

## Chapter 1

### Introduction

This dissertation examines the pro-drop parameter in second language acquisition (SLA), based on a study of the acquisition of Spanish by native speakers of English. It argues that despite extensive research on pro-drop, accounts of pro-drop based on standard generative grammatical theories still contain a number of inadequacies. This dissertation explores an alternate account by applying a particular theory of language acquisition and representation, Optimality Theory (Prince and Smolensky 1993, Grimshaw 1997), and a particular learning algorithm within this framework, the Constraint Demotion Algorithm (Tesar and Smolensky 2000), to address the pro-drop question from a developmental perspective.

The overarching goal of this study is to provide an account of the developmental stages in the second language learning of three grammatical properties: null subjects, inversion, and *that-trace*. Although there is no lack of such accounts from earlier generative perspectives, and although some individual properties associated with pro-drop have received accounts within an Optimality Theory framework, the need remains for a comprehensive developmental account from an Optimality-theoretic perspective of the grammatical properties traditionally associated with pro-drop. This dissertation begins to address that need.

The study here is based on several empirical tests (a translation task, a pilot study, and a grammaticality judgment task) that were administered to adult native English

speakers who were studying Spanish at the University of South Carolina or the Pennsylvania State University. Each task was designed to investigate learner competencies regarding null subjects, inversion, and *that-trace*. The translation task involved 124 participants from four proficiency levels (beginning, intermediate, advanced, and native), a pilot of a 36-item grammaticality judgment task was administered to 39 intermediate learners of Spanish and the grammaticality judgment task involved 207 participants from five proficiency levels (beginning, intermediate, advanced, near-native, and native).

A key conclusion from these studies is that the acquisition of Spanish (a pro-drop language) by native speakers of English (a non-pro-drop language) involves a reranking of universal syntactic and discoursal constraints in these languages. Specifically, this dissertation argues that acquisition of Spanish occurs here through the demotion of certain syntactic constraints in the English native (L1) grammar so that these constraints are dominated by discoursal constraints in the Spanish second language (L2) grammar.

Therefore, this cross-sectional study not only tracks learners through developmental stages, but it is also theory driven, because the theory of grammar used in this dissertation permits specific predictions about the interaction and relative importance of constraints in Spanish and English and, ultimately, of the acquisitional route learners take. The application of Optimality Theory to interactions between discourse and syntax in second language learning represents a new and potentially productive line of inquiry that may advance our understanding of both second language learning and grammatical theory.

An overview of the dissertation follows: Chapter 1 (this chapter) provides a general description of the goals pursued in this dissertation, as well as a brief description of the contents of each chapter. At the beginning of each chapter, a more informative introduction outlines the goals and organization of that chapter. Chapter 2 discusses the major proposals regarding pro-drop as a theoretical construct. The chapter first looks at the early proposals to account for the cross-linguistic distribution of null subjects through a rule-based application of universal principles of grammar. Then it covers later proposals regarding pro-drop, focusing on theories of licensing and identification, morphological uniformity and, more recently, Minimalist accounts based on the strength of features. Subsequently, Chapter 2 considers a significant shift in linguistic theorizing to an approach that has provided new tools for reconsidering the pro-drop question — Optimality Theory (OT). The chapter provides a brief introduction to the major tenets of OT and discusses how recent research in OT may challenge previous conceptions of a ‘pro-drop parameter’ and may demonstrate the need to consider interactions of constraints from various levels of grammar. Chapter 2 also addresses recent critiques of OT on the basis that certain OT analyses (such as the one in this dissertation) violate the principle of the autonomy of syntax. Finally, the chapter reviews the limitations of the proposals regarding pro-drop to date, emphasizing the need for further empirical evidence from acquisition studies and for a developmental analysis that reflects that evidence.

Chapter 3 introduces major issues involved in acquisition research related to the question of pro-drop. Key issues considered in this chapter include the logical problem of language acquisition (Chomsky 1981), the subset principle (Angluin 1978, Berwick 1985, Manzini and Wexler 1987), transfer, access to Universal Grammar (UG), and

issues of learnability. The last of these, learnability, is a central concern to any developmental account, and this dissertation focuses on a particular learning algorithm emerging from research in learnability: the Robust Interpretative Parsing/Constraint Demotion Algorithm of Tesar and Smolensky (2000). Chapter 3 reviews a number of studies that have considered these issues from a parameter-setting perspective and two that have provided SLA accounts from an OT perspective: Park (2000) and LaFond, Hayes, and Bhatt (2001).

Chapter 4 begins with a discussion of the specific research questions and hypotheses pursued in this study, the motivation for using a grammaticality judgment task as the centerpiece for this study, the limitations and validity of a study based on grammaticality judgments, and a brief description of how the grammaticality judgment task in this study was constructed (using a translation task) and refined (through a small pilot study). This chapter then discusses the research pool used for the translation task, the pilot, and the main study, and the precise procedures used for collecting the data. Finally, this chapter discusses in greater detail the creation of the tasks and the predicted results. Four hypotheses are presented in Chapter 4. The first predicts that an implicational hierarchy will be found between the initial acceptability of null subjects, inversion, and *that-trace*, supporting the conclusion of Liceras (1989), who claimed that null subjects are acquired before inversion, and inversion is acquired before *that-trace*. The second hypothesis proposes that this hierarchy requires further refinement because acquisition here must distinguish ‘initial acceptability’ of these properties from their ‘correct use’. The third hypothesis regards the ultimate attainment of learners and predicts that at least some L2 learners will converge on native-like usage of the

grammatical properties associated with pro-drop, but that this convergence will come only in the later stages of L2 acquisition and as a result of a sensitivity to the discursial constraints of the L2. The final hypothesis is that the developmental path taken by L2 learners will find a natural interpretation as the interaction of discreet discursial and syntactic constraints, and that this interaction will provide support for the operation of the Constraint Demotion Algorithm of Tesar and Smolensky (2000).

