Variation in Linguistics

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Second Language Acquisition, Discourse Studies, Sociolinguistics, Syntax

Edited by

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Cambridge
Scholars
Publishing

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This book first published 2023

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN (10): 1-5275-2912-6
ISBN (13): 978-1-5275-2912-0

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FOREWORD

KAILEY PRESTON, JOSHUA WEIRICK,
VANESSA SHEU AND ALEXIS ZHOU

Variation and Language

Language consists of a set of rules and conventions which are shared by a community of speakers (Crystal, 1995). These coordinated rules and conventions make up the various domains of linguistic knowledge including the lexicon, the phonological and phonetic inventories, syntactic structures, and cultural and pragmatic conventions. Yet, despite the fact that communication depends on speakers acquiring and reproducing a language in a rule-governed way, variation is nonetheless constantly observable—from minor production errors by the individual speaker to systematic changes in linguistic rules which eventually come to characterize entirely different and mutually unintelligible varieties. In the most superficial sense, variation occurs in the surface-level production and interpretation of linguistic rules, as when slips of the tongue occur. Speakers vary behaviorally in their actualization of internalized linguistic rules, resulting in linguistic performance which does not match their linguistic competence (Chomsky, 1965). This can more greatly impact second language learners with less stable linguistic forms, who in particular show even greater variability in the forms they use for expressing the same linguistic function, e.g., using both "depend on" or "depend of" (Römer & Yilmaz, 2019). Widening the scope to variation among speech communities, communities which are mutually intelligible with one another can nonetheless vary in lexical items, morphosyntax, and pronunciation. Given isolation and time, these variations can lead to differences significant enough to result in different varieties entirely. Therefore, variation writ both small and large is a natural dynamic of language. This accounts for the prevalence of variation as a topic of interest among scholars in different subfields of linguistics, including second language acquisition (SLA), sociolinguistics, and theoretical syntax, the disciplines featured in this volume.

Second language acquisition (SLA) seeks to characterize language learners' linguistic systems and explain how those systems are formed. Variation is a notable dynamic in both second language learners' acquisition and application of linguistic rules. First, a language learner's linguistic system—known as interlanguage (Selinker, 1972)—is shaped both by the rules of the new language system and transfer of the rules from an existing language system. While the potential domain of interlanguage lies between existing and new sets of rules, the actual interlanguage structures which emerge are based on both speaker-internal and speaker-external factors, such as quantity and quality of forms in the input, the need to balance efficient use of language processing resources with communicative efficacy, individual differences such as age or motivation, and sensitivity towards and identification with the norms of their speech communities. Thus, interlanguage forms vary in a rule-bound way between previous and target linguistic systems while being influenced by a variety of factors. Secondly, the production and usage of these particular forms can change over time, in part based on the presence of similar forms or alternatives in the input. Complex Dynamic Systems Theory (CDST) is one theory which describes how the emergence of forms is driven by equivalent or competing forms in the input and how usage of these forms can stabilize into "attractor" states (Larsen-Freeman, 2006; de Bot, Lowie, & Verspoor, 2007). CDST views second language learning through the lens of a complex cognitive ecosystem which supports the usage and development of linguistic forms, given external resources and internal resources such as attention, working memory, or motivation. A CDST perspective, which describes complex systems' sensitivity to initial conditions, can account for why second language learners' production systems may also be more susceptible to external pressures, and their internal rules may also be less stable than native speaker rules. Thus, determining the source(s) of the variation that characterizes the second language learner's developmental trajectory is a central goal in research on second language acquisition and bilingualism (see Wind, this volume).

Analyzing variation through a sociolinguistic lens reveals how phonetic, morphosyntactic, or lexical forms differ systematically among distinct sets of correlated features, or language varieties. It examines how these alternations are associated with contextual (e.g., genre) factors, social (e.g., class) factors, or individual (e.g., gender) factors. The variationist approach to analyzing phonetic features based on social factors is exemplified in Labov's (1966) foundational study of department store clerks. Using naturalistic short-response elicitation, Labov's study demonstrated how the realization of /ɹ/ varied based on the social classes that clerks aspirationally

identified with. Likewise, Eckert's (1988) study of high-school students in a Detroit suburb revealed how teenagers' use of phonological variables signaled their affiliation with a particular socioeconomic class and culture. Such variationist studies of phonetic features can shed light on the social meanings and identities that such features index (see Maillot, this volume). Other areas of sociolinguistics involve questions of power and prestige, especially the question of which particular varieties are associated with social meanings of being standard or non-standard. Careful analysis of phonetic features within a specific population can reveal whether speakers who claim to speak a prestige variety actually do (see Vakili & Mohammed, this volume). Lastly, sociolinguistics also encompasses questions of how language is used to signal different contexts of language use, i.e., genre. Examining variation in these linguistic conventions that distinguish specific genres can identify the different linguistic features that indicate different stances, registers, and voices (see Głaz, this volume).

