Note. –2 log-likelihood = 59.997, model x^2 = 11.57, *df* = 3, N = 181, *p* =.009, Nagelkerke R^2 = .19, Overall percentage = 95%

Appendix F

Logistic regression statistics for significant predictors of accurate clitic placement in OV contexts – Overall

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
Level			4	.000	
level (1)	21.408	2849.102	1	.994	1.98
level (2)	19.378	2849.102	1	.995	2.6
level (3)	19.266	2849.102	1	.995	2.33
level (4)	16.126	2849.102	1	.995	10074634.38
trans (1)	1.147	.367	1	.002	3.15
case (1)	2.13	.545	1	.000	8.42
Constant	-23.377	2849.102	1	.993	.000

Note. –2 log-likelihood = 203.753, model x^2 = 125.983, *df* = 6, N = 572, *p* =.000, Nagelkerke R^2 = .451, Overall percentage = 93%

Logistic regression statistics for significant predictors of accurate clitic placement in OV contexts – Level 1

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
case (1)	2.639	.792	1	.001	14
Constant	-1.792	.624	1	.004	.167

Note. –2 log-likelihood = 41.659, model x^2 = 13.978, *df* = 1, N = 41, *p* =.000, Nagelkerke R^2 = .389, Overall percentage = 78%

Logistic regression statistics for significant predictors of accurate clitic placement in OV contexts – Level 2

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
homo (1)	-2.009	1.119	1	.073	.134
trans (1)	2.84	1.096	1	.01	17.12
Constant	-3.171	1.021	1	.002	.042

Note. –2 log-likelihood = 47.687, model x^2 = 14.495, *df* = 2, N = 65, *p* =.001, Nagelkerke R^2 = .325, Overall percentage = 81.5%

Logistic regression statistics for significant predictors of accurate clitic placement in OV contexts – Level 3

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
Number (1)	-1.214	.537	1	.024	.297
Constant	-1.229	.328	1	.000	.29

Note. –2 log-likelihood = 98.516, model x^2 = 5.445, *df* = 1, N = 128, *p* =.02, Nagelkerke R^2 = .075, Overall percentage = 85.9%

Appendix G

Table Logistic regression statistics for significant predictors omission – Overall

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
Level			4	.000	
level (1)	2.249	.522	1	.000	9.48
level (2)	1.464	.554	1	.008	4.32
level (3)	1.452	.546	1	.008	4.27
level (4)	.536	.607	1	.378	1.71
trans (1)	1.803	.199	1	.000	6.07
Constant	-5.397	.517	1	.000	.01

Note. –2 log-likelihood = 889.661, model x^2 = 167.637, *df* = 5, N = 2,856, *p* =.000, Nagelkerke R^2 = .184, Overall percentage = 95.4%

Logistic regression statistics for significant predictors of omission – Level 1

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
trans (1)	1.828	.286	1	.000	6.22
Constant	-3.166	.241	1	.000	.04

Note. –2 log-likelihood = 411.392, model x^2 = 48.102, *df* = 1, N = 700, *p* =.000, Nagelkerke R^2 = .138, Overall percentage = 89.9%

Logistic regression statistics for significant predictors of omission – Level 2

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
trans (1)	1.249	.453	1	.006	3.49
Constant	-3.593	.338	1	.000	.03

Note. –2 log-likelihood = 164.273, model x^2 = 7.592, *df* = 1, N = 473, *p* =.006, Nagelkerke R^2 = .052, Overall percentage = 95.6%

Logistic regression statistics for significant predictors of omission – Level 3

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
trans (1)	2.159	.456	1	.000	8.66
Constant	-4.181	.381	1	.000	.02

Note. –2 log-likelihood = 183.726, model x^2 = 25.712, *df* = 1, N = 619, *p* =.000, Nagelkerke R^2 = .142, Overall percentage = 96%

Logistic regression statistics for significant predictors of omission – Native

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
trans (1)	18.182	2070.043	1	.993	78803653.52
Constant	-21.203	2070.043	1	.992	.000

