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Special Issue Reprint

The Acquisition of L2 Sociolinguistic Competence

Edited by
Vera Regan and Kristen Kennedy Terry

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Guest Editors

Vera Regan
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About the Editors

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Professor Vera Regan, University College Dublin, is a specialist in Sociolinguistics and Second Language Acquisition. She publishes on the acquisition of sociolinguistic competence, multilingualism and issues of language and migration, within a variationist perspective. She has been President of the European Association for Second Language Research, the Association of French Language Studies, and a Director of the Ireland Canada University Foundation. She has held visiting professorships at the University of Pennsylvania and the University of Ottawa. Her research appears in journals, books, edited books and in keynote and other conference papers. Her many radio and television presentations include a TEDx talk: "Two ways of saying the same thing". Awards include two Fulbright Senior Research Awards and the Prix du Québec. She is Chevalier de l'Ordre des Palmes Académiques.

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Preface

This reprint on the acquisition of L2 sociolinguistic competence showcases current research at the juncture of Language Variation and Change (LVC) and Second Language Acquisition (SLA). This research is grounded in the field of LVC where natural language data are used to demonstrate that language variation is both systematic and constrained by internal (linguistic) and external (social) factors. Linguistic elements do not have a single instantiation in first language (L1) speech but instead have 'variable' possibilities across the different speech registers used by L1 speakers. The central question addressed in this volume is: how does the speaker of additional languages acquire these aspects of language? Sociolinguistic competence has been seen as a crucial part of communicative competence since the 1990s. Although L2 learners often become sensitive to variation patterns in L1 speech and are capable of participating in such variation, the extent to which an L2 speaker engages in such complexity can involve issues of agency, identity, and affordances.

The contributions to this volume propel the field of variationist SLA forward both by considering a wide variety of target languages, including L2 Chinese, English, French, German, Korean, and Spanish, and by asking new questions about the development of L2 sociolinguistic competence – questions that explore the perception of variation, the acquisition of variation by child learners and heritage speakers, and learner attitudes toward variation, among others. The contributions also incorporate promising new approaches to variationist SLA, such as social network analysis, L2 identity construction, and usage-based linguistics and place a greater emphasis on learner agency, awareness, and stance within communicative interactions. Collectively, these studies represent an important evolution in our understanding of how, when, and in what contexts L2 sociolinguistic competence develops while providing a comprehensive overview of current research trends in variationist SLA for students and practitioners alike.

As Guest Editors, we would like to extend our gratitude to the authors who willingly contributed their time, effort, and important research findings to this Special Issue. Additionally, we would like to thank the editorial team at MDPI and *Languages* for their invaluable assistance from the beginning to the end of this project, especially Candice Nie for her careful and patient guidance. Finally, we would like to acknowledge the passing of Robert Bayley, our dear friend and colleague, who was a cherished advisor and mentor to many of the authors who contributed to this volume, including co-editor Kristen Kennedy Terry. He passed away while this project was underway.

Vera Regan and Kristen Kennedy Terry
Guest Editors

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Editorial

The Acquisition of L2 Sociolinguistic Competence: Critical Insights from an Evolving Field

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This Special Issue on the acquisition of sociolinguistic competence showcases current research at the juncture of Language Variation and Change (LVC) and Second Language Acquisition (SLA) (Regan, in press). Sociolinguistic competence has been seen as a crucial part of communicative competence since the 1990s (Kanwit & Solon, 2022). While research on SLA previously focused on the 'categorical' in language (e.g., *I went* vs. *I goed*), variationist approaches (Adamson & Regan, 1991) investigate the acquisition of the variable in first language (L1) speech (e.g., *I'm going* vs. *I'm goin*). Variationist approaches to SLA focus on the factors, both linguistic and extralinguistic, that constrain the production of variation patterns in speech. The choice of speech items depends on the simultaneous influence of many factors; alternative speech items have the same referential meaning but carry different social weight. Acquiring or learning such a detailed probabilistic grammar of another language is by no means easy, but it is an important component of communicative competence if the more subtle aspects of language are to be conveyed. The acquisition of these variation patterns helps the second language (L2) speaker to better interpret messages and to use their own language resources to generate and manage social interactions (e.g., Geeslin & Long, 2014).[1]

The L2 speaker may learn how and why the L1 speaker chooses one variant over another, influenced by multiple factors: linguistic (e.g., surrounding phonological environment), social (e.g., age of the speaker), or contextual (e.g., setting). In addition, the L2 speaker learns that the factors that constrain the choice of variant, and the hierarchical order of these factors, is not simply a question of occurrence but also of frequencies. Such complexity is difficult to acquire and is frequently linked to proficiency levels, as demonstrated by several studies in this Special Issue. Although L2 learners often become sensitive to the variation patterns in L1 speakers' speech over time and are capable of participating in such variation, the extent to which an L2 speaker engages in such complexity is an interesting one and can involve issues of agency, identity, and affordances.

This Special Issue presents state-of-the-art work within the variationist paradigm as applied to SLA, highlighting how this approach contributes to the elucidation of fundamental questions in research on L2 speakers, particularly in relation to their sociolinguistic competence. These include how, when, and where sociolinguistic competence is acquired and what its development over time looks like. In deepening and broadening the investigation of these crucial areas, the contributions to this Special Issue collectively break ground on both conceptual and methodological levels and reflect current trends and emphases.

The contributions are innovative on numerous fronts. First, in contrast to early variationist L2 research which had an almost unique focus on L2 English, these articles treat an unusually broad range of language pairs. They cover a wide group of speakers

and a broad range of speaker ages, collectively contributing to our understanding of the developmental stages in sociolinguistic competence acquisition. In addition, in line with recent developments in the field, social context is the focus of many of the contributions. Our understanding of study abroad (SA), for instance, is considerably broadened and detailed by several of these studies. Equally, several contributing articles treat sociophonetic awareness and deal with issues of perception and production, another rapidly developing research area, which is linked with the issue of attitudes, also covered by several articles.

Identity issues are highlighted in many of the studies. A focus on identity has recently broadened our understanding of the process of SLA in general and gives a more complete picture of sociolinguistic acquisition. In terms of innovation, a striking aspect of many of the contributions is a newfound awareness of, and sensitivity to, the roles of agency, stance, and identity construction and the evolving nature of these throughout a communicative interaction. Many of the articles problematize, or at least avoid taking as axiomatic, the nature of target norms and whether indeed these are even goals for the L2 speaker. How and why L2 speakers make choices related to native speaker (NS) norms[2] figures in several of the studies. Thus, these articles both increase our understanding of central SLA research issues and address new ones.

This Special Issue begins with a contribution by **Gudmestad and Kanwit** in which the authors argue for more robust focus on "the social side" of language variation. In their article, Gudmestad and Kanwit explain that while much attention has been paid to understanding the role of linguistic factors in the acquisition of variation, much less attention has been aimed at social factors, which play an equally important role in predicting linguistic performance. In their article, the authors review the development of variationist SLA over the past few decades and argue for the incorporation of an ever-evolving set of extralinguistic factors that move beyond the traditional categories of gender, age, and social class, to include influences such as gender identity, race and ethnicity, and social distance. The authors argue that expanding the scope of variationist SLA to include these previously understudied extralinguistic influences will contribute significantly to our understanding of how language learners perceive variation in the target language (TL) community and how they come to produce language that reflects the acquisition of L2 sociolinguistic competence.

The study by **Pozzi et al.** responds to Gudmestad and Kanwit's call for an increased emphasis on extralinguistic influences in variationist research in SLA and uses a mixed-methods approach to understand how investment, identity, and participation in both real and imagined communities of practice (Norton, 2001) during a semester of SA in Buenos Aires, Argentina, influence the acquisition of sociolinguistic competence in L2 Spanish. Specifically, the authors present case studies of three L2 Spanish learners at different proficiency levels and examine their acquisition of four features of the local variety of Spanish (BAS, Buenos Aires Spanish), two of which are unique to BAS and two of which are shared by other Latin American speakers of Spanish. Through these case studies, the authors demonstrate how participation in actual communities of practice, such as host families and friend groups, as well as affiliation with imagined communities as an expression of at-home and SA identity, may encourage or discourage the use of locally salient phonological and morphological variants.

In their study, **Gautier and Chevrot** employ quantitative social network analysis (see Kennedy Terry & Bayley, 2024) to examine the role of personal network structure and composition in the acquisition of two variable structures in L2 French—the retention of the preverbal negative particle *ne* 'not' and the use of optional *liaison* (a 'linking' process that involves the articulation of a silent consonant before a word beginning with a vowel). Both sociolinguistic variables show stratification among NSs by speech style and social class. In

this study, the authors compare speech data from 29 L2 French learners at three points in time during an academic year of SA in France with social network data gathered through logbooks and sociolinguistic interviews. The authors use a Principal Component Analysis (PCA) to determine the impact of network structure (i.e., measures of network size, density, and centrality) and network composition (i.e., the number of co-nationals or local French speakers) on the acquisition of L2 sociolinguistic competence.

The study by **Wirtz and Ender** represents another novel approach to understanding the acquisition of L2 sociolinguistic competence with its focus on language attitudes among L2 German speakers and their perception of the 'functional prestige' associated with the use of standard (Austrian) German and local Austro-Bavarian dialect varieties. Specifically, the authors use a matched-guise task to examine the extent to which L2 German speakers living in an Austro-Bavarian setting follow L1 German speakers in their evaluative judgements of standard German (i.e., more 'intelligent') versus dialectal German (i.e., more 'friendly') in specific situational contexts and consider the role of dialectal proficiency in determining how closely L2 speakers follow NS patterns. Importantly, this study includes results for over 100 L2 German speakers born in over 50 different countries, which represents an unusually broad scope for research on L2 sociolinguistic competence.

Mougeon et al. compare the acquisition of connectors in L2 French (e.g., *alors*, *donc*, *fait que;* 'so') by two groups of learners in Ontario, Canada: university students and high school French immersion students. In addition to comparing learners at different stages of their L2 learning journey, the study by Mougeon et al. employs a novel lens to examine the L2 acquisition of French connectors, which are used variably by French NSs depending on the formality of the speech context and their age and socioeconomic status. In this study, the authors separate the use of connectors by their grammatical and discursive functions, thereby presenting a more fine-grained analysis of the development of L2 sociolinguistic competence while also examining how extralinguistic influences, such as opportunities to interact with French speakers outside of the classroom and time spent learning French, influence such development.

While the majority of studies in this Special Issue focus on the role of in-person interactions in the acquisition of L2 sociolinguistic competence, **Salgado-Robles and George** examine the impact of virtual exchanges between university L2 Spanish learners and NSs in the acquisition of regional variation. Specifically, the authors examine the L2 acquisition of *voseo*, or the use of the second-person singular pronoun *vos* 'you', and its associated verb forms, in the three-tiered pronoun system that is a dialectal feature of multiple countries in Latin America. Despite its widespread use in Latin America, the authors explain that *voseo* is rarely included in Spanish curricula in the United States, which makes it all the more difficult for classroom learners to develop sociolinguistic competence in this area. This study by Salgado-Robles and George demonstrates that virtual exchanges with L1 Spanish speakers who use *voseo* can be a critical component of the L2 acquisition of this important dialectal feature.

Denbaum-Restrepo and Restrepo-Ramos also examine the acquisition of *voseo* in L2 Spanish by a group of seven SA learners residing in Medellin, Colombia for 2–23 months, but in this study, the authors focus on whether learners can perceive, as well as produce, variable forms in the TL. As the authors note, perception of sociolinguistic variation is an important area for further study as learners, especially those of low proficiency, may show evidence of perceiving variation within the L1 speech community before they can produce such variation themselves. Denbaum-Restrepo and Restrepo-Ramos examine the L2 acquisition of the second person singular pronoun *vos* 'you', which is characteristic of the local variety of Spanish in Medellin, through the use of a matched-guise test and discourse

completion task aimed at evaluating the extent to which learners can both perceive the constraints on the use of *vos* and produce *vos* in accordance with these same constraints.

In another study pairing perception with production, **Solon and Kanwit** examine the acquisition of sociophonetic variation by 21 L2 Spanish learners, many of whom had studied abroad in a Spanish-speaking country. The targeted segment in Solon and Kanwit's study is Spanish intervocalic /d/ which is variably realized by NSs as an approximant, or fully deleted. Here, Solon and Kanwit compare previous results from a contextualized preference task with speech data from a monologic narrative task to determine whether a learner's preference for a variant of intervocalic /d/ would be replicated in their production of the same segment. By incorporating a variety of linguistic (e.g., surrounding phonological context and lexical frequency) and extralinguistic (e.g., learner proficiency level and time spent abroad) factors into their analysis, Solon and Kanwit's results indicate that perception of variation does indeed precede production and that proficiency in the L2 is a critical component of the development of L2 sociolinguistic competence.

The study by **Li** explores the acquisition of target-like patterns of null object expression in L2 Chinese, an aspect of L2 development that has not previously been examined from a variationist perspective. In this study, Li analyzes speech data from sociolinguistic interviews with 20 L2 Chinese learners of varying L1 backgrounds who have resided in China for 3–48 months. Li examines the influence of various linguistic constraints (e.g., coreference and object animacy), social constraints (e.g., speaker gender and speech style), and developmental constraints (e.g., length of time in China and proficiency level) to reveal target-like acquisition patterns that largely approximate those of NSs, but fall short of overall NS null object expression rates due to the learners' preference for clarity. Li's results provide important insights into the choices, both conscious and unconscious, that learners make in terms of applying their sociolinguistic knowledge when navigating interactions in the L2.

The contribution by **Griffin and Nagy** explores another understudied area in variationist SLA—heritage speakers (HSs) and the dual influences of a homeland language variety spoken within the HS community and interference from the dominant language of the wider speech community. Specifically, the authors examine ongoing vowel shifts in the variety of Korean spoken by HSs in Toronto, Canada, through the lens of Meyerhoff's (2009) framework for cross-language influence and seek to determine whether variation patterns among HSs primarily reflect the homeland language variety from Seoul, Korea or interference from Toronto English. Importantly, this study provides a cross-generational analysis that includes three groups of Korean speakers—homeland speakers who have remained in Korea and two groups of Korean speakers who currently reside in Toronto (distinguished by their birthplace—Korea or Canada)—and the myriad influences, both from the HS and the dominant speech community, on attested patterns of vowel fronting and shift.

The study by **Zhang** also focuses on the acquisition of sociolinguistic competence among HSs and examines subject pronoun expression (SPE) among child learners of Chinese Mandarin as a Heritage Language (CHL). In this study, Zhang compares speech data from 27 children enrolled in English–Mandarin dual immersion preschools with data from 15 adult CHL undergraduate students to support the hypothesis that although child learners may not have acquired adult-like constraints on SPE, they may show some sensitivity to adult variation patterns. Moreover, Zhang's results demonstrate that although the development of adultlike constraints on SPE may still not be complete among young adult learners, the impacts of linguistic transfer from a non-pro-drop language like English are more readily seen among child heritage learners than young adult learners who have had more experience with the pro-drop patterns of the heritage language.

The contribution by **Miao and Diskin-Holdaway** explores the use of adjective amplifiers, such as *very* and *really*, in L2 English among L1 Mandarin Chinese speakers residing

in Australia with a specific focus on how language learners adapt to changes in the TL-speaking community. In this study, the authors compare the type and rates of amplifier use of L2 English speakers with those of a group of NSs of Australian English and demonstrate that although overall rates of use are higher than among L1 English speakers, learners lag behind in their participation in the change in progress among L1 English speakers who increasingly prefer the amplifier *really* over *very*. In addition to examining the role of extralinguistic factors such as speaker gender, language proficiency, and length of residence in Australia, the authors also analyze collocation patterns of amplifier use by NSs and L2 speakers and consider the role of L1 interference in the L2 English of lower-proficiency learners and those with shorter periods of residence in the TL community.