Abstracting away from variation due to linguistic experience (e.g., L1 background, age of acquisition) and aspects of the discourse and social contexts of language use (e.g., genre, social class), research in generative syntax explores variation from a broader cognitive perspective by identifying universal syntactic principles, structures, and categories and their varying expressions across languages. For example, generativists explain the variation between head-initial and head-final word orders (e.g., French vs. Japanese) as a choice in the linearization parameter of a universal hierarchical structure. More recently, the Minimalist Program assumes a principle of Binary Merge with a Hierarchy of Functional Projections (Adger, 2003). These functional projections are said to reflect universal syntactic categories which project hierarchically into a universal sequence. While the hierarchy is universal, strong and weak features might attract different elements to different positions in the structure, leading to different word orders across languages. For instance, it has been proposed that English has a weak V-feature while French has a strong V-feature, causing V-to-T movement in French (Hornstein, 2005). This accounts for why main verbs precede VP-adverbs in French (*bois souvent*, lit. 'drinks often') while they follow VP-adverbs in English (e.g., 'often drinks'*)*. Continuing the work of explaining variation within a universal hierarchy of projections, Gallardo (this volume) proposes that aspectual distinctions between clauses may be attributed to the type of aspectual head present in the structure or its position relative to other functional projections. Similarly, Al-Raba'a (this volume) proposes that semantic distinctions between similar morphemes may be due to subtle differences in their syntactic composition. Specifically, different types of comparatives can be distinguished by where the

morpheme head is merged, as well as by the types of complements each type takes.

Nonetheless, variation is not the same as unconstrained difference. Variation is behavior around a center or attractor—alternations of a common rule, or forms determined by constraint. It is this search for what structures and constrains variation—universals which, according to different theoretical perspectives, are either shaped by domain-general cognitive principles or by modular, domain-specific linguistic principles (Fodor, 1983)—which is much of the project of linguistics as a field of study. Suggested domain-general principles include statistical learning of form-meaning pairs via statistical preemption (Goldberg, 2006, 2013, 2019), which limits the speed of language change, biological constraints shaping phonetic inventories, and learnability constraining morphosyntactic complexity. Suggested domain-specific principles include syntactic principles such as binary Merge and Movement, which limit possible positions of constituents in the phonological form (PF) and determine syntactic functions via functional projections and their relative positions in the tree (Chomsky, 1995). This volume brings together four interdisciplinary perspectives: SLA, sociolinguistics, theoretical syntax, and discourse studies. Each discipline examines different types of variation, and each ultimately proposes different principles which drive their observed types of variation. It is hoped that this juxtaposition might draw each discipline out of the narrower theoretical purview specific to a particular approach to reveal a more holistic understanding of language. Specifically, the disciplines taken together may point to the principles that control and constrain linguistic variation, as those universals or tendencies can shed light on those principles which ultimately shape language itself. This volume investigates linguistic variation across SLA, sociolinguistics, and syntax in eleven chapters from contributing authors.

Second Language Acquisition

The opening chapter by Rex Sprouse and Bonnie Schwartz offers insight into transfer, one of the primary mechanisms shaping the development of interlanguage and variation, and how it works in third language (L3) acquisition. Different models of L3 acquisition differ in whether the L3 learner transfers the morphosyntactic system from one or both existing language systems, and factors influencing which of the two language systems is chosen. From several competing models, Sprouse & Schwartz argue for adapting the Typological Primacy Model (Rothman, 2011). This model argues that the L3 grammar is only shaped by one of the two existing

language systems. During early L3 exposure, the acquisition mechanism makes a decision about which of the two languages is more typologically similar to the new L3. This decision is based preferentially on perceived similarity in the lexicon, phonetic/phonological cues, then morphosyntax. However, Sprouse and Schwartz propose the Abbreviated Grappling Period Model (AGPM), which reviews empirical data suggesting this decision is made based on lexical similarity, then phonotactics, then language dominance. This proposed ranking allows for a shorter decision period, since morphosyntax takes time to acquire. Thus, Sprouse and Schwartz's chapter argues that variation in L3 interlanguage development is constrained and predicted by specific factors; first, L3 forms are influenced not by L1 and L2 forms, but by only one set of forms, and secondly, these forms are determined early on based on three linguistic subdomains that are hierarchically ranked.

In Chapter 2, Daniel Olson explores the mechanisms behind the acquisition of a new phonetic feature by L2 learners. Current debate in second language phonology concerns whether acquisition of a new feature, such as manner of voicing or articulation, is better facilitated by learning an individual phoneme with the feature (Flege, 1997) or multiple phonemes sharing the feature (de Jong et al., 2009). Implementing pedagogical activities with visual feedback, Olson tests the effectiveness of classroom-based training which focuses on the presentation of single phonemes with a specific phonetic feature to intermediate L2 learners. He finds significant improvement in pronunciation of the feature of interest—not only in phonemes in which the learners had been trained, but also in other phonemes with that feature, phonemes in which the learners had not been trained. The study suggests that L2 phonological acquisition is first attuned to specific segments or phonemes rather than more general features; in fact, these features are part and parcel of a phoneme from which generalization can later occur. This contrasts with the view that broad phonetic features are first acquired before phonemes. Olson's study sheds light on how variation might surface in the L2 phonological developmental trajectory: L2 speakers may initially engage in phoneme-to-phoneme analysis, from which feature-to-feature analysis later emerges.

In Chapter 3, Attila Wind focuses also on the academic writing practices, but rather in English as a Foreign Language (EFL) learners. Using the Complex Dynamic Systems Theory (CDST; Larsen-Freeman, 1997) as a framework, Wind investigates the dynamic changes of engagement and linguistic complexity in self-assessment practices among six participants over a seven month period. Evidence from seven argumentative essays and seven retrospective interviews suggests that participants become more

engaged in self-assessment practices over time. The results of Wind's analysis also indicate variability and variation both inter- and intra-individually in terms of the changes in linguistic complexity. The variation and variability exhibited by participants in this study are in line with predictions by the CDST. Ultimately, Wind notes that second language writing is an "individual and erratic" process, inherently subject to variation.