Note. –2 log-likelihood = 32.355, model x^2 = 13.621, *df* = 1, N = 463, *p* =.000, Nagelkerke R^2 = .307, Overall percentage = 99.1%

Appendix H

Research Instrument for Processing Study

#	**Sentences read by native speaker**
1	Cuando caminaba a la universidad, hablaba por teléfono.
2	Fracisco es un amigo de mi padre. Él estudiará la química el año próximo en Indiana.
3	Susana golpeó a Pedrito.
4	Marta es muy generosa. Te mandará Marta la tarea mañana.
5	El papá de María es muy inteligente. Lo admira María mucho.
6	Tomás y Felipe fueron al baile anoche. Los rechazaron María y Pía varias veces.
7	El auto al tren chocó.
8	Pablo y Pedro no saben cómo llegar a la fiesta pero Carolina y Angela sí. Las acompañan Pablo y Pedro.
9	Linda y Barbara son muy gregarias pero Miguel y Mateo son muy calmados. Les hablan Linda y Bárbara siempre.
10	El niño al hermano golpeó.
11	El papá de María vive en Detroit. Lo admira María mucho.
12	Al tío golpeó Susanita.
13	Susan no está felíz en su matrimonio con Richard. Siempre la critica Richard.
14	Miguel, Mateo, Linda, y Bárbara asisten las mismas clases. Les hablan Linda y Bárbara siempre..
15	Ricardo está en el hospital para visitar a Marta.
16	En la cafetería sirvió a Estela la muchacha.
17	Mis mejores amigos son Susan y Richard. Siempre la critica Richard.
18	Miguel siempre lee lo nuevo. Me dará Miguel la nueva novela de Stephen Hawking.
19	María y Pía son mucho más sofisticadas que Tomás y Felipe. Los rechazaron María y Pía varias veces.
20	Como está en el hospital, visitó a Marcos María.
21	Richard nunca está satisfecho con su esposa, Susan. Siempre la critica Richard.
22	Gloría contó a sus amigas que compró un carro nuevo.
23	Tomás y Felipe son muy extraños y no tienen novias. Los rechazaron María y Pía varias veces.
24	Chocó el auto al tren.
25	La clase de español es difícil. Me ayudará Antonio esta noche.
26	Al niño el tío golpeó.
27	Como van de vacaciones Juana y Virginia compraron boletos.
28	Leo todo tipo de cosa. Me dará Elena la nueva novela de Sue Grafton.
29	Carolina y Angela saben cómo llegar a la fiesta, pero Pablo y Pedro no. Las acompañan Pablo y Pedro.
30	Tú necesitas saber qué tarea que hacer. Te llamará Roberto esta noche.

31 Las novelas policíacas son las más divertidas. Nos dará Carlos la última novela de Patricia Cornwell.
32 El auto chocó al tren.
33 Pensamos salir esta noche. Nos invitó Pablo ir al cine.
34 Gloria contó a sus amigas que Ramón atacó a Roberto.
35 Muchos dicen que el ser humano vivirá en la luna.
36 Diana es la compañera de cuarto de Beatríz. Le da Diana consejos prácticos.
37 Al tren el auto chocó.
38 Gabriela siempre sale y es gregaria. Nos invitó Gabriela ir al cine.
39 Nuria y yo leemos cualquier novela de horror. Nos dio Juan la última novela de Dean Koontz.
40 Diego es muy amigo de Sara. Le da Sara consejos prácticos.
41 Es un placer leer y es divertido. Me dará Carlos la nueva novela de Stephen King.
42 Miguel siempre lee toda novela de espías. Nos dará Miguel la última novela de Robert Ludlum.
43 Al tren chocó el auto.
44 Quiero salir bien en el examen de espanol. Me ayudará Julio esta noche.
45 Hubo un accidente. Al tren chocó el auto.
46 Miguel y Mateo necesitan consejo. Les hablan Linda y Bárbara siempre.
47 Chocó al tren el auto.
48 Es necesario hacer todo el trabajo. Te mandará Esteban la tarea mañana.
49 Elena y Miguel son buenos amigos. Le da Miguel consejos prácticos.
50 María habla frecuentemente con su papá. Lo admira María mucho.
51 Golpeó Susana a Pedrito.
52 Es necesario salir y pasarlo bien. Nos invitó Antonio ir al cine.
53 Golpeó a Pedrito Susana.
54 Sergio siempre sale bien en la clase de español. Me ayudará Sergio esta noche.
55 Carolina, Angela, Pablo, y Pedro van a la misma fiesta. Las acompañan Pablo y Pedro.
56 Ricardo visitó a Susana mientras estaba en el hospital.
57 Marcos contó a sus amigos que piensa comprar una casa.
58 Claudio siempre sabe lo que hacer para tarea. Te llamará Claudio esta noche.
59 Es importante saber las respuestas correctas. Te llamará Jorge esta noche.
60 Su tú quieres, te mandará Sara la tarea mañana.
61 Hacia el padre empujó Juan el carro.
Thank you! The task is now complete.