Finally, **Brown et al.** examine the acquisition of target-like patterns of subject personal pronoun (SPP) expression in L2 Spanish and demonstrate that a period of SA has a significant impact on the use of overt pronouns in specific contexts and that learners acquire constraints on variation that are similar to those of Spanish NSs. Moreover, this study distinguishes itself by employing a usage-based approach to examine the likelihood of 'discourse continuity' for specific verbs (i.e., whether a verb is used more frequently in a switch or same-reference context), where a switch context favors overt pronoun use among NSs. In this study, the authors hypothesized that learners, like NSs, might acquire target-like SPP expression by discerning patterns of overt and null pronoun use in the linguistic environment. While this hypothesis did not hold true in the current study, the novel approach lays the groundwork for future studies on the acquisition of L2 sociolinguistic competence that leverage theories of usage-based linguistics.

From the first to the last, the contributions to this Special Issue demonstrate a forward movement in the field of variationist SLA by considering a wide variety of target languages, including L2 Chinese, English, French, German, Korean, and Spanish, and examining previously underexplored aspects of the acquisition of L2 sociolinguistic competence, such as learner attitudes toward variation, perception of variation, and the acquisition of variation by child learners and HSs. Additionally, numerous studies in this Special Issue operationalize novel and promising approaches from adjacent fields in linguistics and sociolinguistics, such as social network analysis, L2 identity construction, and usage-based linguistics, that have been previously underutilized in variationist SLA. Together, these studies represent an important evolution in our understanding of how, when, and in what contexts L2 sociolinguistic competence develops, as well as in our appreciation for the wide range of linguistic and extralinguistic influences that impact this development.

Future research and more empirical evidence will continue to broaden and deepen investigations addressed by the contributing articles. In a rapidly evolving, increasingly global, multilingual and transnational world, it will be ever more important to understand the nature and role of the acquisition of additional languages, as much for reasons of inclusivity and equity as for trade and commerce. A more nuanced understanding of issues such as identity construction, the role of speaker agency, and the role of the interlocutor in evolving communicative interactions, will provide a more complete picture of language in the lives of people in the 21st century. A broadening of our understanding and definition of language variation highlights the issue of norms among speakers of additional languages. Future research needs to further investigate speakers' motivations for acquiring and using another language, as well as their aims and their choice of varieties in the TL. No longer can it be assumed that the L2 speaker wants to sound like an L1 speaker or use any particular (often prestige) norms. More research on perception and production will provide further information on speaker attitudes.

The contributions have collectively dealt with a wider range of language pairs. A continuing expansion of this range will permit us to draw more universalistic conclu-

sions about language acquisition. Future research should include non-literate speakers, an important group in size and world impact and, to date, not sufficiently taken into account in variationist SLA studies (though see, in other approaches, for example, Peyton & Young-Scholten, 2020). Equally, neurodiverse speakers of additional languages should be considered. Broadly speaking, a wider range of speaker voices should figure in future research, as should new forms of input such as social media.

Addressing such issues will necessitate the continued development of research methodologies. Ongoing developments in quantitative approaches, including network analysis and a wider range of statistical methodologies, will be of benefit. Network analysis, for instance, can tell us more about the nature and role of input. New statistical programs will permit a more nuanced picture of language use. In addition, greater use of qualitative approaches will more fully capture social aspects of the speaker, such as context, specific interactions co-constructed by speakers, speaker choice in relation to language variety, speaker-related language attitudes and ideology, and how these may be similar or different from TL ideology. New insights could emerge from investigating the use of different variables by the same speakers in existing datasets (see Gudmestad et al., 2020) or examining datasets using different or newly emerging qualitative or quantitative research methodologies.

A wealth of data at the intersection of SLA and LVC has been accumulated by researchers over a number of decades. In investigating the acquisition of L2 sociolinguistic competence, future research can build upon areas treated in this Special Issue and address others not covered here. Development of this important area of communicative competence will thus provide a more complete and accurate picture of the acquisition of additional languages.

Conflicts of Interest: The authors declare no conflict of interest.

Notes

1 It should be noted that we use the term L2 speaker as a general term which covers many types of users/learners of additional languages.

2 Here, the term native speaker (NS), also referred to as a first language (L1) or target language (TL) speaker, includes speakers who speak the target language as an L1 and expert L2 speakers of the target language who participate in variation like L1 speakers do.

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Review

Reconsidering the Social in Language Learning: A State of the Science and an Agenda for Future Research in Variationist SLA

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Abstract: The current paper offers a critical reflection on the role of the social dimension of the second language (L2) development of sociolinguistic competence. We center our discussion of L2 sociolinguistic competence on variationist approaches to second language acquisition (SLA) and the study of variable structures. We first introduce the framework of variationist SLA and offer a brief overview of some of the social, and more broadly extralinguistic, factors that have been investigated in this line of inquiry. We then discuss the three waves of variationist sociolinguistics and various social factors that have been examined in other socially oriented approaches to SLA. By reflecting on these bodies of research, our goal is to identify how the insights from this work (i.e., research couched in the second and third waves of variationist sociolinguistics and in other socially oriented approaches to SLA) could be extended to the study of L2 sociolinguistic competence. We argue that greater attention to the social nature of language in variationist SLA is needed in order to more fully understand the L2 development of variable structures.

Keywords: variationist SLA; social variation; sociolinguistics; language variation; sociolinguistic competence; acquisition of variation

1. Introduction

The current paper aims to contribute to scholarship on sociolinguistic competence (see Kanwit, 2022, and the other articles in this Special Issue) by offering a state of the science of and an agenda for future research on the social, and more broadly the extralinguistic, dimension of language that shapes second language (L2) development and usage.[1] Sociolinguistic competence refers to the ability to use and interpret the social meaning of language (Geeslin & Long, 2014). We couch our reflections within variationist approaches to second language acquisition (SLA; Bayley et al., 2022; Bayley & Tarone, 2012; Geeslin & Long, 2014). Central to traditional variationist SLA is the recognition that language varies according to numerous factors, not only linguistic but also extralinguistic (i.e., social, individual, contextual).[2] Variationist SLA is an important strand of research in applied linguistics because it has made valuable contributions to the understanding of learners' acquisition of sociolinguistic variation. Despite these insights, we focus this state-of-the-science article on an issue in need of more rigorous inquiry than it has received in previous research: the social side of language variation. We aim, therefore, to initiate a call for a more concentrated focus on social variation in order to develop a stronger theoretical understanding of the ways in which such variation shapes L2 development.

We begin by briefly reviewing why it is important to study the extralinguistic side of L2 acquisition. We then turn to variationist SLA and examine the extralinguistic factors

that have received the most attention in this area of research. These include gender, social class, learning context, L2 proficiency, and discourse topic (e.g., Adamson & Regan, 1991; Geeslin, 2011, 2020; Kanwit & Solon, 2013; Mougeon et al., 2010; Regan et al., 2009). Next, we consider the ways in which variationist sociolinguistics has evolved over its three waves (Eckert, 2012) and how these developments could be valuable for L2 variationism. We then discuss extralinguistic characteristics that have been investigated in other socially oriented approaches to SLA. Examples of these factors include learner sexuality and gender identity (e.g., Knisely, 2020), race and ethnicity (e.g., Alim et al., 2016; Flores & Rosa, 2019), and social distance between interlocutors (e.g., Félix-Brasdefer & Shively, 2021). This review identifies extralinguistic characteristics shown to be important in L2 acquisition that have not been fully integrated into work in variationist SLA. Throughout our discussions of the three waves of variationist sociolinguistics and extralinguistic considerations in other approaches to SLA, we offer a critical reflection on the need to investigate extralinguistic variation in a more profound way than we currently do in most L2 variationist research. We argue that more fully incorporating the extralinguistic dimension of language into studies of variationist SLA is vital not only for advancing theoretical predictions about the acquisition of variation but also for furthering knowledge about sociolinguistic competence.

2. Variationist SLA

Since SLA's inception, cognitivism has guided much of its scope of investigation (Atkinson, 2011); this disciplinary orientation has meant that traditionally the field has sought to understand how an L2 is acquired in the mind. Notwithstanding the value of this scholarship, over the years, researchers have advocated for an expansion of the field to further account for social facets of language (e.g., see early works in variationist SLA, such as Bayley, 1991; Dickerson, 1974; Preston, 1993).[3] Subsequently, Firth and Wagner (1997), for example, argued that "language is not only a cognitive phenomenon, the product of the individual's brain; it is also fundamentally a social phenomenon, acquired and used interactively, in a variety of contexts for myriad practical purposes" (p. 296). In short, investigating the social, or extralinguistic, dimension of L2 acquisition is valuable because language is inherently social: it is used in social contexts to express social meanings reflective of the identities of the interlocutors (Eckert, 2000). A discussion of the debate about SLA's scope of inquiry (i.e., cognitive versus social) is beyond the purview of the article, so we simply note that SLA has diversified its scholarly focus and consequently its theoretical orientations (Atkinson, 2011). Importantly, there now exists evidence of the complex ways in which the extralinguistic dimension of language shapes L2 acquisition (see Tarone, 2000; Geeslin & Long, 2014).

2.1. An Overview of Variationist SLA

One social approach to acquisition is variationist SLA, which seeks to explain variation in learner language, namely, the complex ways in which learners' language usage is variable and in which variation/variability is important for understanding acquisition. In this area of research, variation refers to the use of two or more forms (i.e., variants) to express the same meaning or function. A phonetic example in Arabic is variation with the character ج *jīm* (Picoral & Carvalho, 2020). Various realizations exist, with [g] being associated with Egyptian dialects and [dʒ] with Levantine varieties. Verbs that express futurity in French (e.g., periphrastic future, inflectional future, and present indicative) constitute an instance of morphosyntactic variation (e.g., Gudmestad et al., 2020), as shown below.

- Periphrastic future: *Demain je vais aller à Londres*. "Tomorrow I am going to go to London."
- Inflectional future: *Demain j'irai à Londres*. "Tomorrow I will go to London."
- Present indicative: *Demain je vais à Londres*. "Tomorrow I go to London."

Central to variationist SLA, which has roots in variationist sociolinguistics (e.g., Labov, 1972), is the recognition that language varies according to numerous factors, both internal and external to the language system, where internal factors are linguistic features of the language itself and factors external to language include social, individual, and contextual characteristics of speakers and the communicative context.[4] We continue with the aforementioned examples in Arabic and French to offer examples of linguistic and extralinguistic factors. First, Raish (2015) investigated variation in the phonetic realizations of ج *jīm* among L2 and (Levantine and Egyptian) heritage learners of Arabic who were studying in Cairo, Egypt. The linguistic factor of word position and the social factor of gender were two constraints that impacted participants' use of ج *jīm*. The Egyptian variant [g] was favored in word-initial position and among women. In the study on future-time expression and French, lexical temporal indicator and topic seriousness[5] were internal and external factors, respectively, found to impact the use of future-time verbs in Gudmestad et al. (2020). Near-native speakers of French living in France were more likely to use present indicative to express futurity when a time-specific lexical temporal indicator (e.g., *aujourd'hui* "today") was present in the same clause as the future-time verb, and they were less likely to use present indicative when the topic of conversation was serious (e.g., education).

Variationist SLA distinguishes between two types of variation: Type I or vertical variation and Type II or horizontal variation (Rehner, 2002). Type II variation has been the focus of most variationist SLA research. It pertains to linguistic phenomena that are variable among native speakers.[6] In sociolinguistics, these are called linguistic variables, and in SLA, they are termed variable structures. We use the latter term in the current paper. Phonetic variation with the Arabic character ج *jīm* and future-time expression in French are examples of variable structures. Instances of Type II variation offer a unique acquisitional challenge to learners: Because native-speaker usage is variable, the input learners receive is presumed to be characterized by this variability and the target of acquisition is also variable. Categorical usage, in other words, is typically not the learning goal.[7] This is in contrast to Type I variation, where variability is not (generally) seen among native speakers but is present among learners as part of their language development. For example, in Portuguese, certain prepositions (e.g., a "to", em "in", Picoral & Carvalho, 2020) categorically contract with the following definite article (e.g., *em* + *a* = *na* "in the$_{\text{FEM.SG}}$"). Picoral and Carvalho (2020) investigated the variable use of these contractions (i.e., use versus non-use) among third-language learners of Portuguese in order to account for the Type I variation seen in this learner population.

The psycholinguistic model of interlanguage variation, developed by Dennis Preston (2000, inter alia), offers a theoretical framework for explaining variability in learner language. This model includes three explanatory levels. Level 1 consists of social (or extralinguistic) variables, including the aforementioned factors like gender of the speaker, L2 proficiency, and topic seriousness. Level 2 pertains to linguistic factors. Word position and lexical temporal indicators described above for ج *jīm* and future-time expression, respectively, are examples of linguistic features that can constrain variable usage. Finally, Level 3 is time, which accounts for the variability observed in learner language along the developmental trajectory. Learners' use of a linguistic form in this model is explained in probabilistic terms, with a particular variant more or less likely depending on the specific combination of linguistic and social constraints that characterize a given instance of usage and by the point at which learners are on the developmental trajectory (i.e., time). This model, thus, offers a way of conceptualizing and empirically investigating the complex interplay between the linguistic and social dimensions of language in L2 acquisition (Tarone, 2000).

The methodological tools that variationist SLA researchers employ align with Preston's (2000, inter alia) theoretical account. The analyses tend to be quantitative and consist of two general components. First, researchers document the frequency with which each variant occurs in the dataset. Second, they conduct a multivariate analysis (usually a regression model) to explain learners' variable behavior. In a regression model, the linguistic phenomenon under investigation is the dependent variable (e.g., phonetic realizations of ج *jīm* in Arabic, future-time expression in French, preposition + article contractions in Portuguese). The independent variables are the internal and external factors thought to condition variation. The model reveals which factors are important and the specific role they play in variation. For example, Picoral and Carvalho (2020) found that one of the significant linguistic constraints on preposition + article contraction was article number: learners were more likely to use the contraction when the article was singular compared to plural. A significant extralinguistic factor was third-language Portuguese level: Level 3 (the most advanced group) favored contraction, Level 2 disfavored contraction, and Level 1 neither favored nor disfavored contraction. In this way, a regression analysis has the ability to explain how multiple linguistic and social factors simultaneously influence variability, rather than accounting for factors in isolation.

Variationist SLA is a valuable area of research in applied linguistics because it helps to further the understanding of how learners build a more nuanced grammar that reveals sensitivity to linguistic and extralinguistic factors. It also provides a model for integrating the extralinguistic dimension of language into theoretical understandings of L2 acquisition. Despite these important contributions, we believe that there are ways in which this framework could be further strengthened. In particular, although it has made valuable contributions to the understanding of linguistic constraints on L2 variation (Level 2 of the psycholinguistic model of interlanguage variation), we focus this state-of-the-scholarship article on an issue that would benefit from more rigorous attention than it has received in previous research: social variation (i.e., Level 1 of the model). Variationist SLA research has given considerably more attention to linguistic constraints or Level 2 variation (Geeslin, 2011, pp. 501–502). As we discuss in Sections 3 and 4, this focus is limiting because it does not reflect more recent developments in variationist sociolinguistics and other socially oriented approaches to SLA. However, we aim to initiate a call for a more concentrated focus on social (and extralinguistic) variation because in order to develop a stronger theoretical understanding of the ways in which social variation shapes learner development, renewed attention to the extralinguistic nature of language learning and variation is needed.

2.2. Previous L2 Variationist Research on Social Factors

In traditional variationist SLA, Level 1 of the psycholinguistic model of interlanguage variation, although termed *social* by Preston (2000), has been interpreted broadly to encompass *extralinguistic* variation. Researchers have investigated social factors that are commonly examined in sociolinguistics like gender and social class, as well as other individual and contextual factors like learning context, L2 proficiency, and topic. Focusing specifically on work that adopted the variationist approach, we review each of these variables in turn.