In Chapter 4, Demet Yigitbilek investigates the employment of linguistic acts in L2 writing. Inspired by the works of Matsuda (2006), Yildiz (2012), and Cook (2002), Yigitbilek seeks to further explore the decision-making processes of multilinguals, specifically within interviews of three multilingual graduate students as they prepared academic writing pieces. Three major themes emerge from the interviews and text samples. First, all three participants seem to negotiate their so-called "disciplinary voices" through thematic and linguistic choices rather than alternative means. Secondly, variation emerges in how the participants utilized argumentation in their text samples. Yigitbilek notes that this was a product of their linguistic and cultural backgrounds and of contextual interactions. Lastly, all three participants emphasize their dual identities as scholars and international graduate students by utilizing personal experiences in a narrative style throughout their academic writing. Thus, variation is evident in the way participants used certain "discursive acts" at three different levels: lexical, syntactic, and rhetorical.

In Chapter 5, Kyle Lucas offers a synopsis of genre theory in the Second Language (L2) and English for Specific Purposes (ESP) traditions over the past three decades, specifically with regard to the concept of move-analysis and how this methodology has been used to study discourse structure in an academic context. In this synopsis, Lucas's focus is twofold. First, he explores the issues inherent in discussing the concepts of genre and move analysis. Secondly, he provides a comprehensive review of previous research, pointing out the ways in which the application of the move analysis methodology varies, both among disciplines and between situations. Lucas's analysis is an important step in furthering the body of research on move analysis and, as a result, on genre theory.

Sociolinguistics

In Chapter 6, Martin Maillot discusses variation in terms of the linguistic factors affecting the use of the variable liaison in varieties of French from both France and Quebec. Building on previous research by scholars such as Encrevé (1988), Mallet (2008), and Laks & Peuvergne (2017) and using an adaptation of the Phonology of Contemporary French (PFC) Program,

Maillot finds evidence for the influence of several sociolinguistic and morphological factors (such as sex, age, and regional variety) on the production of the variable liaison within the speech of lawmakers from France and Quebec. These findings mirror the work of previous scholars and suggest that several factors are at play in determining the production of certain linguistic forms, both situationally and individually.

In Chapter 7, Reda Mohammed and Pouya Vakili analyze variation in the perceptions of and the use of American Midwestern English among users of that variety, namely in Midwestern English as a Second Language (ESL) teachers. Mohammed and Vakili argue that not only is there variation in how these users identify what constitutes the Midwest geographically, there is variation within the Midwestern variety, despite the fact that the users' perception of the variety was static and standard. The authors also note that there is a distinct divergence between Midwesterners' beliefs in their variety's "correctness" and homogeneity and, in actuality, linguistic reality. Despite this variation, users' beliefs and ideologies regarding the standardness and correctness of their variety drive negative perceptions of those in the out-group, exhibiting how language variation can fuel sociological tension.

Discourse Studies

In Chapter 8, Adam Głaz examines the variation of the concept of "voice" in journalistic narratives. Here, the concept of voice is understood as the "one who speaks," and, as Głaz argues, should not be connected to the one who is actually speaking. In light of this, Głaz investigates the concept of fusion, in which the journalistic voice and the actual speaker blend into one interwoven entity. From evidence emerging in both British and American journalistic narratives, Głaz argues that fusion is not utilized often, but its (albeit uncommon) use indicates that these so-called "cognitive styles" are not possessed by specific speakers, but rather that these cognitive styles are available for speakers to choose. Thus, there are a variety of voices from which speakers can choose in any given situation. Głaz notes that future research could focus on examining this variation from several angles.

Syntax

In Chapter 9, Martine Gallardo analyzes systematic variation in the form of transitive constructions by discussing the fundamental nature of passivization. Adopting the approach of Gehrke and Grillo (2009), Gallardo argues that at least one form of passive operation in Italian involves an

event-structure alternation, rather than an argument structure alternation, as assumed by most traditional analyses of passivization. According to Gallardo, passives involving the verb *venire* ('come') have a curious combination of properties: they are ungrammatical with perfect aspect, yet allow a completed interpretation. Gallardo argues that these facts may be accounted for by analyzing *venire* as a light verb that realizes an aspectual head with identical Event Time and Assertion Time semantics. Gallardo's analysis is situated within the realm of variation in transitive sentence form, but further considers potential variation in the mechanisms by which the passive is derived, variation which deserves further research both within and between languages.

In Chapter 10, Basem Al-Raba'a explores the issue of structural variation in comparative constructions across varieties of Arabic. Previous work has investigated comparative constructions in Standard Arabic and Palestinian Arabic, but Al-Raba'a argues that these analyses fall short of explaining the properties of comparatives in Jordanian Arabic. Adopting a Distributed Morphology framework, Al-Raba'a makes several novel contributions to the study of these constructions in Arabic, such as proposing differences between simple and complex comparatives. By investigating systematic variation in the behavior of comparatives across varieties of Arabic, Al-Raba'a addresses several gaps in the study of these constructions, and additionally adds to the relatively small body of work on Arabic comparatives compared to comparatives in other languages.

Why Variation from Multiple Perspectives?

Variation reveals the diversity and universality of possible features that can emerge in language and how one set of rules can change into another, shedding light on the nature of human language and cognition itself. Typically, analyses of linguistic variation would take place from within a discipline's particular theoretical framework. At times much is made of the differences between the many theoretical approaches and methodologies employed in linguistics. There are moments where the discourse surrounding the sociology of this diverse and broad discipline reveals that there are non-trivial disagreements regarding the appropriateness of fundamental theoretical assumptions, the types of questions that should be addressed in the purview of a given theory, and the validity of different types of data for answering those fundamental questions. While it may seem unnecessary to point out that language scientists are all interested in language variation, it is in moments of disagreement that it is worth reminding ourselves that our shared goal is also our most important one. We

all seek to describe and explain the fundamental nature of human language. The most important commonality among this diverse group of studies is thus the one which ultimately unites all subfields of linguistics: the identification of systematic variation at some level of linguistic structure, and the employment of the tools of that discipline to explain that variation and define its boundaries. We hope that this volume will serve as a small reminder of this shared goal.