Appendix I

Example of Answer Sheet for Processing Task

This is your final task. In this task, you will listen to a voice recording of a speaker reading a series of sentences. After each sentence, you should respond to the corresponding questions below by circling either option "a" or option "b". You will hear each sentence only once.

Item No.		**Circle "a" or "b"**	
1.	When does the event take place?	a. future	b. past
2.	When does the event take place?	a. future	b. past
3.	Who will do the helping?	a. I will	b. Julio will
4.	What did the crashing?	a. the train did	b. the car did
5.	Who does the speaking?	a. Miguel and Mateo do	b. Linda and Barbara do
6.	What did the crashing?	a. the train did	b. the car did
7.	Who will send the homework?	a. You will	b. Esteban will
8.	Who gives practical advice?	a. Elena does	b. Miguel does
9.	Who does the admiring?	a. María does	b. her father does
10.	Who did the hitting?	a. Susana did	b. Pedrito did
11.	Who did the inviting?	a. We did	b. Antonio did
12.	Who will do the calling?	a. You will	b. Jorge will
13.	Who will do the helping?	a. I will	b. Sergio will
14.	Who does the accompanying?	a. Carolina and Angela do	b. Pablo and Pedro do
15.	Who did the visiting?	a. Ricardo did	b. Susana did
16.	When will a house be bought?	a. immediately	b. in the future
17.	Who will do the calling?	a. You will	b. Claudio will
18.	Who did the hitting?	a. Susana did	b. Pedrito did
19.	Who will send the homework?	a. You will	b. Sara will
20.	Who pushed the car?	a. Juan did	b. the father of Juan did

Appendix J

Logistic Regression Statistics for Accurate OV Processing

Logistic regression statistics for significant predictors of OVS processing – Overall

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
person			2	.000	
person (1)	-.912	.132	1	.000	.402
person (2)	-.714	.151	1	.000	.49
gender			2	.000	
gender (1)	.073	.147	1	.619	1.076
gender (2)	-.494	.148	1	.001	.61
context			2	.007	
context (1)	-.333	.108	1	.002	.717
context (2)	-.108	.107	1	.315	.898
level			3	.000	
level (1)	1.901	.155	1	.000	6.691
level (2)	1.85	.151	1	.000	6.357
level (3)	1.434	.149	1	.000	4.197
constant	-1.29	.166	1	.000	.275

Note. –2 log-likelihood = 2967.208, model x^2 = 301.437, *df* = 9, N = 2454, *p* =.000, Nagelkerke R^2 = .157, Overall percentage = 63.5%

Logistic regression statistics for significant predictors of OVS processing – Level 1

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
gender			2	.000	
gender (1)	-.963	.249	1	.000	.382
gender (2)	–1.074	.308	1	.000	.342
context			2	.011	
context (1)	-.567	.215	1	.008	.567
context (2)	-.012	.212	1	.956	.988
constant	1.024	.258	1	.000	2.784

Note. –2 log-likelihood = 737.13, model x^2 = 26.702, *df* = 4, N = 551, *p* =.000, Nagelkerke R^2 = .063, Overall percentage = 58.1%

Logistic regression statistics for significant predictors of OVS processing – Level 2