We begin with the gender of the learner. While not all studies that have investigated this factor have found that it conditions variation (e.g., present progressive in Spanish, Geeslin & Fafulas, 2012), various L2 investigations have shown that men use informal variants more than women, findings that were similar to native-speaker patterns. For example, Adamson and Regan (1991) investigated variable (ing) in words like "going", "tempting", and "nothing" (p. 4) among additional-language learners of English (native speakers of Cambodian or Vietnamese). Result showed that the male learners favored the

informal variant [in] and women favored the formal variant [iŋ]. Mougeon et al. (2010), moreover, examined immersion learners in Canada and variation between two lexical items that mean "only" in French. They observed that men favored the informal variant *juste*, while women favored the formal *seulement*. In another study on French, Regan et al. (2009) investigated Irish learners who were studying abroad in France. They found that men favored the informal first-person-plural subject pronoun *on* "we" and women favored the formal variant *nous*. In contrast, however, Regan et al. also found that women deleted /l/ in subject clitic pronouns more. In this case, women favored the informal variant more than men, which aligned with trends among native speakers.

Social class is another extralinguistic factor that has received attention in variationist SLA, though it has been investigated more often in L2 French than other languages. Regan et al. (2009), in their study of additional-language learners of French studying in France, found that middle-class participants were more likely to use the informal first-person-plural subject pronoun *on*, whereas upper class learners favored the formal *nous*. In Mougeon et al.'s (2010) work on immersion learners of French, social class did not constrain some of the variable structures under investigation (e.g., future-time reference, lexical items for *car*). However, when class did influence use, middle-class participants favored formal variants (e.g., retention of the preverbal negative particle *ne* and the pronoun *nous*) and upper-working class learners favored the more informal variants (omission of *ne,* pronoun *on*). Collectively, these two investigations on L2 French suggest that learners who belong to higher social classes use formal variants more often than those who belong to lower social classes.

Other factors that have received attention in variationist SLA include, for instance, learning context, L2 proficiency, and discourse topic. Regarding learning context, researchers examine whether the location where learners are exposed to the target language is connected to variable language behavior. One such study is Kanwit and Solon (2013), who investigated future-time reference in Spanish among two groups of learners: one who studied in Spain and another in Mexico. A group of native speakers living in the same cities where the learners were studying also participated in the study. The two native-speaker groups exhibited certain differences in their selection of future-time verb forms on a written contextualized preference task. For instance, whereas temporal distance (i.e., how far in the future an action is to occur) was a linguistic factor that influenced selection of future-time verb forms for the Spaniards, this factor was not significant for the Mexicans. Kanwit and Solon also found that over the course of the seven-week study abroad program, the learners in each location changed their variable patterns of verb selection in contexts of future-time reference, moving closer toward the patterns exhibited by the native speakers in the same region (i.e., comparatively greater preference for the morphological future in Spain). Whereas Kanwit and Solon (2013) constitutes an example of between-learning-context variation, research that investigates within-learning-context variation also exists. For instance, Wirtz and Pfenninger (2024) utilized virtual reality data-collection techniques to study learners' use of dialectal varieties in German (i.e., standard German, Austrian dialect, and mixed varieties).[8] They assigned each participant a score for their self-reported standard German exposure and their self-reported Austrian dialect exposure. Their analysis of these variables showed, for example, that only those participants who reported higher than average exposure to the Austrian dialect used this regional variety. Collectively, these two investigations indicate that learners gain sensitivity to the linguistic features that are present in a given learning context, and they can incorporate them into their language behavior.

Regarding L2 proficiency, the analysis of this variable has been particularly common in cross-sectional research on L2 Spanish, where the course level of instructed learners has

been used often as a general means of distinguishing proficiency levels. For example, in Gudmestad's (2012) investigation of mood distinction (i.e., the subjunctive–indicative contrast) and Kanwit's (2017) study of future-time reference, the researchers identified stages of development for the variable structures under investigation by documenting differences in patterns of use across course levels. More recently, other assessments of proficiency have been employed in variationist SLA. In Solon and Kanwit (2022), for instance, participants completed an elicited imitation task, an instrument that has been used in various subfields of SLA as a general measure of proficiency (see Bowden, 2016 for information on the task; and Gudmestad & Edmonds, 2023, for the use of this proficiency measure in the study of variable subject expression). The researchers conducted a hierarchical cluster analysis on the scores, which identified three distinct proficiency levels. In the authors' investigation of intervocalic/d/in Spanish (in words like *cada* "each") in an aural contextualized preference task, Solon and Kanwit found that L2 proficiency on its own did not predict whether learners selected the deleted or realized variant. However, L2 proficiency significantly interacted with other independent variables. For example, the interaction between L2 proficiency and the preceding vowel (i.e., the vowel that came before/d/in the word containing intervocalic/d/) demonstrated that "when the preceding vowel was/i/rather than/a/, the low and mid groups selected deletion significantly less than the high group" (Solon & Kanwit, 2022, p. 815).

Other investigations have examined the topic of the interview (Regan et al., 2009) or topic seriousness as a means to examine sociostylistic variation, where certain topics are linked with (in)formality in language. Regarding topic seriousness, Donaldson (2017) studied verbal negation in French, specifically retention versus omission of the preverbal particle *ne*. He found that near-native speakers of French were more likely to use *ne*, the formal variant, when the topic was serious. In another analysis of the same speakers, Gudmestad et al. (2020) found that in contexts of future-time reference, the near-native speakers were also more likely with serious topics to use the inflectional future, again the formal variant, compared to the periphrastic future and present indicative.

Having reviewed some of the extralinguistic variables that have been investigated in this area of scholarship, we now turn to future directions for the study of the social side of the acquisition of sociolinguistic variation. We begin by reviewing the evolution of variationist sociolinguistics, which has been described as occurring in three waves, and highlight the need for L2 researchers to pursue more research that aligns with the second and third waves. We then consider L2 work conducted in frameworks other than variationism that have shed important light on the role of extralinguistic variation in L2 development. Such scholarship and L2 variationist research are not necessarily in active dialogue with each other, and we argue that greater consideration of the social dimension of language from L2 studies outside of variationism can help reveal understudied aspects of L2 variation.

3. Three Waves of Variationist Sociolinguistics

As previously mentioned, variationist SLA has drawn conceptually and methodologically from variationist sociolinguistics. This research strand began with William Labov's (1972, inter alia) work on phonological variation in US English and led to a rich line of inquiry. Penelope Eckert (2012) has described variationist sociolinguistics as evolving over the course of three waves in the way it investigates language change and social meaning. Methodologically, first-wave studies have aimed to gather data from representative samples of a community, and quantitative analyses then identify links between linguistic variation and pre-established, macro-level demographic factors like age, gender, and socioeconomic class (Eckert, 2012, p. 90). The L2 studies described in the previous section

align most closely with the first wave.[9] Despite the valuable knowledge that has emerged from first-wave investigations, Eckert (2012, p. 90) observed that these studies "interpreted the social significance of variation on the basis of a general understanding of the [social] categories that served to select and classify speakers rather than through direct knowledge of the speakers themselves and their communities". The second wave, in response, represents a departure from a priori social classifications and instead uses ethnographic methods to understand the local significance (i.e., tangible issues, locations, people) of social categories in a community and how local features shape language variation and change, with language users attributed as agents making decisions to use particular forms according to local practices and ideologies, rather than simply as a result of their macro-demographic characteristics (Eckert, 2012, pp. 90–91). For more on the local, see the notion of communities of practice in seminal works by Eckert and McConnell-Ginet (1992, 2007).

A well-known example of second-wave variationist sociolinguistics is Eckert's (1989a, 2000) study of sound change among adolescents in a suburban US high school. Eckert spent two years at pseudonymous Belten High School conducting participant observation of and interviews with students. She focused on the final two years of high school of one graduating class. The research identified Jocks and Burnouts, two categories of students that had local significance. The contrasts between these two local social categories are manifested in various ways (see Table 1). Eckert (1989a, pp. 67–68) also observed clear differences in the two groups' use of language, with one example being that Burnouts use double negation (e.g., *You can't do nothing*) far more often than Jocks. While a detailed discussion of Eckert's analysis of sound change is beyond this article's scope, we highlight two relevant findings that emerged because of the focus on local social categories. For one, Eckert (1989b) observed differences in sound change between gender identities and between category memberships (i.e., Jocks and Burnouts) and, importantly, found that these two social variables interact such that "girls are asserting their category identities through language more than are the boys" (p. 265). Another observation is that the a priori classification of the adolescents according to their parents' socioeconomic status did not account for their involvement in sound change, but their membership in the locally relevant categories of Jocks and Burnouts did (Eckert, 2018, p. 58). Taken together, these findings attest to the value of ethnographic work that seeks to identify social categories that are meaningful to the community under investigation and that subsequently applies these categories to the study of language variation and change.

Table 1. Differences between local social categories (adapted from Eckert, 1989a).

Characteristic	Jocks	Burnouts
Clothing	Pastel-colored	Dark-colored
Smoking habits	Do not smoke cigarettes	Smoke cigarettes
School activities	Involvement in school sports and clubs	Rejection of school extracurriculars
Spatial orientation	Occupy school facilities (eating lunch in the cafeteria, storing belongings in lockers)	Prefer school spaces less central to school life (courtyard, parking lot)

To date, L2 variationist investigations generally do not classify themselves as examples of second-wave research, which suggests that there are many ways in which it could be applied to the study of L2 sociolinguistic competence.[10] This work would begin with the identification of communities in which learners participate and the determination of relevant social categories based on deep local knowledge gained from interacting with and observing groups of and individual learners. For example, Bayley and Tarone (2012) note that the L2 classroom may form a community. Ethnographic studies on L2 classrooms

could stand to make unique contributions to second-wave research because "L2 learner identity and group orientation may be defined in terms of categories not traditionally used in sociolinguistics; for example, L2 learners entering academic disciplines may define themselves more in terms of membership in academic discourse communities than membership in traditional speech communities" (p. 44). Investigations of L2 users living in the target-language context (e.g., study abroad participants, immigrants) would also be valuable because they may form local categories that have social meaning.[11] Study abroad participants, for instance, may create and understand social meaning within their temporary residence in the community. Once researchers have identified locally relevant categories, they can be applied to the study of the L2 development of variable structures.

While the first wave accounted for macro-demographic factors and the second wave highlighted language users' agency and locally meaningful social categories, the third wave is marked by its concern with speakers' stylistic perspective and fluid expression of social meanings (see Eckert, 2018; Hall-Lew et al., 2021). Namely, as language users, we place ourselves in the social landscape through particular stylistic practices (i.e., ways of interacting) that are achieved in real time (Eckert, 2012, pp. 93–94). As members of particular social groups use certain forms, variable language usage becomes reinterpreted and fluid social meanings (e.g., associations with men, nerds, etc.) continue to become recombined in a bricolage of sorts (Hebdige, 1979; Lévi-Strauss, 1966; Kiesling, 2024, Chapter 6). In other words, through language, among other semiotic resources (e.g., clothing, gestures), individuals index ways of belonging or attempt to take on what they view as desirable traits. These practices and features (i.e., the bricolage) associated with particular linguistic or other semiotic usage become ideologically linked—together constituting an indexical field, or grouping of ideologically related meanings (Eckert, 2008; Campbell-Kibler, 2011)—and any of the social meanings can be invoked at a particular time based on ideological connections. Thus, the social meanings of linguistic forms are not fixed or static and instead include a range of possible meanings (i.e., an indexical field, as exemplified in the paragraph that follows, taking place within an ever-changing ideological field; Silverstein, 2003).

Social differentiation develops over time (e.g., through schooling, work) and individuals continue to develop distinctive styles. As language users index particular social meanings, individual and group styles develop and become fortified, with speakers taking repeated stances in their relationship to each other in an interaction and alignment (or not) with their interlocutor (see Kiesling, 2024). Registers are thus not only stylistic resources at a speaker's disposal but also the end products of the bricolage of the multiple social meanings conveyed when speaking a certain way. Linguistic forms may then become associated with a particular social context (e.g., location) or type of speaker, and ideology becomes embedded in language and is constructed and reconstructed, revealing an ideological link between the linguistic and the social (Eckert, 2008; Irvine & Gal, 2000).

Consequently, in the third wave, style becomes viewed as evidence of choice or agency rather than simply the result of an individual's membership in a particular sociodemographic group. Ideologies become revealed, as stylistic moves stem from how individuals view and interpret the surrounding world, how they hold and re-form ideologies, and how they position themselves in the social world. Thus, stylistic moves connect language to demographic categories in local practice, as individuals interpret and produce a range of styles (Eckert, 2008).

For instance, in his third-wave case study, Podesva (2007) examined the speech of "Heath" across different communicative contexts via acoustic measures and analyses of discourse functions of phenomena such as hyperarticulation, creaky voice, and falsetto. Hyperarticulation has been documented as indexing a range of social types, styles, or voices (e.g., aspirated intervocalic /t/ can invoke identity as a nerd(y) girl, a gay man, an Orthodox

Jew, a speaker of British English, a school teacher), and thus in real time a gay man (i.e., Heath) has the agency to use longer bursts of /t/ aspiration to convey the persona of a "playful diva" at a social barbecue with friends (p. 4). In the first place, hyperarticulation becomes ideologically linked to these social types because it is associated with certain qualities (e.g., articulateness, elegance, educatedness, prissiness) that might be expected for a particular type of person. Moreover, in a given moment, a speaker may decide to hyperarticulate in order to take a particular stance (e.g., to be formal, polite, clear, emphatic, exasperated, angry, annoyed). It is precisely, then, the indexical connection between hyperarticulation and a particular form of gayness that makes Heath's intentions clear to his audience of friends and enables him to play with (i.e., vary) language accordingly, making these features noticeable. These connections can be visualized in Figure 1 (see also Figure 4 of Eckert, 2008, p. 469). The particular qualities may be ideologically associated with multiple social types, and stances may be linked to a variety of different qualities. For instance, a school teacher and a nerdy girl may be associated with articulateness, and someone articulate and someone elegant may be linked to politeness. Thus, a range of social types, qualities, and stances come to form the indexical field of /t/ release. Some qualities may be more closely related and are therefore visualized more closely; the same is true for some stances.

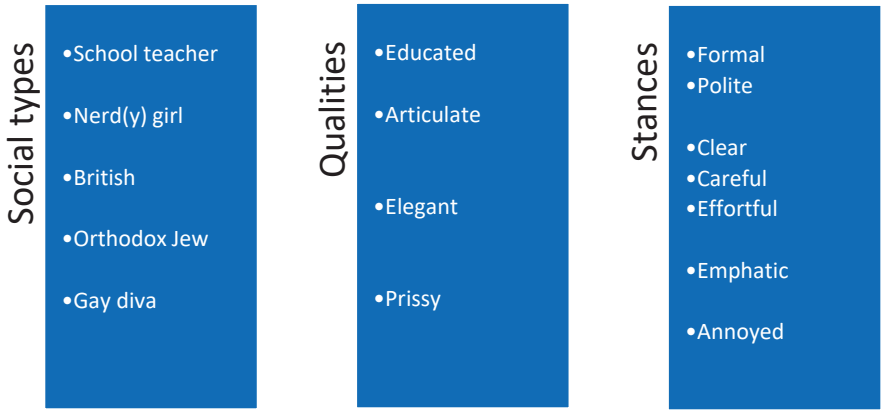

Figure 1. The indexical field of /t/ release (adapted from Podesva, 2007; Eckert, 2008).

Furthermore, language is but one semiotic resource available to individuals, so much like how linguistic forms may become associated with particular speakers, groups, and styles, so too can other meaningful resources (e.g., makeup, hair styles). Therefore, through the second and third waves, we see that language users are not passive members of certain social categories constrained by a particular variable but are agents expressing a certain meaning in a particular moment. The specific moments of language use by a particular speaker may generalize to a bigger picture, with social meanings interpreted and reinterpreted, becoming associated with certain groups and styles. Speakers then meaningfully play with such knowledge for their own communicative purposes.