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SECOND LANGUAGE ACQUISITION

CHAPTER 1

L3 COGNITIVE STATES AND THE ABBREVIATED GRAPPLING PERIOD MODEL

REX A. SPROUSE AND
BONNIE D. SCHWARTZ

Abstract

In this paper we first offer a brief critical review of seven oft-cited models of third language (L3) acquisition, considering both empirical evidence and conceptual coherence. We then motivate and explicate yet another variant—the *Abbreviated Grappling Period Model* (AGPM)—combining the most promising features of Rothman's *Typological Primacy Model* (TPM) (e.g., Rothman, 2011; Rothman, González Alonso, & Puig-Mayenco, 2019) and the perspective introduced by Fallah, Jabbari, and Fazilatfar (2016), a proposal we call the *Principal Language of Communication Model*. In putting forward the AGPM, we concur with proponents of the TPM that at a very early stage of L3 acquisition, the abstract properties of one of the two previously acquired grammars are transferred *en bloc*, thereby constituting the initial state of the L3-Interlanguage grammar. We argue that there are two routes, both necessarily quick, to establishing which previously acquired grammar becomes the Transfer Grammar: The first route is based on the learner's perception of the new language compared to the two previously acquired languages with respect to only lexical similarity or phonotactic (dis)similarity; otherwise, the grammar of the learner's dominant language is selected as the Transfer Grammar.

Keywords: Abbreviated Grappling Period Model, L3 acquisition, transfer

Introduction

Two indispensable components of any viable model of language acquisition are a characterization of the initial state and a characterization of how further development proceeds. This is true for any grammatical subsystem (phonology, morphosyntax, semantics, etc.) and for the acquisition of both first language (L1) and nonnative language.[1]

In the case of generative models of L1 acquisition, it is generally assumed that the initial state includes an innately specified set of primitives, requirements, and restrictions, conventionally known as Universal Grammar (UG).[2] Within the generative paradigm, questions relating to further development have included: whether different facets of UG become operative according to some sort of maturational unfolding; what the precise nature of the primary linguistic data (PLD) available to the child is; how input (i.e., PLD) becomes intake; how it is that children generalize, overgeneralize, and, in some cases, retreat from overgeneralization; and (in the terms of the principles-and-parameters approach) how parameters are set and whether they can subsequently be re-set (however parameters may be formally represented).

Competing models of (adult) L2 acquisition have proposed different responses to the questions about the initial state and further development. In light of the existence of an already-developed L1 grammar, some proposals have (nevertheless) included no transfer of L1 properties at the L2 initial state; others have offered various versions of partial transfer (transfer of a theoretically well-defined proper subset of L1 properties); still others have advanced the claim that all abstract properties of the L1 grammar form the L2 initial state. Likewise, positions on further L2-Interlanguage development also differ: Some proposals have maintained that it proceeds via general cognitive strategies with no role for UG; some have claimed that further L2-Interlanguage development is restricted to only

[1] In the interest of clarity, we restrict our use of "second language (L2)" acquisition specifically to the chronologically second language an individual acquires, as opposed to the L1, the L3, the fourth language (L4), etc. In much of the literature on nonnative language acquisition, the terms "second language" and "L2" are used to refer to any instance of nonnative language acquisition. We wish to avoid any possible confusion in this regard.

[2] UG must simultaneously be restrictive enough to account for the acquisition of highly specific abstract grammatical properties underdetermined by the input available to the language-acquiring child and permissive enough to allow for the variation observed cross-linguistically. It is thus not surprising that one of the central preoccupations of generative theory is the precise characterization of UG.

a certain subset of UG properties (e.g., interpretable features); still others have hypothesized that L2-Interlanguage development is fully guided and restricted by all of the properties of UG. (For the original framing of the issue of the L2 initial state and its consequences for subsequent development, see Schwartz & Eubank, 1996; for extensive discussion and citations of specific proposals of this bipartite issue, see White, 2003.)

Based on our reading of the generative L2 literature of roughly the past three decades, we believe that it is fair to state that the Full Transfer/Full Access (FT/FA) model of Schwartz and Sprouse (1996), although not accepted universally, tends to have emerged as the dominant model within generative approaches to L2 acquisition. The two primary tenets of the FT/FA model are: (a) the L2 initial state consists of all the abstract properties of the L1 grammar (excluding the phonetic matrices of lexical and morphological items); and (b) further development is error driven, i.e., revision/restructuring is triggered when the parser cannot assign a well-formed analysis to Target Language (TL) input, a process that draws from the possibilities made available by UG.

With this background in place, we next turn to the focus of this paper: generative (and generative-adjacent) approaches to L3 acquisition. In what follows, we first briefly introduce and then empirically consider the seven oft-cited models of L3 acquisition. We will then motivate and explicate yet another variant—the *Abbreviated Grappling Period Model*—combining the most promising features of Rothman's *Typological Primacy Model* (e.g., Rothman, 2011; Rothman, González Alonso, & Puig-Mayenco, 2019) and the perspective introduced by Fallah, Jabbari, and Fazilatfar (2016), a proposal we call the *Principal Language of Communication Model*.