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
person			2	.000	
person (1)	-1.266	.249	1	.000	.282
person (2)	-.735	.282	1	.009	.479
gender			2	.001	
gender (1)	.36	.284	1	.204	1.434
gender (2)	-.673	.276	1	.015	.51
Constant	.375	.196	1	.056	1.455

Note. –2 log-likelihood = 863.868, model x^2 = 34.148, *df* = 2, N = 648, *p* =.000, Nagelkerke R^2 = .068, Overall percentage = 60%

Logistic regression statistics for significant predictors of OVS processing – Level 3

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
person			2	.000	
person (1)	-.585	.174	1	.001	.557
person (2)	-.875	.234	1	.000	.417
Constant	-.122	.103	1	.238	.886

Note. –2 log-likelihood = 949.922, model x^2 = 20.746, *df* = 2, N = 724, *p* =.000, Nagelkerke R^2 = .038, Overall percentage = 60.6%

Logistic regression statistics for significant predictors of OVS processing – Level 4

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
person			2	.000	
person (1)	-2.105	.397	1	.000	.122
person (2)	-2.622	.63	1	.000	.073
homophony (1)	.853	.301	1	.005	2.347
Constant	-1.563	.198	1	.000	.209

Note. –2 log-likelihood = 379.555, model x^2 = 45.623, *df* = 3, N = 531, *p* =.000, Nagelkerke R^2 = .149, Overall percentage = 86.3%

Appendix K

Logistic Regression Statistics for OVS Processing, OV Placement, and Appropriate Production

Logistic regression statistics for significant predictors of OVS processing – Overall

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
level			3	.000	
level (1)	2.03	.216	1	.000	7.61
level (2)	1.998	.224	1	.000	7.37
level (3)	1.649	.207	1	.000	5.2
person (1)	-.844	.14	1	.000	.43
gender			2	.000	
gender (1)	-.02	.156	1	.896	.98
gender (2)	-.584	.158	1	.000	.58
constant	-1.653	.212	1	.000	.19

Note. –2 log-likelihood = 2186.61, model x^2 = 185.751, *df* = 6, N = 2454, *p* =.000, Nagelkerke R^2 = .135, Overall percentage = 64.8%

Logistic regression statistics for significant predictors of OVS processing – Level 1

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
gender			2	.001	
gender (1)	-.981	.261	1	.000	.38
gender (2)	-.942	.312	1	.003	.39
constant	.693	.227	1	.002	2

Note. –2 log-likelihood = 576.956, model x^2 = 15.62, *df* = 2, N = 428, *p* =.000, Nagelkerke R^2 = .048, Overall percentage = 58.9%

Logistic regression statistics for significant predictors of OVS processing – Level 2

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
person (1)	-1.515	.326	1	.000	.22
gender			2	.010	
gender (1)	.238	.374	1	.526	1.27
gender (2)	-.807	.363	1	.026	.45
constant	.502	.264	1	.057	1.65

Note. –2 log-likelihood = 414.672, model x^2 = 30.472, *df* = 2, N = 322, *p* =.000, Nagelkerke R^2 = .121, Overall percentage = 64.9%

Logistic regression statistics for significant predictors of OVS processing – Level 3

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
person (1)	-.564	.157	1	.000	.569
constant	-.234	.093	1	.012	.792

Note. –2 log-likelihood = 1000.006, model x^2 = 13.164, *df* = 2, N = 707, *p* =.000, Nagelkerke R^2 = .023, Overall percentage = 60.9%

Logistic regression statistics for significant predictors of OVS processing – Level 4

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
case (1)	-1.442	.416	1	.001	.236
person (1)	-1.97	.566	1	.000	.14
constant	-.82	.286	1	.004	.44

Note. –2 log-likelihood = 168.067, model x^2 = 25.632, *df* = 3, N = 275, *p* =.000, Nagelkerke R^2 = .176, Overall percentage = 88.7%

LOGISTIC REGRESSIONS – PRODUCTION

Logistic regression statistics for significant predictors of accurate production – Overall