Although the third wave shares with the second wave that it has been much less invoked in L2 variationist research than the first wave, there is a small but growing body of research that investigates how L2 speakers perform stylistic practices and reveal ideologies in real time (for recent overviews, see Smakman, 2022; Starr, 2023). For instance, Grammon (2024a) analyzed "Rita", a learner studying abroad in Cuzco, Peru, and identified two principal phases through which she developed sociolinguistic competence. First, Rita gained interpretive abilities regarding regional forms and their social indexicality (i.e., connection to particular social types) in making first-order (i.e., direct) connections between forms and social meanings. She made ideological connections based on opinions regarding comprehensibility, prestige, and an idealized standard language in generally associating

Cuzco Spanish as less complex and correct than the classroom Spanish to which she had been previously exposed. For instance, her host mother's usage of *hay que* "one must" instead of *tener que* drew her attention as a local form generally absent from her prior instruction. In the second phase, Rita justified these connections through additional social experiences and began to connect regional forms with higher-order social-indexical values via representations of local social types (of Peruvians). We give two variable structures as examples. Rita came to associate usage of the familiar second-person singular *tú* (rather than more formal *usted*) with *bricheros* (e.g., catcallers and inappropriate cab drivers) and usage of the double possessive construction (e.g., the phrase-initial possessive pronoun in *su mamá de Juan* "the mother of Juan" rather than the standard definite article in *la mamá de Juan*), which she came through a raciolinguistic ideology to associate with *cholos,* or individuals originating from indigenous communities and typically able to speak Quechua. Thus, third-wave research has the ability to demonstrate how learners move from connecting forms (1) directly to social meanings (e.g., that a certain variety is prestigious) and then (2) to higher-order indexical types of local social relevance (e.g., that possessive pronoun usage might be associated with ties to an indigenous community in a particular regional setting).

4. Other Socially Oriented Research in SLA

L2 variationism has considered social factors less robustly than certain approaches outlined in the current section. Critically, the work described here has much to offer L2 variationism because it provides an interpretive lens for the analysis of social meaning. L2 research that does not classify itself as variationist in orientation has considered a range of social factors that have heretofore been underexplored in variationist SLA, including variables related to gender and sexuality; culture, race, and ethnicity; and interlocutor factors; among others. Critically, research described in the current section sheds light on how language users demonstrate agency in making decisions to use or avoid particular variants and varieties for social purposes. For each set of social variables in this section, we consider illustrative examples of recent and/or seminal research from non-variationist perspectives and highlight the ways in which extending this work to variationist SLA could be valuable for advancing knowledge about sociolinguistic competence.

Recent research on L2 development has afforded an important role to learner gender and sexuality that has tended to be absent from L2 variationist studies; we offer two examples. First, interdisciplinary work by Knisely (2020) reports attitudes toward non-binary forms in L2 French, drawing on frameworks of sociocultural theory (Lantolf et al., 2020), sociocultural gender diversity, trans studies, sociology of language, power, and identity, and raciolinguistics (see Alim et al., 2016). Knisely reveals the complex task of non-binary individuals in attempting to use forms perceived to be true to their own identities (i.e., not necessarily represented by pre-existing grammatical forms or the combination thereof) while still being comprehensible to interlocutors from a range of experience levels with non-binary individuals. For instance, the hybrid pronoun *iel* (built off *il* "he" and *elle* "she", equivalent to English singular "they") was the highest rated of the innovative pronouns, and inclusive punctuated suffixes (e.g., use of combined affixes as in *gentil.le* for "kind", integrating masculine *gentil* and feminine *gentille*) also received high comprehensibility scores. L2 variationist work could benefit from approaches such as Knisely's, which move beyond the binary in analyses of learner gender identity and its relationship with sociolinguistic variation.

Second, recent interdisciplinary research by Moore (2019) has provided vivid insights into the linguistic experiences of LGBT learners of L2 Japanese, drawing on three theoretical frameworks: theory of social domains (i.e., that the social world is made up of

psychobiography, situated activity, social setting, and contextual resources), sexual identity management (i.e., that stigmatized identities must be actively managed, e.g., Nelson, 2010), and the model of social participation trajectories (i.e., that inbound (new) trajectories may differ from insider (ongoing, established) ones). Moore's qualitative study demonstrates how learners come to indicate nonheteronormative identities in class through salient indicators, insider evidence, and explicit statements, illustrated in Table 2. Moore's work, like that of Knisely, benefits from being informed by multiple social theories. As we explore in the next paragraph, such interdisciplinary grounding could help subsequent L2 variationist work to predict and interpret language variation realized via learner interaction.

Table 2. Cues affecting learners' decisions to indicate nonheteronormative identities (adapted from Moore, 2019).

Cue	Description	Example
Salient indicators	Possible signifiers of classmates'/teachers' acceptance of LGBT individuals	Status as young, a woman
Insider evidence	Comments and actions regarding acceptance of LGBT individuals	Facial expressions, use of outdated terms
Explicit statements	Overt declaration of acceptance	Pre-semester survey with such a statement

Subsequent work on sociolinguistic competence from a variationist perspective might, for example, use the powerful social frameworks and qualitative elucidations from Moore (2019) to consider the possible role of nonheteronormative gender identity in constraining other forms of language variation in the presence of independent linguistic and/or social variables and how such constraints may change over time as the learner becomes more comfortable with the instructor, classmates, and other interlocutors according to the strategies outlined above. For instance, in a study focused on second-person singular address forms in German (i.e., traditionally informal *du* and traditionally formal *Sie*), in addition to noting the relevant cues identified by Moore, the researcher could analyze how a learner's gender identity shapes how they address their significant other and their instructor. Adding to the complex considerations of such a project, the German address system has been argued to be more of a continuum than a binary distinction of formality (Hickey, 2003), which could be conceptualized as a scale of perceived hierarchical and social distance (Kretzenbacher, 2010). The researcher could also code other contextual forms known to affect the acquisition and use of forms of address (e.g., context of interaction, level of imposition in any requests, gender identities of interlocutors). The analyst could then see to what extent the address form used for the partner matches the learner's acquisition of forms of address more generally or whether the learner meaningfully manipulates person reference for certain types of interlocutors or micro-contextual factors. This information could be complemented qualitatively by the three cues noted by Moore. For example, with interlocutors who differ in terms of salient indicators, to what extent does the learner utilize different forms of address? Does insider evidence that reveals an interlocutor to be more/less accepting correlate with diverging rates of pronoun usage? Moreover, conceptualization of address systems as scalar/continuous rather than binary would be consistent with the cognitive–functional origins of variationism in not forcing dichotomous binaries of categorization (Tomasello, 1998), with more nuanced conceptualizations of other dimensions of social life (e.g., non-binary considerations of gender, Sauntson, 2020), and with statistical suggestions to not impose categorical distinctions on continuous/scalar constructs (Baayen, 2014).

Moore (2019) and Knisely (2020) point to trends elucidated across a range of methodologies, which have at times revealed differential acquisitional patterns based on the role of identity work or access to differential types of input (e.g., Cashman, 2021; Nelson, 2010).

Namely, because a learner may perform their gender identity differentially in a given moment (based on the interlocutor, communicative goal, etc.) and because a learner's access to input may differ based on their gender identity and the attitudes of potential interlocutors, variationist SLA would do well to prioritize such information in future studies. As seen in the prior example, a learner's fluctuation in rates of familiar or formal pronoun usage may, in fact, reveal a conscious decision to express themselves in a certain way depending on perceived comfort or hesitation with the audience rather than, for instance, inconsistency in an ability to maintain consistency in forms of pronominal address in German. Similarly, more in-depth information about a learner's identity and orientation toward Peruvian culture, à la Grammon (2024a), could help shed light on their variability in the use of second-person pronouns and double possessives. Such information will help inform the researcher whether a learner is continuing to acquire variable structures in determining when more (in)formal pronouns or possessive constructions might be expected but also when a learner decides to (not) use a given form due to a desire to identify with a given interlocutor. This future work could complement Grammon's qualitative examples with larger-scale production data from learners to see to what extent more widespread usage supports or diverges from the forms we might expect a learner to use given a particular social and linguistic context and a particular orientation to the target culture and interlocutor.

L2 research outside of variationism has also shed important light on the roles of culture, race, and ethnicity on L2 experience and development. Beginning with culture, Lybeck (2002) used acculturation theory (i.e., that social factors play an essential role in influencing the quantity and quality of input) to demonstrate links between learners' cultural identification and development of L2 pronunciation for English-speaking American learners of L2 Norwegian studying in Norway. Namely, learners who showed greater identification with Norwegian culture developed more target-like development of pronunciation of/r/. Thus, as we have seen with second-wave sociolinguistics, Lybeck used knowledge of learners' context of social interaction (i.e., their attitudes toward Norwegian culture) to help explain language variation. Perception of culture has also received attention, as in perception of learner approximation to the target culture in Gatbonton et al. (2005), which found that Chinese- and French-speaking learners of English in Quebec perceived that L2 speakers who sounded more like target-language speakers of English were less loyal to their home ethnic group. Work such as that by Gatbonton and colleagues helps reinforce the point that learners are agents who may decide to approximate local target-language variants because they want to sound like (native) speakers from the region or they may consciously adjust their speech to maintain affiliation with another community (e.g., that of their L1). Such studies add important explanatory power for the role of social variables in constraining L2 use and perception because the theories from which they draw help to provide an interpretative lens for data and help make predictions regarding the roles of identity factors and other contextual and situational elements.

Moreover, the roles of race and ethnicity in constraining exposure, usage, and development in the L2 tend to be underexplored, based on emphasis on college-age students who are overrepresented by Caucasian/European individuals who may not strongly identify with a particular cultural background. Nevertheless, Gatbonton et al. (2005), Grammon (2024a), Knisely (2020), and Moore (2019), along with recent efforts in raciolinguistics (Alim et al., 2016), push SLA forward by considering underrepresented perspectives. For example, through the lens of transformative socialization (i.e., how learners and their communities enact new communicative selves in collaboratively co-constructing and negotiating multiple identities, Anya, 2017, p. 4), Anya documented in detail the experiences and linguistic development of African–American students studying abroad in a majority Black (i.e., Afro-Brazilian) region of Brazil, noting for instance positive learner reports of sojourn-

ing in an environment of greater understanding and comfort with respect to racial identity. Subsequent research from a variationist perspective could analyze a dataset like the one in Anya (2017) for instances of variable structures that may develop longitudinally during the sojourn, as learners studying abroad can be exposed to the rich input and socialization detailed by Anya. In particular, future work could investigate whether learners who report greater comfort in the host country more closely approximate local Brazilian features such as palatalization of /t/ that typically occurs in regions of Brazil.

Finally, also important along the social dimension are interlocutor factors, such as social distance, power differential, and (un)familiarity. Non-variationist research from the field of L2 pragmatics has contributed knowledge on the multiplicity of these factors. For example, learners make more formal requests when interacting with interlocutors in contexts of greater social distance, unfamiliarity, cultural differences, and imposition, and when the interlocutor is in a position of greater power than the learner (for a comprehensive overview, see Félix-Brasdefer & Shively, 2021). One example is Kobayashi and Rinnert's (2003) findings for English learners in Japan, who made more supporting moves (e.g., preparators like "May I ask you a favor?") and delayed requests (i.e., placing a request later in the discourse) when the level of imposition on the interlocutor was higher. Nevertheless, L2 sensitivity to these factors may vary, as the same study revealed that other learners may not necessarily use more formal language in the face of these factors. For instance, high-proficiency learners showed greater use of requests with informal "want" when the level of imposition was higher. It is worthwhile to consider the range of interlocutor factors (e.g., level of imposition, relationship with interlocutor) when investigating social effects on variable structures, as the identities of each interlocutor play an important role in shaping the communicative context, how communication unfolds, and the identity work performed by each participant in the discourse. In this vein, the study of variable structures could draw on L2 pragmatics research in order to incorporate variables that pertain to the relationship between learners and their interlocutors. This would dovetail with Geeslin's (2020) variationist model of learner/interlocutor interaction, which places the relationship between the learner and the interlocutor at the center of language development and use of language variation. This model builds on Preston's (2000) psycholinguistic model of interlanguage variation by showing how individual characteristics can shape how interlocutors are perceived and how speakers use language in specific moments of interaction.

In sum, this section offers a snapshot of some of the ways in which non-variationist SLA has advanced the understanding of how social factors shape acquisition. We believe that extending this body of work's interpretive lenses and insights to variationist SLA's exploration of sociolinguistic competence has the potential to contribute significantly to knowledge about the development of variable structures.

5. Conclusions

We began the current paper by offering an overview of variationist SLA and identifying some of the extralinguistic factors shown to be important for the L2 development of variable structures. Despite the valuable contributions of previous work, we highlighted that variationist SLA has paid greater attention to the role that linguistic factors play in the acquisition of variable structures and that there is thus much we still have to learn about how the extralinguistic side of language shapes this aspect of sociolinguistic competence (Geeslin, 2011, pp. 501–502). We then reflected on the evolution of variationist sociolinguistics and looked to other socially oriented approaches to SLA in order to establish an agenda for future variationist SLA scholarship. Throughout this discussion, we identified specific ways in which variationist SLA researchers could draw on insights from these

bodies of research in order to incorporate greater emphasis on social variation into the study of L2 sociolinguistic competence. We believe these recommendations fall into three general issues for an agenda for future studies, listed in (i) through (iii):

(i) The second and third wave of sociolinguistics and contributions from non-variationist L2 approaches show us that a critical aspect of language usage and development pertains to language users and learners themselves—the active role they play in their language behavior and the agency they have to use language to reflect their identity. For instance, with approaches informed by sociocultural theory, van Compernolle and Williams (2012) have shown how learners use variation to perform and negotiate their identities in an L2 and how the meanings they assign to variation may change over time for variables such as first-person plural and second-person singular reference and variable use of negative *ne* in L2 French.[12] Variationist SLA has much to learn about L2 sociolinguistic competence by better incorporating the constructs of agency and identity into the investigation of variable structures and by examining these constructs along with other (extra)linguistic factors. This work could also help reveal how learner language ideologies develop and the extent to which these reflect or diverge from ideologies present in the target-language culture. In turn, how learners come to associate variable linguistic forms with locally relevant social types and how additional orders of indexicality unfold can continue to inform what we know about L2 development.

(ii) Most L2 variationist research has employed quasi-experimental techniques and has been quantitative (see Regan, 2023; Wirtz et al., 2024, for recent examples of qualitative studies). While analytical tools like regression models remain valuable, the evolution of variationist sociolinguistics and other socially oriented approaches to SLA has demonstrated that ethnography and qualitative analyses shed important light on the intricacies of social factors (e.g., local categories like Burnouts and complex variables like gender identity). Thus, diversifying the research methods employed in variationist SLA appears to be a necessary step for expanding the study of the relationship between the extralinguistic nature of language and the L2 development of variable structures (see Riazi & Farsani, 2024, for a discussion of mixed-methods research in applied linguistics more generally). The aforementioned recent example of the use of virtual reality in Wirtz and Pfenninger (2024) illustrates another way in which new methods may be used to untap the role of social characteristics in language development, and the study's dense data collection points help to reveal how sociolinguistic competence develops over time. Such repeated elicitations will contribute social information to a base of studies in L2 variationism that have tended to follow the general applied linguistics trend of largely including one-time cross-sectional or relatively limited longitudinal sampling (Ortega & Byrnes, 2008).

(iii) Variationist SLA research has primarily investigated Caucasian college students. These participant pools come from Western, educated, industrialized, rich, and democratic (i.e., WEIRD) societies, which are not representative of the extent of human diversity, thus raising questions about the generalizability of the knowledge that has emerged from research on this population (Henrich et al., 2010). Broadening the study of variable structures to other learner populations (see Anya, 2017) will therefore enable researchers to more fully investigate the role that social factors play in the development of sociolinguistic competence because, for one, the social and linguistic diversity that exist in the world will be more accurately represented.