Formal models of L3 acquisition

We currently find nothing approaching a scholarly consensus when it comes to formal models of L3 acquisition. On the contrary, at least the following seven models have been put forward, each suggesting a distinct characterization of the role of *previously acquired grammars* (PAGs):

(1) Seven L3 models

a. *L1 Status Factor* (e.g., Hermas, 2010; Leung, 2002; Lozano, 2002[3]): Early on in the acquisition process, L3 learners (L3ers)

[3] Strictly speaking, these authors do not formulate their observations as a distinct model but rather point out a strong tendency on the part of L3ers to rely on properties of their L1 grammar.

tend to rely preferentially on the morphosyntactic properties of their L1.

b. *L2 Status Factor* (e.g., Bardel & Falk, 2007): Early on in the acquisition process, (instructed adult) L3ers tend to rely preferentially on the morphosyntactic properties of their L2-Interlanguage.[4, 5]

c. *Cumulative Enhancement Model* (e.g., Flynn, Foley, & Vinnitskaya, 2004): L3ers freely draw on properties of either PAG, but only properties that are facilitative.

d. *Scalpel Model* (Slabakova, 2017): Throughout the acquisition process, L3ers transfer individual properties from their L1 and/or their L2-Interlanguage, in response to a wide range of factors (frequency, availability of unambiguous input, complexity, etc.), varying on a case-by-case basis.

e. *Linguistic Proximity Model* (Westergaard, Mitrofanova, Mykhaylyk, & Rodina, 2017; Westergaard, 2021): L3ers attempt to parse L3-TL input on the basis of *micro-cues* already included in the L1 grammar and/or the L2-Interlanguage grammar. When a given micro-cue in either of the two PAGs proves useful in parsing L3-TL input, it is transferred to the L3-Interlanguage grammar.[6] In the absence of such an existing micro-cue in the PAGs, the L3er can resort to the UG toolkit to create a novel micro-cue and add that to the L3-Interlanguage grammar. This occurs on a property-by-property basis throughout the acquisition process, as in the Scalpel Model. (A more detailed critical summary of this model is given in (2) ff.)

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[4] Falk and Bardel (2012) ground this model in the distinction between procedural knowledge vs. declarative knowledge (e.g., Paradis, 1994, 2009; Ullman, 2001, 2004), assuming that the former characterizes (implicit) L1 knowledge and the latter characterizes (explicit) L2-Interlanguage knowledge. Falk, Lindqvist, and Bardel (2015) accordingly contend that one exception to preferential reliance on the L2-Interlanguage grammar in L3 acquisition arises when the L3er has substantial declarative knowledge about their L1. Falk and Bardel (2021) further stress that the L2 Status Factor is intended to refer only to L2-Interlanguage properties about which the L3er has explicit knowledge.

[5] Note that the L3 literature more often than not speaks of transfer from the "L2," when in fact this is shorthand for transfer from the "L2-Interlanguage" at whatever stage it happens to be, i.e., the cognitive state of the L2-Interlanguage may not have converged on the target grammar (Schwartz & Sprouse, 2021a, p. 2).

[6] On this model, there is no guarantee that a micro-cue selected for transfer is appropriate from the perspective of the L3-TL, because it is possible that the selection stems from a misanalysis of the L3-TL input.

f. *Typological Primacy Model* (e.g., Rothman, 2011; Rothman et al., 2019): The PAG deemed (by the parser) to be "typologically" more appropriate for the L3-TL input is selected for Full Transfer. Further development of the Interlanguage grammar is error driven, as in the FT/FA model for L2 acquisition. (A more detailed critical summary of this model is given below in (6) ff.)
g. *Principal Language of Communication Model* (e.g., Fallah et al., 2016; Fallah & Jabbari, 2018): Early on in the acquisition process, L3ers tend to rely preferentially on the PAG of the language they more often use for communication.

Problems with the first four L3 models

Of the seven models listed in (1), empirical evidence offered by the Typological Primacy Model (TPM) renders implausible the L1 Status Factor, the L2 Status Factor, and the Cumulative Enhancement Model, as we shall see later. The most straightforward kind of evidence in this vein comes from well-controlled studies instantiating *mirror-image* L3 learner groups. Consider, for example, two groups of learners of L3 Brazilian Portuguese, one an L1Spanish/L2English L3 group and the other an L1English/L2Spanish L3 group, and the acquisition of a binary grammatical feature shared by English and Brazilian Portuguese but not Spanish. If both L3 groups exhibit the Spanish-like property at an early stage in the acquisition of Brazilian Portuguese, the first group would appear to have transferred the L1 grammar (*contra* the L2 Status Factor), whereas the second group would appear to have transferred the L2-Interlanguage grammar (*contra* the L1 Status Factor). In both cases, moreover, the transfer has been non-facilitative (*contra* the Cumulative Enhancement Model). Proponents of the TPM have presented case after case of precisely this kind of empirical evidence, paradigm examples of which we summarize below. Finally, in its present form, the Scalpel Model appears to be so unconstrained with respect to which factor might tip the balance to transfer from the L1 vs. from the L2-Interlanguage that it makes no testable predictions (see Schwartz & Sprouse, 2021a, c).

Problems with the Linguistic Proximity Model

We turn now to a more detailed consideration of the Linguistic Proximity Model (LPM; Westergaard et al., 2017; Westergaard, 2021). The principal elements of the LPM are outlined in (2).