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
level			3	.011	
level (1)	1.492	.739	1	.044	4.47
level (2)	1.912	.611	1	.002	6.77
level (3)	1.047	.576	1	.069	2.85
case (1)	20.78	3914.26	1	.996	1.06E9
person (1)	-37.61	5098.89	1	.994	.000
gender			2	.02	
gender (1)	-20.55	3914.26	1	.996	.000
gender (2)	-19.34	3914.26	1	.996	.000
constant	-3.7	.7	1	.000	.025

Note. –2 log-likelihood = 227.4, model x^2 = 65.02, *df* = 7, N = 381, *p* =.000, Nagelkerke R^2 = .293, Overall percentage = 87.9%

Logistic regression statistics for significant predictors of accurate production – Level 2

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
gender			2	.009	
gender (1)	.606	.967	1	.531	1.83
gender (2)	2.231	.845	1	.008	9.31
constant	2.398	.739	1	.001	.09

Note. –2 log-likelihood = 64.097, model x^2 = 10.636, *df* = 2, N = 69, *p* =.005, Nagelkerke R^2 = .216, Overall percentage = 76.8%

Logistic regression statistics for significant predictors of accurate production – Level 3

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
person (1)	-19.593	5277.596	1	.997	.000
constant	-1.609	.228	1	.000	.2

Note. –2 log-likelihood = 124.355, model x^2 = 17.394, *df* = 1, N = 196, *p* =.000, Nagelkerke R^2 = .165, Overall percentage = 88.3%

LOGISTIC REGRESSIONS – PLACEMENT

Logistic regression statistics for significant predictors of accurate OV placement – Overall

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
level			3	.018	
level (1)	19.327	4330.526	1	.996	2.476E8
level (2)	19.663	4330.526	1	.996	3.463E8
level (3)	18.317	4330.526	1	.997	89329512.28
case (1)	2.429	1.068	1	.023	11.35
number (1)	-.89	.447	1	.046	.411
constant	-22.695	4330.526	1	.996	.000

Note. –2 log-likelihood = 170.085, model x^2 = 49.681, *df* = 5, N = 381, *p* =.000, Nagelkerke R^2 = .279, Overall percentage = 91.6%

Logistic regression statistics for significant predictors of accurate OV placement – Level 1

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
case (1)	20.040	9748.227	1	.998	5.048E8
constant	-21.203	9748.227	1	.998	.000

Note. –2 log-likelihood = 23.053, model x^2 = 6.54, *df* = 1, N = 38, *p* =.001, Nagelkerke R^2 = .292, Overall percentage = 86.8%

Logistic regression statistics for significant predictors of accurate OV placement – Level 2

Variable	Coefficient *(B)*	*SE*	*df*	Significance	Estimated odds ratio
number (1)	-2.104	.714	1	.003	.122
constant	-.435	.387	1	.261	.261

Note. –2 log-likelihood = 58.985, model x^2 = 10.621, *df* = 1, N = 69, *p* =.001, Nagelkerke R^2 = .225, Overall percentage = 79.7%

Logistic regression statistics for significant predictors of accurate OV placement – Level 3

Variable	**Coefficient *(B)***	***SE***	***df***	**Significance**	**Estimated odds ratio**
homophony (1)	-19.104	4550.958	1	.997	.000
constant	-2.098	.294	1	.000	.123

Note. –2 log-likelihood = 82.094, model x^2 = 13.567, *df* = 1, N = 196, *p* =.000, Nagelkerke R^2 = .173, Overall percentage = 93.4%

Notes

Chapter One

1 An early example of this analytic approach is Huebner (1979, 1985), in which the production of English definite articles by a native-Hmong speaker was analyzed. Huebner found that the learner, while not producing definite articles in a nativelike manner, did produce them systematically, following his own interlanguage rules governing the respective form-function associations. The study demonstrated that form-function analyses reveal systematic form-function associations and also capture systematic restructuring of form-function associations as the L2 learner moves from one stage of development to another. This is due to the complete distribution of one form to varying functions evident in the analysis, which ultimately provides researchers with the means to delineate systematic variability from idiosyncratic form-function associations (Ellis and Barkhuizen, 2005).