Our hope is that this state of the science of and agenda for future scholarship on variationist SLA offers variationist researchers useful insights for more fully integrating the social dimension of language into their investigations of L2 sociolinguistic competence.

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Notes

1 In our article, *usage* refers to language use, interpretation, and selection (Gudmestad, 2024). See Section 2.2 for further details on the term *extralinguistic*.

2 In Section 3, we recognize that most variationist SLA research has corresponded to the first wave of variationist sociolinguistics (Eckert, 2008), so the terms we use to discuss this line of L2 research align with terminology of the cited authors and of the first wave. As variationist sociolinguistics has evolved (i.e., the second and third waves), so too has the conceptualization of language variation and, therefore, the rhetoric and terminology used to characterize it.

3 We do not mean to imply a strict dichotomy between work that appealed to cognition and research into social factors. Although cognitive accounts of language structure and change were considered in early analyses of L2 variation, social information and the underlying processes that link variability to cognition also have a long history in the field (e.g., Adamson & Kovac, 1981; Bayley, 1991; Dickerson, 1974; Preston, 1993; Tarone, 1988; Young, 1991).

4 In addition to variationist sociolinguistics, variationist SLA also has roots in another vein of sociolinguistics: ethnography of communication. Early contributions from this approach critically informed the aforementioned construct of sociolinguistic competence and the superordinate communicative competence (see Hymes, 1967, 1972; Paulston, 1974).

5 Topic seriousness is a contextual, sociostylistic factor that is external to the internal linguistic system (see Donaldson, 2017).

6 *Native speaker* is the term used most often in this line of inquiry, so we use it in the current article. We recognize, however, concerns about the role of native speakers in applied linguistics more generally (e.g., Holliday, 2006; Ortega, 2013, 2016) and variationist SLA in particular (Grammon, 2022, 2024b).

7 Type II variation can be subdivided into two categories. The most frequently investigated category pertains to linguistic structures that are variable within a given community or speaker (e.g., future-time reference in French). The other category pertains to linguistic structures that vary geographically. In these cases, categorical usage can be found within speakers or communities (e.g., the second-person plural [familiar] subject pronoun *vosostros/vosotras* in north-central Spain, which is generally absent in other varieties).

8 Whereas we focus on variationist research on variable structures in the current article, Wirtz and Pfenninger (2024) show that variationist approaches can also fruitfully be used to study the variable use of language varieties.

9 Although socially informed L2 variationist work has tended to consider macrodemographic characteristics in line with the first wave, early exceptions made greater use of social networks and anthropological methods that would later become hallmarks of the second and third waves. For instance, Preston (1989) highlights ethnographic backgrounds and suggests the possible consideration of classrooms as speech communities.

10 In our consideration of the presence of second and third wave variationist sociolinguistics in SLA research, we were faced with the task of objectively determining the envelope of L2 studies that fall into these waves. The approach we have adopted here is to examine how researchers describe their own work. Another approach would have been independently to classify work based on the presence of certain criteria, even if the author does not mention a particular wave. As we were interested in how researchers viewed their own work as fitting into the waves of the relevant field(s), we chose the former.

11 Although early sociolinguistic work on social networks has been described as second-wave research, the application of social network theory to variationist SLA has tended to take this approach from a first-wave perspective in its consideration of macro-demographic characteristics of learners and local residents in study-abroad contexts (e.g., Kennedy Terry, 2022).

12 Similarly, as part of sociolinguistic development, Ender (2017) has considered how learners construct identities, show alignment with local communities, and develop attitudes toward language varieties in the context of variation between standard German and what is known as Austrian Dialect. Regan (2022) has also shown how learners' identities and attitudes and ideologies toward the L2 help to shape their development of a sociolinguistic repertoire with respect to variable deletion of the French negative particle *ne*.

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Article

Fitting in with Porteños: Case Studies of Dialectal Feature Production, Investment, and Identity During Study Abroad

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Abstract: In recent years, several studies across a variety of target languages (e.g., Chinese, French, and Spanish) have demonstrated that students who study abroad acquire target-like patterns of variation. In Spanish-speaking contexts, recent research has moved beyond investigating the acquisition of features specific to Spain to examine that of features used in immersion contexts such as Mexico, the Dominican Republic, Ecuador, Peru, and Argentina. Nevertheless, many of these studies either rely on quantitative variationist analysis or implement qualitative analysis of one or two target dialectal features. In addition, learner omission and expression of pronominal subjects in these contexts have been largely under-explored. Using a mixed-methods approach, this study not only quantitatively examines learners' production of several features of Buenos Aires Spanish, including *sheísmo/zheísmo*, s-weakening, *voseo*, and subject pronoun expression, but it also qualitatively relates the production of these features to learners' experiences during a five-month semester in Argentina. It aims to answer the following research questions: When and to what degree do three English-speaking students studying abroad for five months in Buenos Aires, Argentina acquire target-like production of [ʃ] and/or [ʒ], /s/-weakening, *vos*, and subject pronoun expression? How do participants' experiences, communities of practice, investments, identities, and imagined communities relate to this production? Speech data were gathered prior to, at the midpoint, and at the end of the semester by means of sociolinguistic interviews and elicitation tasks. To further understand the connection between these learners' use of the target features and their overseas experiences, we explored the case studies of three learners of Spanish of differing proficiency levels (beginning, intermediate, and advanced) using qualitative data collected during semi-structured interviews at each interview time. The results suggest that all three learners increased their production of the prestigious, salient dialectal features of *sheísmo/zheísmo* and *vos* during the sojourn and that the amount of increase was greater at each proficiency level. While the beginning and intermediate learners did not move toward target-like norms in their use of the often-stigmatized, less salient, variable features of /s/-weakening and subject pronoun expression, the advanced learner did. As such, stigma, salience, and variability, as well as proficiency level, may play a role in the acquisition of variable features. Learners' investment in the target language and participation in local communities of practice increased at each proficiency level as well, and learners' imagined communities beyond their study abroad experiences were related to their identity construction and linguistic choices abroad.

Keywords: sociolinguistics; study abroad; Argentine Spanish; investment; identity

1. Introduction

Study abroad (SA) programs have long been regarded as the ideal vehicle through which a language learner can develop advanced linguistic and sociocultural skills in the target language (TL). In comparison to the traditional university language classroom, the SA setting can provide learners with more robust and contextualized exposure to the language, with continual opportunities for interaction with native speakers (NSs) of the host community and authentic cultural experiences. These opportunities often result in SA participants returning home with increased accuracy in linguistic structures, a richer and more diverse vocabulary, increased fluency and oral proficiency, and more advanced pragmatic, intercultural, or sociolinguistic competencies (Isabelli-García & Isabelli, 2020).

This notion of sociolinguistic competence refers to the ability to understand and appropriately use language in different social contexts. It involves not only linguistic knowledge but also an understanding of the social and cultural factors that influence language use, allowing individuals to navigate various social situations and adjust their language to fit the norms and expectations of different social contexts. One way to demonstrate sociolinguistic competence in a language is to acquire target-like patterns of variation. In Spanish-speaking contexts, the first studies on this topic explored features specific to Peninsular varieties of Spanish (Geeslin & Gudmestad, 2008; George, 2013, 2014; Knouse, 2013; Ringer-Hilfinger, 2013) but later expanded to include a range of countries, including Mexico (Geeslin et al., 2013; Kanwit et al., 2015; Kanwit & Solon, 2013), the Dominican Republic (Linford et al., 2021), Ecuador (Escalante, 2018a, 2018b), Peru (Grammon, 2018), and Argentina (Pozzi & Bayley, 2020; Pozzi, 2021, 2022). Nevertheless, many of these studies either rely solely on quantitative variationist analysis or implement qualitative analysis of one or two target dialectal features. In addition, features such as subject pronoun expression (SPE) have been largely underexplored in these contexts, including Argentina, the focal context in this study.

Using a mixed-methods approach, this study examines the development of sociolinguistic competence of three learners of Spanish of differing proficiency levels studying for a five-month semester in Buenos Aires, Argentina. The quantitative analysis investigates learner production of four features of Buenos Aires Spanish (BAS): *sheísmo/zheísmo*, /s/-weakening, *voseo*, and SPE. The qualitative analysis explores how participants' experiences, communities of practice (CoPs), investments, identities, and imagined communities relate to their production of these features throughout the sojourn.

Research on the development of sociolinguistic competence has clear implications for language teaching in and outside of SA. The view of language as socially situated helps us to understand the variable nature of the input that learners receive and how they might adopt that variation into their own speech (Geeslin, 2022). It also emphasizes the need for language teachers to provide students with opportunities for practice outside the classroom (Gurzynski-Weiss et al., 2018) and encourages practitioners to consider the norms and targets they establish for learners (Beaulieu, 2016; Drewelow & Theobald, 2007).

2. Literature Review

2.1. Acquisition of Sociolinguistic Competence

Due to the importance of sociolinguistic competence in communicative competence overall, a growing number of studies across languages has explored the importance of SA in developing this knowledge (see, for example, Arabic: Trentman, 2017;

French: Kennedy Terry, 2017; Regan et al., 2009; German: Barron, 2006; Mandarin Chinese: Li, 2010, 2014; Japanese: Iwasaki, 2010; Spanish: Geeslin et al., 2013; George, 2013, 2014; Knouse, 2013; Ringer-Hilfinger, 2013). In general, this research has found that learners who go abroad use dialectal variants at a higher rate than those who do not, but typically use them to a lesser degree than NSs in the host community. The degree to which a speaker adopts local features is highly variable and mediated by a wide range of linguistic, social, and programmatic factors, such as the linguistic variables themselves, language proficiency, and the degree to which they interact with locals, which can depend on one's social identities. However, this research has largely been conducted using quantitative methods and has not sufficiently examined the reasons for individual differences.

2.2. Argentine Spanish

Over the past 20 years, Buenos Aires, Argentina has been one of the top Spanish-speaking destinations for US students studying abroad, typically attracting between 1000 and 5000 students a year (Institute of International Education, 2023). In this section, we detail four features of BAS and the patterns of variation found among NSs in the city, who are often referred to as *porteños,* as well as previous research on learner acquisition of these features.

2.2.1. Sheísmo/Zheísmo

One hallmark feature of BAS is *sheísmo/zheísmo*, or the use of the prepalatal fricatives [ʃ] and/or [ʒ] for the sounds that correspond to the graphemes "ll" and "y". For example, *yo* ("I") and *allá* ("there") are pronounced as [ʃo] or [ʒo] and [a.ˈʃa] or [a.ˈʒa]. This is different from most varieties of Spanish, which use a voiced palatal fricative ([ʝo] and [a.ˈʝa]) or affricate ([ʄʝo] and [a.ˈʄʝa]). Studies on variation in BAS indicate that the prepalatal sounds [ʃ] and [ʒ] are considered prestige norms. However, there is still some variation between the voiced and voiceless variants, with younger speakers of BAS preferring the devoiced variant [ʃ] and some older speakers using the voiced and devoiced variants (Rohena-Madrazo, 2015). Although the devoicing of these phonemes has neared completion (Chang, 2008; Rohena-Madrazo, 2015), due to the variation still present in BAS, in this study, we examine the use of the voiced or devoiced variants.

A few studies have explored the acquisition of BAS phonological features in SA sojourns (Hoffman-Gonzalez, 2015; Pozzi & Bayley, 2020; Pozzi, 2022). These studies found that, by the end of a semester in Buenos Aires, participants made gains in nativelike production of the target phonological features, using [ʃ] and/or [ʒ] 84–90% of the time. These findings demonstrate that participants increased their use of these features throughout SA, with the most dramatic increase occurring during the first 2.5 months. In fact, learner production of these features in Buenos Aires was greater than that of previously studied phonological features of Peninsular Spanish in Spain, perhaps due to the ease of implementation, prestige, salience, and stability of the BAS phonemes.

2.2.2. Syllable-Final /s/-Weakening

Syllable-final /s/-weakening is a widespread phonological process in which nearly half of the world's Spanish speakers participate (Lipski, 2011), but it tends to be used more often among speakers of lower socioeconomic status in vernacular speech (File-Muriel, 2007). In many Spanish dialects, /s/-weakening is viewed as a gradient progression from more to less robust realizations of /s/: a maintained voiceless sibilant [s], a partially weakened aspirated variant [h], and the fully reduced, deleted, or elided variant (Lipski, 2011).

BAS is known to be an /s/-weakening variety of Spanish (Rasmussen & Zampini, 2010) in which /s/ tends to be maintained before a vowel or a pause and aspirated or

deleted before a consonant within a word or in word-final position (Hualde, 2005). Table 1 shows /s/-weakening rates in BAS as presented by Bybee (2000), based on Terrell's (1977, 1978, 1979) studies. These numbers suggest that in BAS, aspirating /s/ is more common than completely deleting it, though deletion, which is often considered stigmatized (Colantoni & Kochetov, 2016), does occur.

Table 1. /s/-weakening in BAS.

	Buenos Aires			
	[s]	**[h]**	**0**	**Tokens**
_C	12%	80%	8%	4150
_##C	11%	69%	20%	5475
_##V	88%	7%	5%	2649
_//	78%	11%	11%	2407

Adapted from Bybee (2000).

Studies on learner acquisition of /s/-weakening (Escalante, 2018a, 2018b; Geeslin & Gudmestad, 2008; Pozzi, 2022; Sayahi, 2005; Schmidt, 2011) have examined the perception and production of the feature. First, there is evidence that learners can acquire the ability to perceive /s/-weakening. Escalante (2018b) found that nearly all of her eleven participants who spent a year in coastal Ecuador made significant gains in the perception of the variant, and learners with higher proficiency levels were more likely to perceive it. The same pattern was evident in a study conducted by Schmidt (2011), who found that the perception of /s/-aspiration in the United States emerged at the high-intermediate level and continued to increase at advanced levels.

However, there is little evidence of learner adoption of the feature, despite its prevalence in many dialects of Spanish. For example, Escalante (2018a) found that after a year of immersion in coastal Ecuador, participants weakened /s/ only 4.6% of the time, and one of the participants was responsible for most of this use. Similarly, Sayahi (2005) found that learners maintained /s/ 94% of the time in Morocco, and Geeslin and Gudmestad (2008) found that only 5 out of 130 learners exhibited /s/-weakening in the United States. Exploring the acquisition of /s/-weakening among learners in Buenos Aires, Pozzi (2022) found that participants exhibited /s/-weakening just 0.56% of the time mid-program and only 1% of the time after 5 months in Buenos Aires, with two students accounting for most of this use.

2.2.3. *Voseo*

The *authentic voseo*, which is used in Argentina, refers to the use of the pronoun *vos* and the verb forms associated with it. It is not only highly frequent, salient, and recognizable (Lipski, 1994; Schreffler, 1994) but it is also used uniformly across social levels and contexts in Argentina in place of *tú* (Lipski, 1994), the informal address form used in many other varieties of Spanish.

Few studies (Hoffman-Gonzalez, 2015; Pozzi, 2021, 2022) have explored learner acquisition of *vos* in Argentina, finding that participants used *vos* 59.6% (Hoffman-Gonzalez, 2015) to 70.4% of the time (Pozzi, 2021, 2022) by the end or after SA in Buenos Aires. Pozzi (2021, 2022) found that the stronger the learners' social networks and the higher their proficiency level, the more they used *vos* verb forms. In fact, learners in Buenos Aires produced *vos* at a much higher rate in oral tasks (59.6–70.4%) than learners in Spain produced *vosotros* in oral tasks (20.96% in George, 2013). This could be because although neither *vos* nor *vosotros* forms tend to be explicitly taught in US Spanish classes (Cameron, 2012; LeLoup & Schmidt-Rinehart, 2017), students might struggle to not only acquire the *vosotros* form and use it to address a group informally in Spain but also to remap the *ustedes* form to

only address a group formally there. In contrast, it may be relatively simple for learners to acquire and use *vos* verb forms instead of *tú* verb forms to address an informal interlocutor in Argentina, as no remapping is necessary. The higher rate of *vos* acquisition in Argentina may also occur because students are increasingly exposed to *vos* in Argentina, as it is used in a growing number of situations, including service encounters, in which *usted* was previously used (Kapovic, 2007).