(2) The Linguistic Proximity Model

a. A grammar consists of a set of micro-cues, which are pieces of structure that the parser uses in processing input. (*NB*: Westergaard's micro-cues are **not** given in advance by UG but are rather constructed via induction by the (L1, L2, L3, L4, etc.) learner on the basis of PLD and the structural primitives made available by UG. Language acquisition under this view thus consists in the accumulation of micro-cues.)

b. The L3er attempts to parse L3-TL input by initially searching through micro-cues already instantiated in one or both of the two PAGs. When a given micro-cue in either PAG proves useful in parsing L3-TL input, it transfers to the L3-Interlanguage grammar. When the parser identifies no such already-instantiated micro-cue for analyzing a given piece of L3-TL input, the L3er can resort to the UG toolkit to construct a novel micro-cue and add it to the L3-Interlanguage grammar.[7]

c. Starting (apparently) with no micro-cues (that is, a blank L3 initial state), the L3-Interlanguage grammar adds micro-cues in a property-by-property fashion. For any given grammatical property, there is no inherent bias for a micro-cue to be drawn from one or the other PAG.

d. There is no guarantee that only micro-cues convergent with the L3-TL grammar will be transferred, because it is possible for (the parser of) the L3er to misanalyze L3-TL input. In such cases, (the parser of) the L3er might subsequently detect that an inappropriate micro-cue was added to the L3-Interlanguage grammar, and so this micro-cue might consequently be replaced with one (either from a PAG or by building it from the UG toolkit) that appears to be a better fit with the L3-TL input.[8]

Westergaard et al. (2017)—the chief empirical study offered to date in support of the LPM—involves the comparison of results from an Acceptability Judgment Task (AJT) administered to three groups of middle school children acquiring English: (a) native Norwegian speakers acquiring English as an L2 (n = 46); (b) native Russian speakers acquiring English as

[7] Originally offered to account for L3 acquisition, the LPM was also extended to L2 acquisition (Westergaard, 2021), where, of course, the only prior micro-cues are in the L1 grammar.

[8] Schwartz and Sprouse (2021b) thus point out that despite Westergaard's (2021) rhetoric to the contrary, the LPM relies heavily on "copying and restructuring" to describe L3-Interlanguage development.

an L2 ($n = 31$); and (c) Norwegian-Russian simultaneous bilinguals (2L1 children, all being raised entirely/mostly in Norway) acquiring English as an L3 ($n = 22$). One focus of the task was the relative order of non-auxiliary verbs (henceforth, "lexical verbs") and sentence-medial adverbs in subject-initial main clauses. The basic patterns of interest for the three languages are given in (3), where "*match*" indicates surface overlap between only Russian and English:

(3) Description of the relevant linguistic main-clause phenomena
a. Norwegian: S $V_{lexical}$ Adv …
b. Russian: S Adv $V_{lexical}$ … *match*
c. English: S Adv $V_{lexical}$ … *match*

With respect to these particular phenomena, Westergaard et al.'s model assumes that a Russian grammar includes the micro-cue necessary to parse English PLD of the type in (3c), but a Norwegian grammar does not. These researchers state their prediction as in (4):

(4) "[The L3ers] are predicted to outperform L1[-Norwegian L2ers], due to access to Russian. However, they may score lower than L1[-Russian L2ers], due to non-facilitative influence from Norwegian." (Westergaard et al., 2017, p. 672)

The results of the AJT are shown in Figure 1-1.

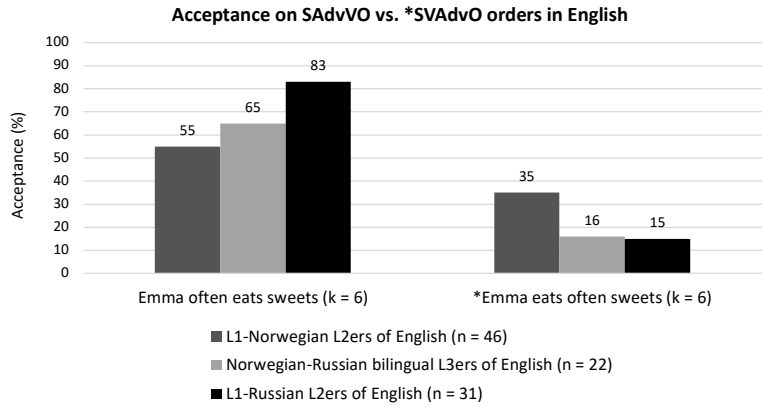

Figure 1-1. L2 vs. L3 AJT results from Westergaard et al. (2017) (adapted from Westergaard et al., 2017, p. 675, Figure 2)

Westergaard et al.'s (2017) interpretation of these results is given in (5):

(5) "The score of the [L3ers] is in between [those of] the two [L2-]control groups, suggesting both facilitative [Russian] and non-facilitative [Norwegian] influence...." (Westergaard et al., 2017, p. 676)

In other words, for the L3 group, the contradictory properties of each PAG are taken to have transferred to some extent.

Westergaard et al. (2017) furthermore claim that the results as articulated in (5) (on this interpretation) indicate that there is no *wholesale transfer* (see (6b) below) of morphosyntactic properties of just one of the PAGs in L3 acquisition. In principle, any property of either PAG may be transferred to the L3-Interlanguage grammar at any time.

Schwartz and Sprouse (2021a, pp. 7–10) have challenged the logic of this interpretation. While the results of the L1-Russian L2ers of English are wholly expected (83% acceptance of S-Adv-$V_{lexical}$-O; 85% rejection of S-$V_{lexical}$-Adv-O), the results of the L1-Norwegian L2ers of English should be surprising from the perspective of Westergaard et al. (2017). Even after several years of English classroom instruction (and likely extensive exposure to native English in Norwegian mass media and culture), these L2ers (as a group) accept the English-like S-Adv-$V_{lexical}$-O sentences only 55% of the time and accept the (non-matching to English) Norwegian-like S-$V_{lexical}$-Adv-O sentences 35% of the time. Westergaard et al. offer no account of what sort of misparse (see (2d) above) of the English input could have led to this apparent lingering L1-Norwegian transfer effect.