Chapter Two

1 The published abstract of Makino's 1979 PhD dissertation is cited in Dulay, Burt, and Krashen (1982, p. 207) and Ellis (1985, p. 220). It was published in article form (Makino, 1980) but we were unable to access it. As the abstract states, Makino investigated native speakers of Japanese studying English in Japan. The order he found supported that of Dulay & Burt and he found no differences in order based on class grade (8th or 9th), textbook used in English classes, or location of school (urban/rural).

2 Van Naerssen (1986) presented the morphemes as a rank order. For morphemes of equal difficulty she assigned them the same rank. We have placed morphemes of the same rank difficulty in the same box, following Krashen (1977).

3 Turner (cited in Ellis, 1985 and van Naerssen, 1986) presented a paper in 1978 about which Ellis states the following:

> Turner (1978) investigated three L2 learners and found that the order of instruction of a set of grammatical morphemes did not correlate very highly with the order of acquisition. In other words, the teaching and learning orders were different. (Ellis, 1985, pp. 218–19)

4 Gunterman (1992) compares her results to Ryan (1991), an unpublished master's thesis that formed the basis of Ryan & Lafford (1992). We refer here to Ryan and Lafford (1992) rather than Ryan (1991) for consistency.

5 Lafford (2006) reviewed the empirical studies on the L2 acquisition of Spanish in which direct comparisons were made between study abroad learners and their at-home counterparts. Her review brought this research to our attention.

6 Gunterman (1992b) is treated more extensively in the section on developmental sequences. We refer to her work here as "in-country" as opposed to "study abroad"

because the data-gathering period took place after intensive language training and then after the Peace Corps volunteers' in-country service.

Chapter Three

1 Examples of such studies are Corder (1967), in which the notion of systematic errors in L2 performance was put forth, and subsequently, Selinker's (1972) proposal of interlanguage theory.
2 The model of input processing will be discussed later in this volume, whereas we limit our discussion of form-function mapping to the operating principles in this chapter.
3 As Long (2007) points out, the field of SLA has witnessed what he referred to as "theory proliferation," with the number of current models and theories reaching over 60. We selectively choose to review current models that coincide with a functionalist approach to SLA, and that focus on form-function mapping specifically.
4 This claim has brought some criticism to the nativization model (Dussias, 2003). Andersen (1990) invites research to better tease apart the different principles, which this study does not aim to do.
5 Specific semantic predictors of object expression will be discussed separately from our analysis of form-function mapping.
6 Our use of the term *default* refers to syntactic and morphological constructions, the latter of which coincides with what other researchers working within the generative framework refer to as *underspecified* forms (see, for example, McCarthy, 2008).
7 The data indicated in Table 3.1 do not include data reported by Andersen regarding the reflexive clitic *se*. I will limit my discussion of previous research to object pronouns.
8 This finding contributed to Andersen's formulation of the *Transfer to Somewhere* principle (Andersen, 1990)
9 Andersen excluded the form *lo* from his description of homophonous forms. The form does, however, encode other grammatical functions, though perhaps less frequently.
10 VanPatten's and Andersen's analyses were from function to form. They recorded David's production of clitics in direct object, indirect object, and reflexive contexts. His analysis did not record the distribution of direct object clitics to other grammatical or semantic functions in David's interlanguage, which prevents us from knowing the complete mapping between function and form as specific forms are integrated in the developing system.
11 We exclude Torres' data for the second person singular (*te*) due to limited production of the form.
12 The semantic feature of animacy, referred to in Stage 1, will be further explored in Chapter 5.
13 This provides support for the transfer-to-somewhere principle by demonstrating the transfer of word order by a learner whose native language follows a canonical SOV pattern, thus providing contrast to the native English speakers.
14 Borgonovo, Bruhn de Garavito, Guijarro-Fuentes, Prévost, and Valenzuela (2006) use the term *vulnerable* to refer to interface areas, such as syntax/semantics and syntax/pragmatics, which are more complex and more difficult to acquire than syntactic features alone.