2.2.4. Omission or Expression of Pronominal Subjects

The vast literature on SPE (i.e., *voy* "(I) go" vs. *yo voy* "I go") among NSs in Spanish-speaking contexts suggests that rates vary widely across dialects. Varieties with lower overt expression rates include Andean Spanish (16%, Cerrón-Palomino, 2018) and Mexican Spanish (19%), while varieties with the highest rates have been found in the Caribbean, specifically in the Dominican Republic (41%, see Otheguy et al., 2007). To our knowledge, only three studies have examined this topic in BAS, but there is some discrepancy between the rates found. Barrenechea and Alonso (1977) and Soares da Silva (2006) found overt subject pronouns present in oral interviews at rates of 21 and 32%, respectively, but Pešková (2013), who explored overt SPE in semi-spontaneous speech, found a higher rate at 48%. This difference could be attributed to methodology; Pešková asked participants to respond to tasks, such as "Preguntale a tu padre qué Ø opina de Buenos Aires" ("Ask your father what (he) thinks about Buenos Aires"). This was intended to lead to a target question from the participant, such as ¿Qué opinás (vos) de Buenos Aires? ("What do [you] think of Buenos Aires?"). Since interviews typically allow participants to speak longer about the same person, which would lead to fewer changes of referent—the strongest predictor of overt SPE across many languages, including Spanish (Guy et al., forthcoming)—it may be that the semi-spontaneous prompts used in Pešková (2013) led to a higher overt SPE rate because speakers were not encouraged to continue the discourse further. Taking this into consideration, we expect that learners in Argentina would be exposed to overt SPE by NSs somewhere between 21 and 32% of the time.

A growing number of studies using a variationist methodology has examined the acquisition of SPE among English-speaking L2 learners, often comparing cross-sectional L2 SPE rates to NS rates (see Geeslin et al., 2015; Geeslin & Gudmestad, 2008, 2011, 2016; Gudmestad & Geeslin, 2010; Linford, 2009). Overall, these studies show that, as learner proficiency increases, the use of null subject pronouns increases. Linford (2009) found that beginning learners produced null subjects 60% of the time, and advanced learners produced them 87% of the time, with the advanced rate overshooting that of NSs, which is consistent with Geeslin et al. (2015).

2.3. Case Studies in Study Abroad Research

Since language learning in an SA context "is as much a process of socialization as it is of acquisition" (Kinginger, 2009, p. 156), students' (non) participation in the host community, determined by the learner and the community, relates to the acquisition of sociolinguistic competence. One way that learners might gain participation in the target community is through a community of practice (CoP, or group of individuals who interact together and share common goals, Wenger, 1998), for example, a host family. Nevertheless, host families do not always effectively integrate host students (Wilkinson, 1998). For example, in Kinginger's (2008) study, Ailis stayed with an older single woman with whom she did not share much conversation. In contrast, Bill reported having 4 hour dinners with his host family three times a week, during which they discussed his interests. Thus, both the quality and the quantity of NS interactions are important in SA (Magnan & Back, 2007; Segalowitz & Freed, 2004).

Not only are host families potential settings for quality interactions in the TL in SA, but social networks can be instrumental in L2 learning as well (Isabelli-García, 2006). In Kinginger's (2008) study, Deidre lived by herself, only spoke French in service encounters and class, and did not make French friends. With time, she decided that French was too difficult and her cultural norms were better than those of the French. Ultimately, she opted to interact on the internet, barely improving her French in SA.

In addition to social networks, language development is mediated by identity and investment in the TL (Menard-Warwick & Palmer, 2012; Norton, 2001; Watson-Gegeo, 2004). This notion of investment refers to one's desire to learn the TL due to the benefits such learning may bring as it relates to one's identity (e.g., increased value in the social world, access to privileges afforded to TL speakers). As learners interact in the TL community, they continually construct their identities and adjust how they relate to others based on how they perceive themselves and how they believe they are perceived by TL users (Norton Pierce, 1995). This complexity of co-constructed learning is exemplified in the case of Beatrice (Kinginger, 2008), who spent extensive time with her host family and wanted to become a French teacher upon her arrival in France, yet due to conflicts with her hosts about the war in Iraq, her national identity conflicted with her developing identity as a French speaker. She retreated from interactions with NSs, adopted a negative attitude toward French culture, and made minimal linguistic gains. In this way, students' investment in their TL, identities, attitudes toward the target culture, and experiences in SA affect their interactions and language learning.

Previous work has also examined the often negative ways in which students of color have been positioned in SA contexts. In Talburt and Stewart's (1999) study, Michiela, an African American female studying in Spain, reported facing racial discrimination and hypersexualization, which affected her desire to engage with locals. Similarly, in Quan's (2018) study, an Iranian American student of color who was studying in Granada, Spain, Vera, felt she was often stared at on the street and believed that "her inability to access communities of TL speakers in Spain [was] a product of her race and ethnicity" (p. 37). In fact, Vera felt "positioned as an incompetent Other because of the way she looked" (Quan, 2018, p. 37).

Heritage speakers (HSs), or individuals who have personal or familial connections to a language other than English in the United States (Beaudrie & Fairclough, 2012), have also been positioned in diverse ways when studying the language of their heritage in an immersion context. In fact, some HSs have faced racial, class-based, and linguistic discrimination (Shively, 2016). For example, Riegelhaupt and Carrasco (2000) reported that a Mexican American aspiring bilingual teacher, Lidia, was judged as low-class by her host family in Guanajuato, Mexico, due to speaking a contact variety of Spanish used in her hometown in Yuma, Arizona, whereas her Euro-American peer was accepted and welcomed by the same host family, despite making more errors. Similarly, Quan (2018) examined the ways in which a half-African, half-Mexican American student, Caroline, distanced herself from her host family in Spain because she felt the family had positioned her as an incompetent Spanish speaker.

HS perceptions of the local dialect, as well as their connections with locals, have also been found to be related to their acquisition (or lack thereof) of dialect-specific features in Spain (see George & Hoffman-González, 2019; George & Salgado-Robles, 2021; Peace, 2021; Salgado-Robles & George, 2019). For instance, in Peace's (2021) study, four HSs chose to use Peninsular variants while studying in Spain, in some cases because they viewed Peninsular Spanish as "correct". On the other hand, one student, Julia, maintained her home dialect due to her desire to speak Spanish in a way her Mexican family would approve of and due to her greater connection to her home community than to the SA community. Similarly,

Kentengian (2020) found that most of her HS participants chose not to adopt salient features of Peninsular Spanish while studying in Spain, with the exception of those who had more social relationships with Spaniards and those who positively evaluated the culture. Finally, in George and Hoffman-González's (2019) study, although Jessica, a Mexican American who studied in Argentina, was ridiculed by her family for her use of Argentine Spanish (specifically *vos*) upon her return to the United States, she felt proud of her ability to use different varieties of Spanish, as she believed it marked her as "worldly".

A speaker's imagined communities (Norton, 2001) can also impact language learning during SA. Imagined communities are the communities constructed through learners' imaginations—the communities that learners participate in or wish to join or gain membership to in the future. Kanno and Norton (2003) explain that since our actions will be driven by our aspirations, "our identities then must be understood not only in terms of our investment in the 'real' world but also in terms of our investment in possible worlds" (p. 284). Few studies (Kentengian & Peace, 2019; Pozzi et al., 2023; Pozzi & Reznicek-Parrado, 2021) shed light on the complex relationship among identity, imagined communities, and the acquisition of dialectal features. Kentengian and Peace (2019) found that their HS SA participants accommodated minimally to Peninsular Spanish, instead choosing linguistic practices that aligned with their imagined community of educated, global speakers of transnational varieties of Spanish. In Pozzi et al.'s study, Juan was an HS of Mexican descent who initially wanted to use *vos* but confirmed his Mexican American identity while in Argentina, ultimately figuring out how to "be himself" in Spanish by using *tú*, the address form used in his imagined community at home, where he planned to return and speak Spanish after SA. In Pozzi and Reznicek-Parrado (2021), three HSs of Mexican descent studying in Argentina affirmed their heritage identities, gained awareness of linguistic variation, and confirmed their imagined communities in the United States. In these studies, the HSs' imagined communities were not rooted in the host communities abroad, but rather in their desire to become multidialectal speakers of Spanish or in their commitment to returning home. Thus, their evolving identities and imagined communities were closely tied to their adoption or rejection of local dialectal features.

As seen here, learners are not fixed people with predictable abilities or experiences, nor can we presume that they have the goal of speaking a particular monolingual variety of Spanish. Still, the field tends to classify students as either L2 learners, assuming they are monolingual in English without previous experience with Spanish and whose goal is to speak like an NS, or HSs, who are believed to use Spanish in their families and communities and to study abroad in order to connect with a single identity related to the country of their heritage (Leeman, 2015). These fixed categories and assumptions, however, are limiting in that they do not reflect the diverse, complex realities or aims of our students. For example, how do we classify students who may have grown up in a home in which the dominant language is English but live in a community in which the dominant language is Spanish, and who are committed to using their community's variety of Spanish in their daily lives and in immersion contexts? As seen here, these L2 and HS labels do not necessarily accurately represent learners' rich, diverse stories. Nevertheless, case studies that examine qualitative information in greater detail can provide additional insight regarding learners' trajectories and goals, moving beyond the limitations of any imposed scholarly constructed terminology.

In sum, previous studies on the acquisition of dialectal features are generally quantitative, while few have adopted a qualitative case study approach, and these studies tend to focus on one or two features (see Hoffman-Gonzalez, 2015; Pozzi et al., 2023). This study explores the cases of three focal participants of differing proficiency levels using mixed methods to relate each learner's quantitative production of linguistic features used in the

host community to qualitative data collected during a five-month semester in Buenos Aires, Argentina. It aims to answer the following research questions:

1. When and to what degree do three English-speaking students studying abroad for five months in Buenos Aires, Argentina acquire target-like production of [ʃ] and/or [ʒ], /s/-weakening, *vos*, and subject pronoun expression?
2. How do participants' experiences, communities of practice, investments, identities, and imagined communities relate to this production?

3. Methodology

3.1. Context and Participants

This study's participants—Kim, Eddie, and Brittany (pseudonyms)—were English-speaking undergraduate students whose home institutions were in different parts of the United States. They attended distinct host universities in Buenos Aires affiliated with different semester-long SA programs that lasted 5 months (20 weeks). All three lived with host families, although Brittany later moved to an apartment alone, and Eddie switched host families toward the beginning of the sojourn. None of them had previously visited Argentina or had contact with people from the country before participating in SA in Buenos Aires. Each student was assessed by their respective SA program to determine their placement in a particular level of Spanish classes, which we refer to in this study as their proficiency level. Focal students took courses with international students or with Argentines. Our only participant who completed an internship was Eddie (intermediate proficiency), who chose to work in the area of human rights, which was also his concentration while abroad.

In order to recruit participants, the first author, who was an L2 speaker of BAS who had previously lived in Argentina, sent an email about the study to a company that organized SA programs in Buenos Aires. This company then distributed the study information to SA students, and 23 of these students chose to participate in the study. Three of those twenty-three were chosen as focal participants for the case studies: Kim, Eddie, and Brittany. These focal students, outlined in Table 2 below, were chosen because their production of the features under investigation varied, they had different pre-program proficiency levels and racial/ethnic backgrounds, and their cases were quite distinct from one another.

Table 2. Case study focal students.

Name	Age	Gender	Level	Racial/ Ethnic Background	Living Situation	Internship	Program Type
Kim	20	Female	Beginning	African American	Host family	No	International students
Eddie	20	Male	Intermediate	Mexican American	Host families	Yes	Argentines
Brittany	22	Female	Advanced	Non-Hispanic White	Host family, Apartment alone	No	Argentines

3.2. Procedures

These students completed a background questionnaire prior to SA. In addition, the first author conducted three recorded interviews that lasted approximately one hour each and included a semi-structured interview in English about their SA experiences, followed by a variety of instruments at each interview time: prior to or at the beginning, in the middle (after 2.5 months), and at the end or immediately following their return from Buenos Aires (after 5 months). The instruments included a sociolinguistic interview in Spanish about their daily routines and their experiences abroad lasting 20 minutes or more, a reading passage from *Todo Mafalda* (Quino, 2007) selected from that used in Chang (2008),

a word list based on Davies' (2006) frequency dictionary (which incorporated 24 words from the comic strip and 28 distracters), an oral discourse completion task (DCT) based on George (2013), and two role plays adapted from Kinginger (2008) and Villareal (2014). The oral DCT consisted of 28 situations written in English that asked for oral responses in Spanish, 16 of which elicited *vos* in the imperative or present indicative and 12 of which were distractors. The role plays aimed for the students to use address forms to obtain information from someone else (Villareal, 2014) while participating in spontaneous speech and imitating real-life turn-taking (Bardovi-Harlig, 2013).

3.3. Linguistic Features

With respect to *sheísmo/zheísmo*, every time a student uttered an instance of "y" or "ll" during the sociolinguistic interviews, the reading passage, and the word list, the realization of those graphemes was coded as [ʃ], [ʒ], [j], and [ʄ j]. The first listen of each interview involved an impressionistic analysis performed by the first author, followed by another impressionistic analysis performed by an applied linguist who was a NS of BAS. A total of 95% of the tokens were coded consistently after the applied linguist's initial training. Afterward, any discrepancies in our coding of the 3000 tokens were examined using acoustic analysis through Praat (Boersma & Weenink, 2017). For /s/-weakening, auditory analysis (File-Muriel & Brown, 2011) was used to code each instance of coda /s/ in the sociolinguistic interviews as maintained (as in mosca "fly" realized as [moska]) or weakened (including aspiration as in [mohka] and deletion as in [moØka]). A linguistics student who was a NS of BAS was trained in this impressionistic analysis as well, and the interrater reliability was verified at 98% based on a random sample of 10% of tokens. As for *vos*, the first author examined students' responses on the oral DCT and the role plays to determine whether they used the *tú* or *vos* verb form, not the subject pronoun. The purpose of this was to determine whether students acquired the morphosyntactic form, as opposed to the ability to replace one pronoun *(tú*) with another (*vos*). The use of subject pronouns was examined in the sociolinguistic interviews to determine the extent to which students used overt subject pronouns as opposed to null subject pronouns in natural speech. In terms of the envelope of variation, the SPE data analysis consisted only of clauses with animate subject pronouns that have a conjugated verb for which there is the possibility of using a null or overt pronoun (see Orozco & Hurtado, 2021).

To examine the connection between learners' use of the target features and their overseas experiences, each case study draws on mixed methods, exploring the results of a quantitative and qualitative analysis. The quantitative analysis was conducted to determine the percentage of use of the aforementioned linguistic features by each focal student at each interview time. The qualitative analysis examined the ways in which learners' experiences, CoPs, investments, identities, and imagined communities relate to their production of the linguistic features under investigation.

4. Case Studies

4.1. Kim

4.1.1. Background Information

Kim was a 20-year-old sophomore Spanish major at a large, private university in the Northeast who identified as African American (pre-SA interview, mid-SA interview). She had taken intermediate Spanish classes at her home university; however, through her placement test results for her SA program and her pre-SA interview, it became clear that she had a novice proficiency in Spanish. In her background questionnaire and her initial interview, Kim reported that she was more of an introvert than an extrovert and that she was nervous about her trip to Argentina. Although Kim might traditionally be considered

an L2 learner since she did not grow up in a home in which Spanish was used, she reported having personal ties to the language in her home community. Not only was Kim's best friend from the Dominican Republic, but Kim described her hometown as having a large community of Spanish speakers from the Caribbean, so she had likely been exposed to Caribbean Spanish before studying abroad; however, no data were collected regarding the extent of this exposure.