Chapter 5 presents the results obtained from the translation task, the pilot task, and the main grammaticality judgment task. It discusses the coding and data analysis procedures that were used for each task, and then it presents the statistical results of those tasks. Significant differences between the responses of the various proficiency levels are discussed, organized around the three grammatical properties of null subjects, inversion, and *that-trace*. An interpretation of these results in light of the first three hypotheses of the dissertation is given. The empirical results reported in Chapter 5 show that learners begin to drop subjects indiscriminately in the early stages of acquisition. Soon after this, they begin to accept complementizer + null subject sequences, but they do not choose these sequences as consistently as native speakers. For native speakers, choices regarding subject inversion in declarative sentences remains relatively free in cases where the inverted constituent has the discourse feature of focus; where focus is lacking, the non-inverted choice is preferred. Although early learners select inverted options less frequently than later learners, their choices for inversion also appears to be affected somewhat by discourse conditions. Learners eventually identify the correct discourse conditions related to the dropping of subjects, and in the later stages of acquisition, they appear to acquire native-like judgments related to *that-trace*.

These results suggest that the first hypothesis, regarding evidence for the implicational hierarchy of Licerias (1989) of null subjects > inversion > *that-trace*, finds little support in this study. In this study, the acceptance rate of *that-trace* items among beginners is higher than the acceptance rate of inversion. Nevertheless, while this study does not provide additional support for Licerias' hierarchy, it also does not disconfirm it. This study provides evidence that, even for early learners, the choice of inversion is affected by discourse context, and a lower acceptance rate of inversion does not demonstrate that inversion is acquired after *that-trace*, if choices related to inversion are optional in the native grammar but the choice of a complementizer in the native grammar is obligatory.

This study confirms the second hypothesis that claimed 'initial acceptability' must be distinguished from 'correct use' for each of these grammatical properties. For example, learners here made judgments indicating an acceptance of null subjects or *that-trace* long before they had accurate control of the properties of the L2 grammar regarding these conditions. Also, the third hypothesis, that some L2 learners will converge on native-like usage of these properties as a result of sensitivity to discursal constraints of the target language, is supported by these results. This study showed no statistically significant differences between near-native and native speakers, and there is ample indication both that the shifts in grammar leading to the near-native proficiency level involved increasing sensitivity to discursal conditions and that the relationship between these conditions and the syntactic constraints in the grammar is important.

Chapter 5 concludes with a discussion of the limitations of the study revealed by the results. The discussion focuses on certain interpretational differences that appear

inherent in the use of grammaticality judgments. It also suggests further refinements that could be made to the translation task (regarding the total number of speakers translating each item) and the grammaticality judgment task (regarding the number of items used to test particular subconditions).

Chapter 6 concludes the dissertation with an analysis of the developmental path taken by L2 learners in this study. In so doing, it addresses and supports the final hypothesis of the dissertation, that the learning path taken here displays an interaction between discursual and syntactic constraints under the operation of the Constraint Demotion Algorithm (CDA) of Tesar and Smolensky (2000). The analysis in Chapter 6 argues that the developmental stages displayed in this data can be explained as an interaction between the syntactic and discursual constraints shown in Figures 1.1–1.2:

Figure 1.1 Syntactic constraints

- a. SUBJECT (SUBJ): The highest A-specifier in an extended projection must be filled. Failed when a clause lacks a subject in the canonical position. (Grimshaw 1995)
- b. PARSE: Parse input constituents. Failed when input elements are not overtly parsed in the output.
- c. FAITH[SUB]: The output value of [SUB] (for ‘subordination’) must be the same as the input value. (Baković 1997)
- d. T-LEX-GOV: Trace is lexically governed. (Grimshaw 1997)

Figure 1.2 Discursual constraints

- a. ALIGNFOCUS-RIGHT (AF-RT): Align the left edge of focus constituents with the right edge of a maximal projection. Failed by non-aligned foci. (Grimshaw and Samek-Lodovici 1995)
- b. DROPTOPIC (DROPT): Leave arguments coreferent with the topic structurally unrealized. Failed by overt constituents which are coreferential with the topic. (Grimshaw and Samek-Lodovici 1995)

Chapter 6 provides a detailed description of how the mechanism of constraint demotion works in the acquisition of null subjects, inversion, and *that-trace*. The chapter

also suggests some non-parametric explanation of why these conditions tend to pattern together (e.g. why inversion effects frequently appear in those languages that permit null subjects), concluding that the various properties associated with pro-drop are acquired by second language learners in a particular developmental order that is predictable by the CDA. These results challenge traditional parameter-setting accounts of pro-drop by arguing that the grammatical properties associated with pro-drop are actually epiphenomena resulting from particular constraint rankings within a grammar, not from the switching of a parameter to a particular inviolable setting.

This dissertation also argues against accounts in which autonomous applications of syntax fail to admit interactions between syntax and discourse. The developmental path taken by the L2 learners in this study is best characterized in terms of the interaction between these two components of grammar. There is additional evidence that the interaction between syntax and discourse for L2 learners is not parameterized because lower-ranked constraints sometimes remain operative and higher-ranked constraints are sometimes violated. This result would not be expected in a model of grammar built on inviolable principles.

Further applications of OT to questions of second language learning hold a great deal of promise. The goal of this dissertation is not only to provide new insights into important interfaces between syntax and discourse in L2 acquisition, but also to highlight the need for this type of research and encourage others to conduct further investigations that will advance our understanding of second language acquisition.