As for the L3 group, Westergaard et al.'s (2017) main claim, as noted above, is that the relevant micro-cues from both Russian and Norwegian transfer. It is important to bear in mind, however, that a Norwegian micro-cue for $V_{lexical}$-Adv-O has no utility for parsing English PLD (again, see (2d)), while the Russian micro-cue for Adv-$V_{lexical}$-O would perfectly equip the L3ers to parse the relevant English PLD. Nonetheless, Westergaard et al. explicitly state that because the L3 results fall "in between" the results of the two L2 groups, this is evidence of transfer from both PAGs. However, **if both the Russian micro-cue for Adv-$V_{lexical}$-O and the Norwegian micro-cue for $V_{lexical}$-Adv-O transfer, the L3ers**

should systematically accept both word orders in English.[9] This is clearly not the case.

More generally, we raise three conceptual issues with the property-by-property approach to transfer inherent in the LPM. First of all, reliance on **input as the instigator of transfer** seems to confuse "transfer" with "further language development." If the mind/brain must first recognize a given L3-TL property (by parsing L3-TL input strings, by matching, or by whatever procedure) before that property is to be incorporated into the L3-Interlanguage grammar, this would seem to make the mechanism of transfer in such cases "superfluous" (to borrow a fitting characterization from Giancaspro, Halloran, & Iverson, 2015, p. 192). That is, it is difficult to distinguish the ostensible "transfer" of this property from its simple acquisition (i.e., language development in response to L3-TL PLD).

Secondly, as Miller and Iverson (2021, p. 85) astutely state, "current models of piecemeal [i.e., property-by-property—ras & bds] transfer" cannot "make testable predictions regarding **how** transfer occurs during initial-stages L3 acquisition but also **why** it occurs the way it does [emphasis original]." Property-by-property models of transfer in L3 acquisition are, in the terminology of Miller and Iverson, purely *retrodictive* in nature.

Finally, because of its single-pointed focus on structure building via micro-cues, how a model like the LPM could account for the existence of **constraints** in an L3-Interlanguage grammar is unclear. For example, it is difficult to see how such a model could capture island constraints, constraints on coreference/binding of anaphors, pronominals, and R-expressions, constraints on ellipsis and gapping, restrictions on quantifier scope resolution, and similar perennial topics in generative syntax.

The Typological Primacy Model

We shift attention now to the Typological Primacy Model, proposed and developed by Jason Rothman and his collaborators (e.g., Rothman, 2011; Rothman et al., 2019). The primary components of the TPM are summarized in (6):

[9] As one eminently plausible account of Westergaard et al.'s (2017) data, Cabrelli and Puig-Mayenco (2021, p. 468) suggest that the apparent "hybridity" may in fact represent an intermediate stage of development, in which the initially-transferred Norwegian property is in the process of being replaced by the TL-like English property on the basis of L3-TL input.

(6) The Typological Primacy Model

a. During the earliest stage of L3 acquisition—what Schwartz and Sprouse (2021c, p. 117) call the *Grappling Period*—the parser seeks to determine which PAG is perceived to be "typologically" more consonant with the L3-TL PLD (see (6d) below).

b. The PAG deemed "typologically" more consonant with the L3-TL input is selected for Full Transfer—what Schwartz and Sprouse (2021a, p. 16) dub the *Big Decision*—i.e., all of the abstract properties of that PAG are transferred to serve as the initial L3-Interlanguage grammar. (This is commonly known as *wholesale transfer*, as distinguished from the *property-by-property transfer* that is the centerpiece of the Scalpel Model and the LPM.)

c. Subsequent L3-Interlanguage development is error driven; this is to say, revision/restructuring of the Interlanguage grammar is triggered when the parser is unable to assign a well-formed structural analysis to TL PLD, a cyclical process drawing from and hence constrained by the possibilities that UG makes available (as in FT/FA).

d. Determination of "typological" consonance is subject to the Rothman Hierarchy (Rothman, 2015, p. 185 (1)):

Lexicon → Phonological/Phonotactic Cues → Functional Morphology → Syntactic Structure

In the TPM, "typology" is understood neither in the usual sense in linguistics nor in the sense of Kellerman's (1983) "psychotypology." Instead, the search for the "typologically" more consonant PAG follows the steps outlined in the conjectured Rothman Hierarchy, given in (6d). If the parser (mind/brain) determines that one PAG is lexically more similar to the words identified in the L3-TL PLD, that PAG is chosen as the *Transfer Grammar*. If such a determination cannot be made very early on, then the parser (mind/brain) considers phonological/phonotactic cues, and so on along the steps of the Hierarchy. To our knowledge, neither Jason Rothman nor other researchers working within the TPM have provided any detailed account of precisely how the PAGs are scrutinized at each step along the Rothman Hierarchy. We will return to this matter later in this paper.

A slew of empirically compelling L3 studies have been offered in support of the TPM (for detailed discussion, see Rothman et al., 2019). Here we summarize two of them. The archetypal TPM study involves two mirror-image experimental groups, for instance, two groups of learners in

the (very) early stages of acquiring Brazilian Portuguese as an L3, such as one group of L1Spanish/Advanced L2English L3ers and one group of L1English/Advanced L2Spanish L3ers. The TPM predicts that the two groups should pattern alike, selecting the same PAG as the Transfer Grammar. The status of that language (grammar) as an L1 vs. an L2 should play no role. For results to count as evidence for (wholesale) transfer, the L3ers must have acquired a property that could not be deduced from the L3-TL PLD, a property that, typically, is a TL-divergent one.

One particularly ingenious study by Giancaspro et al. (2015) offers a very straightforward illustration. Consider the phenomenon of *Differential Object Marking* in Spanish and its absence from both Brazilian Portuguese and English, as shown in (7).