4.1.2. Quantitative Analysis

Overall, Kim's use of the features under investigation moved toward target-like norms 2.5 months into the sojourn and away from those norms immediately following SA (after 5 months, see Table 3 and Figure 1). At the beginning of SA, Kim did not use *sheísmo/zheísmo*, /s/-weakening, or *vos*. She used overt pronouns 41% of the time, which, curiously, is the SPE percentage that studies have found in Dominican Spanish (41%, Otheguy et al., 2007), the dialect Kim reported she had been exposed to prior to arriving in Argentina. By the second interview, although Kim did not exhibit /s/-weakening, her use of *sheísmo/zheísmo* and *vos* increased significantly to 51% and 36%, respectively, moving toward BAS norms. Her use of overt pronouns also moved toward BAS norms, reaching 31% overt pronoun use, which is in the range of the target NS SPE rate of 21–32% found in BAS (Barrenechea & Alonso, 1977; Soares da Silva, 2006). In the final interview, she used *sheísmo/zheísmo* and *vos* slightly less than in interview 2 (49% and 33%, respectively), exhibited no /s/-weakening, and moved away from NS overt pronoun use across dialects of Spanish, with her highest SPE rate of 68%. Kim's move away from BAS norms in interview 3 could have been affected by the final interview being conducted immediately after her return home, where she had returned to hearing English and had reunited with Dominican friends.

Table 3. Kim's tokens and percentages of BAS feature use.

Feature	**Interview #1**			**Interview #2**			**Interview #3**		
Sheísmo/ zheísmo	Tokens (BAS)	Tokens (No BAS)	% BAS	Tokens (BAS)	Tokens (No BAS)	% BAS	Tokens (BAS)	Tokens (No BAS)	% BAS
	0	71	0%	48	45	51%	52	50	49%
S-weakening	Tokens (s-weakening)	Tokens (No s-weakening)	% s-weakening	Tokens (s-weakening)	Tokens (No s-weakening)	% s-weakening	Tokens (s-weakening)	Tokens (No s-weakening)	% s-weakening
	0	23	0%	0	78	0%		115	0%
Vos	Tokens (vos)	Tokens (tú)	% vos	Tokens (vos)	Tokens (tú)	% vos	Tokens (vos)	Tokens (tú)	% vos
	0	14	0%	5	9	36%	4	8	33%
Subject pronoun expression	Tokens (overt)	Tokens (null)	% overt	Tokens (overt)	Tokens (null)	% overt	Tokens (overt)	Tokens (null)	% overt
	7	10	41%	39	12	31%	47	22	68%

4.1.3. Qualitative Analysis

Experiences, Identity, and Communities of Practice

Kim's SA program in Buenos Aires focused on the Spanish language. Her classes were taught in Spanish with exchange students from different countries. This set-up was difficult for Kim, especially at first when she "didn't know *castellano*", she "was confused all day long", and she "didn't understand a thing" (mid-SA interview). However, over time, she began to understand and participate more in Spanish (post-SA interview).

Kim's classes were spread out in different universities across the city. During her commute, she was unpleasantly surprised by stares, catcalls, and theft. She explained it this way:

> People stare a lot, so that's different. Staring in the U.S. is very, like, rude, but here it's totally different, that's just normal, people are very curious, which also,

> especially for me, there aren't a lot of African Americans here, so I don't know if I get stared at more than a normal person, but I feel like . . .maybe that's it, I don't know. . .. (mid-SA interview)

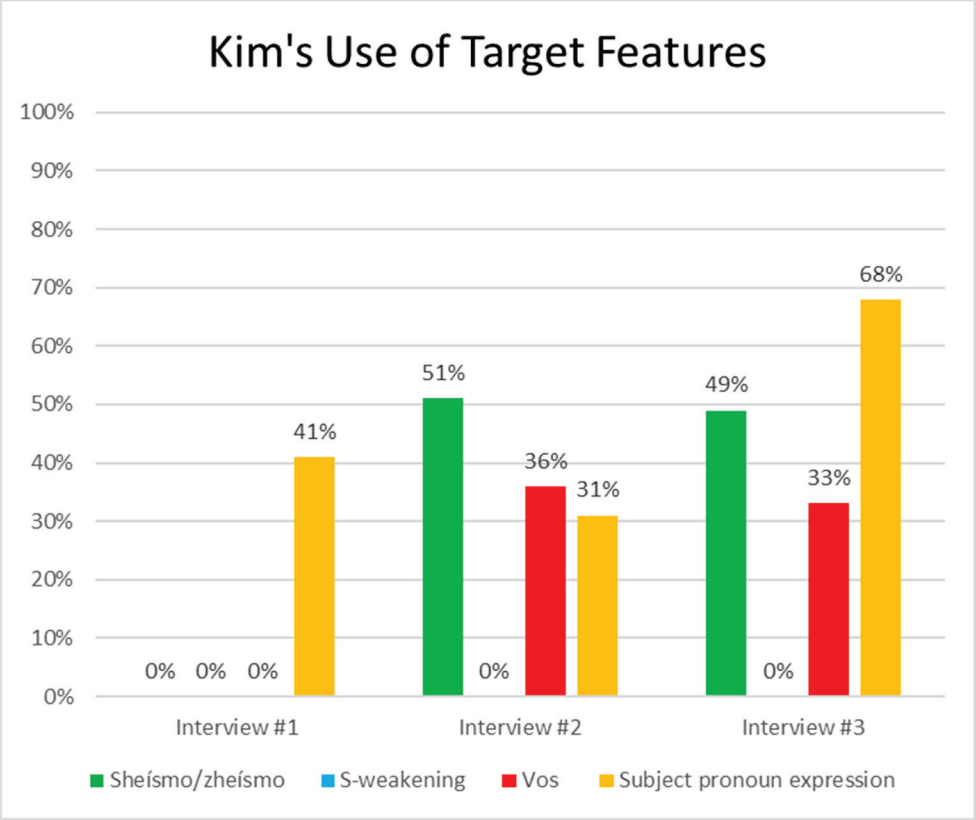

Figure 1. Kim's use of target features.

In addition to the staring, Kim was uncomfortable with the way men would try to call her attention. She said, "Catcalling is huge here and like any sign of the catcalling is just like interest and that guy like thinks he can get with you. . .it makes me very uncomfortable. . .sometimes I have no idea what they're saying and I don't think I wanna know" (mid-SA interview). Another aspect of the culture that made her uneasy was the need to be vigilant. She mentioned that "Theft is a huge thing, like pickpocketing. . .so I'm constantly aware and watching my surroundings, it just, like, takes a lot of energy to do that" (mid-SA interview).

Kim lived with a host mother who was in her sixties in an apartment in a wealthy neighborhood of Buenos Aires. Kim described having a positive, "well-matched" relationship with her, reporting that she spoke English and that they often spoke "Spanglish". However, Kim struggled to participate in conversations in Spanish with her host mom and her 25-year-old host brother, who visited occasionally, especially when the conversation did not slow down and focus on her. She explained, "I'm. . . spending a lot of time confused about what's going on. With my host mom we'd talk for a little bit about what we did and then they would talk really fast and I wouldn't understand what they were saying. It's really hard" (mid-SA interview). Thus, Kim's language abilities seemed to prohibit her from full participation in her host family CoP.

Aside from her host family, Kim did not have many opportunities to interact with Argentines. In her mid-program interview, Kim explained that she had fallen into a routine of attending her classes, sharing meals with her host mom, and watching Netflix in her room. In her post-SA interview, Kim admitted that, despite her desire to interact

with Argentines in the second half of her program, that did not happen. Instead, she barely managed to get to and from her classes, share meals with her host mom, and meet American classmates for dinner on the weekends. She explained that she did not feel confident enough in her language abilities to have real conversations with Argentines, and she did not feel that she had much of an opportunity to do so. She described it this way:

> I haven't really made a lot of connections or relationships with Argentines. It's really difficult I think at this age. . . I've met a lot of people from other countries in South America or just around the world but I think it's harder with other Argentines...just because they have their own lives and they have their own friends and their own routines so I think it's harder to facilitate friendships beyond like, "Hi, bye, oh you're here" type of situation. (post-SA interview)

Although Kim lived with a host family, she struggled to have meaningful interactions with Argentines in and outside of the host family. In addition to not feeling like a part of Buenos Aires culture, certain aspects of the culture, including the way people stared at her, the catcalls, and the possibility of theft, made her feel uncomfortable. These experiences may have contributed to her lack of investment in the target variety and her confirmation that her imagined community was elsewhere.

Investment and Imagined Communities

Kim began studying Spanish because of her love for Hispanic cultures, and she decided to study abroad due to her desire to be engulfed in the Spanish-speaking world, to "push [her] to [her] limits" (pre-SA interview), and to grow in her knowledge of the Spanish language and as a person. She chose Argentina because her university offered programs in Spain and Latin America and she preferred to study in Latin America, where she had always wanted to travel. In addition, since her long-term career goal was to become an immigration lawyer, she preferred to study in a Latin American country since her future clients were more likely to be from Latin America than from Spain. As such, from the beginning of her sojourn in Buenos Aires, her imagined community involved working as an immigration lawyer in the United States with people from different Latin American countries. Furthermore, she wanted to study in a country that was beyond her comfort zone that she would likely not have the chance to visit again.

Prior to the semester abroad, Kim had never traveled outside the United States. Although she did not have any family that spoke Spanish, she reported having several native Spanish-speaking friends from a variety of Spanish-speaking countries (primarily from the Caribbean, specifically the Dominican Republic) in her hometown. During her time in Argentina, she hoped to become fluent in Spanish; however, she did not wish to adopt a specific variety of Spanish from a particular region.

During Kim's mid-SA interview, she provided a somewhat negative evaluation of her SA experience. She related this to the feeling of being Othered, even about the way she ate. She mentioned, "I eat things with my hands and that is seen as taboo and barbaric". When reflecting on this, she alluded to trying to get through her time in Argentina until she could return home. This negative evaluation was also related to the Spanish that was spoken in Buenos Aires. Kim said she was shocked to "first of all...[hear] Spanish all the time to begin with but then also [hear] this specific accent all the time" (mid-SA interview). Moreover, she had difficulty navigating the Spanish used in different contexts. For example, she became accustomed to the way her host mom spoke Spanish, but struggled to understand the way her professors spoke in her classes, the way people spoke in the streets, and particularly the way young people spoke. Regarding the *castellano* (Spanish) that is spoken by *porteños* (people from Buenos Aires), Kim did not hesitate to explain that she preferred Caribbean Spanish as opposed to BAS because that is what she had been exposed to from

her Spanish-speaking friends in the United States. She added that she thought Caribbean Spanish "sounds better", is "smoother", and is more "beautiful" (post-SA interview) than Argentine Spanish. Despite this, she made an effort to speak like an Argentine, particularly toward the middle of the program, although she felt she was not able to do so successfully. By the end of the program, she confirmed that Caribbean Spanish better aligned with her identity as a Black speaker of Spanish and her home community of Dominican Spanish speakers, saying, "I will always just be partial to it [Caribbean Spanish]". In addition, throughout the sojourn, she confirmed her commitment to her imagined community as an immigration lawyer in the United States, where she hoped to use Spanish to interact with Spanish-speaking clients from Latin America, but did not anticipate needing to use the *castellano* that she had been exposed to in Argentina.

This shift in Kim's investment, as well as the negotiation of her identity as a Black Spanish speaker and the confirmation of her imagined community in the United States, seemed to align with her linguistic choices during SA. At the beginning of the program, some characteristics of Kim's Spanish resembled the variety she had been exposed to, Dominican Spanish, in her use of *tú* (as opposed to *vos*) and her production of overt subject pronouns. This was not the case, however, with respect to Kim's lack of use of /s/-weakening (a prominent feature of Caribbean Spanish), which might be attributed to a possible lack of perception of /s/-weakening in her Dominican community as a beginning Spanish speaker. In fact, she did not display /s/-weakening at all throughout the program. Toward the middle of SA, she tried to speak like an Argentine, perhaps related to her early attempts to interact with Argentines and improve her Spanish. By her mid-SA interview, she had increased her use of *sheísmo/zheísmo* and *vos*, and her use of subject pronouns moved toward the SPE rate of BAS Spanish. However, by the end of SA, her linguistic choices had moved away from BAS norms, decreasing her use of *sheísmo/zheísmo* and *vos* and increasing her use of overt pronouns as she invested in her identity as an African American speaker of Spanish in a Dominican community in the United States, where she hoped to one day use her Spanish with Latin Americans as an immigration lawyer.

4.2. Eddie

4.2.1. Background Information

Eddie was a 20-year-old who was a double major in political science and environmental studies with a minor in Spanish at a large, public university located in the Southeast. He described himself as learning Spanish as a foreign language and reported learning Spanish in school, not at home. He said that he had heard Spanish growing up around some of his Mexican friends in Los Angeles. He explained that his parents are Mexican, and they had learned Spanish in school, so they could speak Spanish for their jobs, but they did not speak it at home. That said, Eddie had been exposed to Spanish in his community, but no empirical data were collected on the amount of his exposure to the language prior to SA. He had never studied abroad or left the United States before his trip to Argentina, where he took several classes with locals as part of his SA program in Buenos Aires and was placed into intermediate classes. He lived with two different host families and participated in a human rights internship, for which he worked at a high school for students who identified as transgender. He described himself as Mexican (pre-SA interview, mid-SA interview), and, through studying abroad, he hoped to not only learn to speak Spanish fluently but also to gain a more global perspective regarding race, ethnicity, sexuality, and gender. He had been exposed to Mexican Spanish in school and in his Spanish-speaking community in Los Angeles, but in Buenos Aires, he hoped to speak like an Argentine, "fit in as much as possible, and adapt to the local community" (pre-SA interview). Thus, due to his personal and familial connection to Spanish in the United States (see Beaudrie & Fairclough, 2012),

Eddie might be considered an HS of Spanish. However, since this term has been constructed by scholars and there is a lack of understanding of how this label may shape learners' trajectories (Leeman, 2015), in this case study, we seek to examine Eddie's own perceptions, interpretations, and ways of representing himself in various contexts (see Hornberger & Wang, 2008, p. 6).

4.2.2. Quantitative Analysis

Overall, Eddie's use of sociolinguistic features seemed to move toward target-like norms with respect to the characteristics traditionally associated with BAS, *sheísmo/zheísmo* and *vos*; however, this was not observed for the other characteristics under investigation, /s/-weakening and SPE (see Table 4 and Figure 2). Eddie's first sociolinguistic interview was conducted upon his arrival in Buenos Aires, but he had already begun to exhibit the use of BAS phonemes 14.9% of the time in his pronunciation of "y" and "ll", and he approximated NS norms significantly more as time went on (83.3% of the time 2.5 months in and 92.3% after 5 months). Similarly, although he did not begin to use *vos* immediately, he moved toward NS norms, exhibiting the use of *vos* 12% of the time after 2.5 months and 65% of the time at the end of 5 months abroad. In contrast, Eddie did not move toward target-like norms in his use of /s/-weakening and SPE; he did not exhibit /s/-weakening at all during SA, and he produced few overt subject pronouns throughout the sojourn (4%, 6%, and 5% of the time, respectively, in interviews 1, 2, and 3). This could be due to Eddie's contact with Mexican Spanish prior to SA, which is known for /s/-maintenance and which tends to have lower SPE rates (19%) than other dialects of Spanish (see Otheguy et al., 2007). In addition, Eddie's lack of /s/-weakening could have been related to the tendency of lower-proficiency learners not to perceive the feature.

Table 4. Eddie's tokens and percentages of BAS feature use.