15 Other works investigated such phenomena using grammaticality judgment tasks; we focus on L2 production here (see, for example, Bruhn de Garravito and Guijarro-Fuentes, 2002).
16 Their study divided the monolingual group into adults and children. We limit our review to their findings regarding adult speakers.
17 Using an interpretation and acceptability task, Borgonovo et al. (2006) also investigated the acquisition of object omission according to the semantic feature [+/- specific] by twelve advanced L2 learners of Spanish whose native language was Brazilian Portuguese. They found that learners correctly interpreted an object over 80% of the time when its referent was +specific, and that they accepted overt clitics with –specific DPs, which is not nativelike. They concluded that overt clitics are underspecified in interlanguage grammar with regard to the feature +specific, resulting in the overgeneralization of overt clitics at advanced levels.
18 While we acknowledge the contribution of research examining the interface of syntax and morphology within the generative framework, our focus here is morphological variability.
19 Perales and Liceras (2009) found similar results using a grammaticality judgment task. Learners more accurately identified ungrammaticality of indirect object clitics than with those of the direct object.

Chapter Five

1 Defining nativelike use of object pronouns is not a simple task. First, the choice to pronominalize a topic in discourse is not categorically nativelike or non-nativelike, but rather, often depends on discourse-pragmatic factors. Second, sociolinguistic variation prevents us from categorizing prescriptive dative forms as always realizing dative functions, and prescriptive accusative forms as always realizing accusative functions. Native speakers who are considered *leísta*, for example, use the clitic pronoun *le* in accusative contexts in which the referent is singular, masculine, and animate. Determining accuracy among the L2 learners in the present study, therefore, required the ability to determine whether or not their interlanguage manifested patterns of such sociolinguistic variation.
2 Previous research has correlated the early use of indirect object pronouns with their high frequency in the input as dative experiences and with ditransitive verbs, such as *dar* and *poner*, thus resulting in the L2 production of unanalyzed chunks (VanPatten, 1990; Zyzik, 2008).
3 As the degrees of freedom in the F statistic indicate, the number of participants included in these analyses was smaller than the original participant group. This occurred because not all participants produced object clitics, and they were therefore excluded from the analysis. The breakdown of the number of participants, by level, was 16 at Level 1, 18 at Level 2, 24 at Level 3, 17 at Level 4, and 15 Native Speakers, thus equalling 90 participants total.
4 The total number of participants providing data for third person forms only was 69. The breakdown per level is as follows: Level 1=5; Level 2=15; Level 3=18; Level 4=16; Native=15.
5 The total number of participants providing deictic forms analyzed here was 61. The breakdown per level is as follows: Level 1=12; Level 2=8; Level 3=16; Level 4=14; Native=11.

Chapter Seven

1 This chapter is a much expanded and revised version of Lee, J. F. and Malovrh, P. A., 2009, "Linguistic and non-linguistic factors affecting OVS processing of accusative and dative case pronouns by advanced learners of Spanish," in J. Collentine, M. García, B. Lafford and F. Marcos Marín (eds), *Selected Proceedings of the 11th Hispanic Linguistics Symposium*, pp. 105–16, Somerville, MA: Cascadilla Proceedings Project. A notable difference is that we currently include the performance of more participants, 72 rather than 52. The subject populations are different in that the present study distinguishes the Level 2 and 3 participants by study abroad experience. Also, the Level 4 participants in Lee & Malovrh (2009) are undergraduate students majoring in Spanish whereas our current Level 4 participants are postgraduate students who teach Spanish language courses. They are more advanced and more experienced with Spanish than our 2009 participants.

Chapter Eight

1 We note that not all participants of the previous chapters overlapped, however. That is, not all of the 72 participants studied in Chapter 7 had produced clitics in OV contexts for the data analyzed in Chapter 6, for example. In addition, not all participants who produced clitics in OV contexts completed the processing task. In the present chapter, however, all 59 participants analyzed produced clitics in OV contexts and completed the processing study. Since there may be slight changes in participants from previous chapters, results will not always be exactly equal to those found in Chapters 6 and 7.

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Index