(7) Obligatory vs. prohibited Differential Object Marking

a.	Spanish:	La	mujer	vio	*(a)	Juan.
b.	Brazilian Portuguese:	A	mulher	viu	(*a)	João.
c.	English:	The	woman	saw	(*to)	John.

For Spanish (as in, e.g., (7a)), a direct object with certain features such as [+human] and [+specific] must be marked with the preposition *a* "to," while this marking is sharply ungrammatical in both Brazilian Portuguese (as in (7b)) and English (as in (7c)). On the other hand, for L3ers of Brazilian Portuguese whose two PAGs are Spanish and English, it is obvious—on the basis of considerable lexical similarity between Spanish and Brazilian Portuguese—that under the TPM, the Spanish PAG should be selected as the Transfer Grammar by both L1Spanish/Advanced L2English L3ers and L1English/Advanced L2Spanish L3ers.

Giancaspro et al.'s (2015) results show, importantly, that even though there is no Differential Object Marking in the Brazilian Portuguese PLD, beginning L3ers of Brazilian Portuguese in the two mirror-image groups have L3-Interlanguage grammars requiring the preposition *a* in these syntactic contexts. Note that these results contradict the expectations of the L1 Status Factor (see (1a)) and the L2 Status Factor (see (1b)), because neither status as the L1 nor status as the L2 systematically determines the Transfer Grammar. These results are also mysterious on the assumptions of the Cumulative Enhancement Model (see (1c)), the Scalpel Model (see (1d)), and the LPM, because selectively deploying the property of Differential Object Marking from the previously acquired Spanish grammar (be it the PAG of the L1 or the L2-Interlanguage) in no way "facilitates" the parsing of Brazilian Portuguese input.

Puig-Mayenco and Rothman (2020) report on a linguistically more subtle and complex study at the start of L3 acquisition, one which offers formidable evidence in support of the TPM. The two mirror-image groups under examination this time are L1Spanish/Advanced L2Catalan/Beginner L3English and L1Catalan/Advanced L2Spanish/Beginner L3English. This constellation of languages is interesting in that the two PAGs are quite similar to each other, and the L3-TL is not obviously "typologically" more consonant with either one of them. Nevertheless, Spanish and Catalan do differ from each other in certain respects, one of which is in the domain of *negative indefinites*—a category that cross-linguistically includes, among other sub-categories, *Negative Quantifiers* (NQs) and *Negative Polarity Items* (NPIs).

A bit of linguistic background is in order. English has NQs and NPIs: For instance, both *nobody* and *nothing* are NQs with independent negative force, whereas *anybody* and *anything* are NPIs, lacking independent negative force. NPIs are licensed (roughly speaking) in non-veridical contexts and must be c-commanded by an appropriate (not necessarily overt) non-veridical operator.[10] Consider the contexts and interpretations in (8) and (9) for English.

(8) English: Preverbal position with negated verb
a. #Nobody does not drink coffee.
"double negation" reading only
b. *Anybody does not drink coffee. *ungrammatical*

(9) English: Object position of a conditional clause (no negation on verb)
a. Mary will call us if Peter says nothing. *negation reading only*
b. Mary will call us if Peter says anything.
existential reading only

When an English NQ like *nobody* appears in preverbal position, as in (8a), it carries independent negative force. If an additional negative element appears in the clause (viz., *not* in (8a)), the only available interpretation is negation of the negation—i.e., "double negation." On the other hand, when an English NPI like *anybody* appears in a position where it is not licensed by an appropriate non-veridical operator, as in (8b), the sentence is ungrammatical. The facts in (9) concern conditional clauses, which, like in

[10] A non-veridical context (created by a non-veridical operator) is a context in which the truth of a proposition is not asserted, entailed, or presupposed.

(8), are non-veridical contexts. When an English NQ like *nothing* appears in the object position of a conditional clause (without negation on the verb), as in (9a), it has independent negative force. On the other hand, when an NPI like *anything* appears in this position (again, without negation on the verb), as in (9b), the NPI is interpreted as an existential quantifier.

Neither Spanish nor Catalan lexically distinguishes between NQs vs. NPIs; rather, they each have single lexical items, such as Spanish *nadie* "nobody/anybody" and *nada* "nothing/anything" and Catalan *ningú* "nobody/anybody" and *res* "nothing/anything." Consider the contexts and interpretations in (10) and (11) for Spanish vs. Catalan (cf., respectively, (8) and (9) for English).

(10) Spanish vs. Catalan: Preverbal position with negated verb
a. Spanish *nadie* yields "double negation." *like English NQ*
b. Catalan *ningú* yields single negation. *unlike English*

(11) Spanish vs. Catalan: Object position of a conditional clause (no negation on verb)
a. Spanish *nadie* yields ungrammaticality, but negation if forced. *like English NQ*
b. Catalan *ningú* yields an existential interpretation. *like English NPI*

Spanish *nadie* in both of these syntactico-semantic contexts (i.e., (10a) and (11a)) yields essentially the same interpretations as English NQs in these contexts (cf. (8a) and (9a)). On the other hand, Catalan *ningú* in preverbal position with a negated verb (i.e., (10b)) yields single negation (unlike English *nobody* in preverbal position with a negated verb); however, *ningú* in object position of a conditional clause with no negation on the verb (i.e., (11b)) yields the same interpretation as an English NPI in this position (as in (9b)).

Puig-Mayenco and Rothman (2020) had participants complete a Picture Matching Task, in which they were asked to indicate which of two images accurately depicts a given English sentence. In experimental items, an English NQ or NPI appeared in one of the two contexts discussed above in (8) and (9). A sample item is reproduced in Figure 1-2.