Feature		**Interview #1**			**Interview #2**			**Interview #3**	
Sheísmo/ zheísmo	Tokens (BAS)	Tokens (No BAS)	% BAS	Tokens (BAS)	Tokens (No BAS)	% BAS	Tokens (BAS)	Tokens (No BAS)	% BAS
	10	57	15%	55	11	83%	72	6	92%
S-weakening	Tokens (s-weakening)	Tokens (No s-weakening)	% s-weakening	Tokens (s-weakening)	Tokens (No s-weakening)	% s-weakening	Tokens (s-weakening)	Tokens (No s-weakening)	% s-weakening
	0	68	0%	0	282	0%	0	426	0%
Vos	Tokens (vos)	Tokens (tú)	% vos	Tokens (vos)	Tokens (tú)	% vos	Tokens (vos)	Tokens (tú)	% vos
	0	18	0%	2	15	12%	13	7	65%
Subject pronoun expression	Tokens (overt)	Tokens (null)	% overt	Tokens (overt)	Tokens (null)	% overt	Tokens (overt)	Tokens (null)	% overt
	1	22	4%	3	44	6%	3	56	5%

4.2.3. Qualitative Analysis

Experiences, Identity, and Communities of Practice

Upon his arrival in Argentina, although Eddie was used to hearing Mexican Spanish with friends in the United States, he expressed interest in learning Argentine Spanish in Argentina. He explained, "I'm in this culture and that's the way they speak, I'm going to try to fit in as much as possible and adapt to the local thing" (pre-SA interview). Despite his positive attitude regarding SA, he faced several challenges with his host family and with attempted robberies.

At the beginning of SA, Eddie was placed in an upper-class neighborhood with a host family that initially made an effort to include him but turned out not to be a "good

fit" (mid-SA interview). First, they complained about his cooking. Eddie explained, "I was making chilaquiles which is like a Mexican breakfast food that my family makes, I'm Mexican, and it's like my favorite food, I was like, really excited to make it once I saw there was tortillas in the supermarket that we live next door to and she asked me not to make 'cause it smells really bad" (pre-SA interview). He felt he was stereotyped as an exchange student who makes smelly food, and this rejection felt particularly hurtful because it was related to his identity as a Mexican.

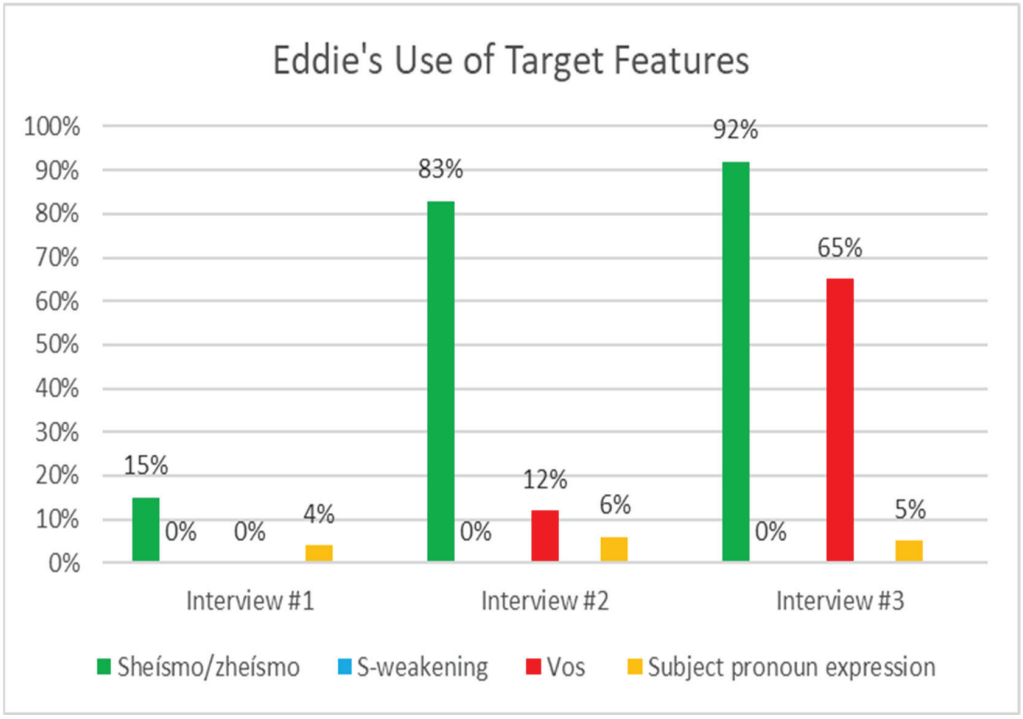

Figure 2. Eddie's use of target features.

In addition, the family showed little empathy after an attempted robbery near their home. He explained it this way:

> I was walking home from class the other day and somebody tried to rob me, I was surrounded by like three people and they like grabbed me and I ended up just like pushing one of the guys really hard and ran, um so nothing was stolen, and it was completely fine, but, I came home and I was like. . .talking to my host mom and I was like yeah, someone tried to rob me, and her reaction was just like 'oh, where were you walking?' and, I was like, 'Córdoba' and she was like, 'oh, you cannot walk at Córdoba at night', and that was just like the end of the conversation and we ate dinner and it was just like really cold, but I think that's pretty emblematic of a lot of the interactions I've had with her so far, so I'm pretty excited to be moving to a new family. (mid-SA interview)

Unfortunately, this was not the only time someone attempted to rob Eddie near his first host family's home, but luckily, he was not hurt either time.

Despite these initial challenges while living with his first host family, Eddie seemed to maintain an overall positive attitude toward his experience abroad. He moved to another more eclectic, diverse neighborhood in the city, which is known for its art scene. In this neighborhood, he moved in with a new host family, which consisted of an older woman from Lima, Peru, named Teresa, whom he described as "the nicest woman in the entire world". She had lived alone in Buenos Aires for 40 years and spent several hours conversing with Eddie in Spanish during the three meals she shared with him each day. In addition,

Eddie started an internship with an organization that supported transgender students in obtaining funding for their schooling. Although he had six friends from home who were studying in Buenos Aires with whom he spoke English, Eddie made friends from Bolivia with whom he spoke Spanish and spent a great deal of time. While he managed to make some Argentine friends, he did not spend much time with them or feel like part of their community. By the end of SA, Eddie settled into several CoPs (Peruvian host family, Argentine internship, Bolivian friends) that allowed him to improve his Spanish while accepting and respecting his identity as a Mexican, not asking him to change who he was to be accepted, as he had felt the pressure to do with his first host family.

Investment and Imagined Communities

Although Eddie seemed to be invested in his adaptation to the language and culture of Buenos Aires upon his arrival, the negative experiences with his first host family and the attempted robberies seemed to shake that investment in the local community and, ultimately, his imagined community. This became apparent as he recognized upsetting aspects of Argentine culture, particularly those he associated with the neighborhood and ideals of his first host family. He said,

> At the moment I'm not very ecstatic about Buenos Aires. . .it's very overwhelming. I'm having. . .not too positive experiences recently, just like a lot of racism is really overwhelming and people are like very open about it and it's like very difficult to navigate society cause it's just like so much racism and it's just like really terrible. . .and I don't know if I'm like very into the big city feel. (mid-SA interview)

Upon asking him to explain more about the xenophobia he described, he explained it as follows:

> A lot of people, more than 60 or 70% of people that I met in the city say things that are hard to hear. . .for example people from Peru, from Chile, from Bolivia, also Colombia. . .[they are] compared to thieves, prostitutes. . . bad people. (mid-SA interview)

The comments that Eddie described hearing in the upper-class neighborhood he had just moved from were quite ironic since he was robbed in that neighborhood and came to feel more comfortable and safe once he moved to the neighborhood that was characterized as "dangerous" due to the presence of the aforementioned immigrant populations. In fact, the person who showed him the most acceptance, care, and respect during his time in BA was Teresa, his new host mom, who was from one of those countries (Peru).

Although Eddie maintained a relatively positive attitude toward his SA experience and BAS, he seemed to become less invested in Argentine society as time went on, and instead invested in his relationships with people from other countries (e.g., friends from Bolivia and his host mom from Peru) and in his efforts related to social justice (e.g., his internship that supported transgender students). While he invested his time and energy in these relationships and activities, he also began to miss home, where he felt he had more of a place in the community. In this way, although Eddie began the sojourn viewing Buenos Aires as his imagined community, where he wanted to adapt to the TL and culture, over time, he embraced his acquisition of the BAS features of *sheísmo/zheísmo* and *vos* but not those of /s/-weakening or SPE. This split in Eddie's production of BAS features—using some but not others—was perhaps a way to embrace the target variety while holding onto his Mexican identity in connection with his imagined community at home, where he felt more accepted and aligned with societal views.

4.3. Brittany

4.3.1. Background Information

Brittany was a 22-year-old pre-law major and Spanish minor at a university in the North Central United States who identified as "White" (pre-SA interview). She was an advanced Spanish speaker who had never been to Argentina, but she had studied abroad in Chile. She explained that she did not have many opportunities to use Spanish back home prior to studying abroad and that she had not made many Chilean friends when she studied in Chile. As such, Brittany might be considered a traditional L2 learner from the United States, who had not been exposed to Spanish outside of school in her home community. She began SA in Argentina living with a host family but moved to an apartment after a few weeks, as she was used to living alone in college. She took classes in history and pre-law with locals at the university, was involved in extracurricular activities, and utilized dating websites, which helped her make connections with Argentines. During SA, she hoped to fit into the local community and speak more like an Argentine.

4.3.2. Quantitative Analysis

At the beginning of SA, Brittany described her Spanish as slow and non-native. She did not exhibit linguistic characteristics of BAS, and she used overt pronouns 22% of the time (which is less than the 35% SPE rate found by Cifuentes, 1980, in Santiago, Chile, the dialect she had previously been exposed to). Nevertheless, she moved toward target-like norms in her use of the features under investigation by the second interview 2.5 months into SA, using *sheísmo/zheísmo* categorically and *vos* nearly categorically (95% of the time). She also exhibited /s/-weakening 23% of the time and overt pronouns 22.5% of the time. By this time, she would correct herself when she used *tú* and opt for *vos*, making an effort to "fit in" by using Argentine Spanish (mid-SA interview). At the end of the sojourn, she used *sheizmo/zheísmo* and *vos* categorically, exhibited /s/-weakening 35% of the time, and produced overt pronouns 28.5% of the time (see Table 5 and Figure 3). This SPE rate remained within the target BAS SPE rate of 21–32% found in Barrenechea and Alonso's (1977) and Soares da Silva's (2006) studies.

Table 5. Brittany's tokens and percentages of BAS feature use.

Feature		**Interview #1**			**Interview #2**			**Interview #3**	
Sheísmo/ zheísmo	Tokens (BAS)	Tokens (No BAS)	% BAS	Tokens (BAS)	Tokens (No BAS)	% BAS	Tokens (BAS)	Tokens (No BAS)	% BAS
	0	82	0%	80	0	100%	102	0	100%
S-weakening	Tokens (s-weakening)	Tokens (No s-weakening)	% s-weakening	Tokens (s-weakening)	Tokens (No s-weakening)	% s-weakening	Tokens (s-weakening)	Tokens (No s-weakening)	% s-weakening
	0	74	0	23	76	23%	117	215	35%
Vos	Tokens (vos)	Tokens (tú)	% vos	Tokens (vos)	Tokens (tú)	% vos	Tokens (vos)	Tokens (tú)	% vos
	0	19	0	21	1	95%	19	0	100%
Subject pronoun expression	Tokens (overt)	Tokens (null)	% overt	Tokens (overt)	Tokens (null)	% overt	Tokens (overt)	Tokens (null)	% overt
	29	32	22%	9	31	22.5%	22	55	28.5%

4.3.3. Qualitative Analysis

Experiences, Identity, and Communities of Practice

Unlike the other two participants, who faced a variety of challenges in the host community, Brittany's experiences seemed to be quite positive overall. In fact, since the beginning of SA, her biggest concern was the way she spoke Spanish. At first, she was so

conscious of sounding non-native that she did not want to speak, even in service encounters, because she felt offended when people would ask where she was from. However, over time, she realized that someone who is not Argentine but identifies as American (pre-SA interview) can still participate in the Argentine community. She explained, "I don't even try to pretend that I am going to sound convincing, I don't even let it offend me" (mid-SA interview). She decided that she was going to use Spanish, even if it meant she was not perceived as Argentine: "If I don't speak Spanish I'm not trying to insert myself in the community, so I have to speak Spanish" (mid-SA interview).

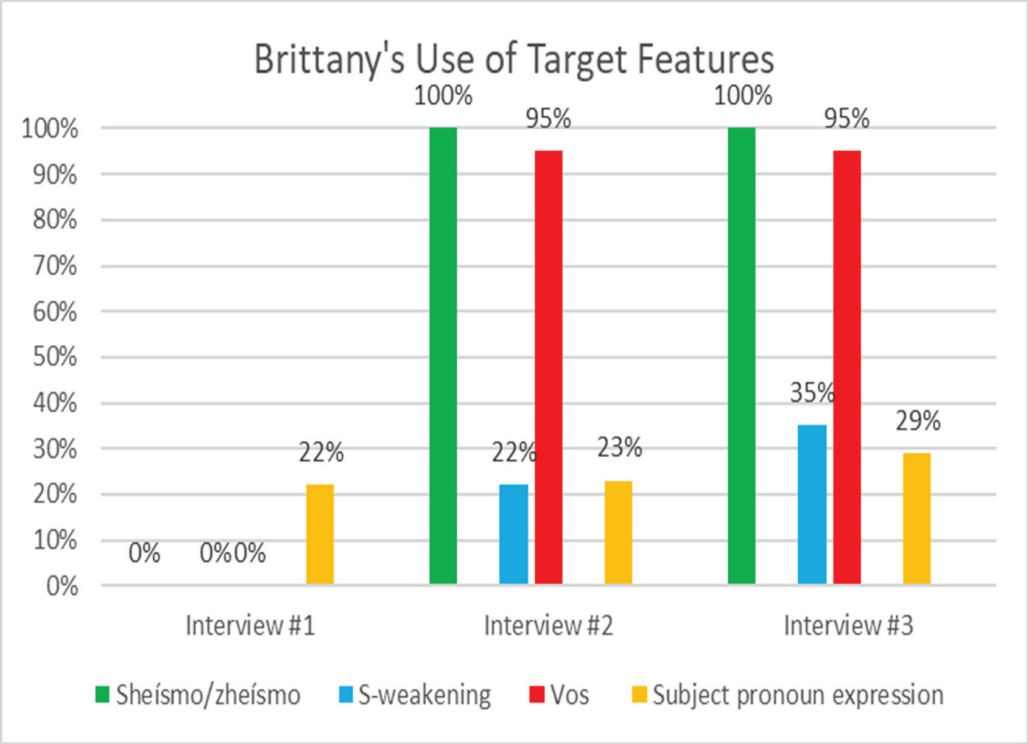

Figure 3. Brittany's use of target features.

She made friends right away thanks to her classes with locals, her ability and willingness to speak Spanish, and her use of social media. She used a dating application called Tinder initially to find a date, but the application ended up facilitating the establishment of her social network. She said, "I actually went. . . [out] with some Tinder guy. . .and through him I met like my core group of friends, so yeah, honestly, I have Tinder to thank for that, for my kind of principal friend group here. . ." (mid-SA interview). Through her Tinder date's roommate, she was introduced to another group, and, by the end of SA, she had made friends with several different groups of Argentines.

In addition to making friends through Tinder, although she said she was not a dancer, she decided to take dance classes with locals, including tango, salsa, and folklore. She reported that these classes allowed her to feel like part of the community and even helped her learn things about Argentine culture that some of her Argentine friends did not know. Participating in these activities led her to feel and speak more like an Argentine, too. She explained,

> Yeah, it's definitely that feeling, if I say a phrase and it's exactly how they would have said it and no one comments or no one kind of smirks a little bit and there's a whole conversation like that is such a rewarding feeling, kind of this feeling like I am, you know, "part of the gang". We're just having a conversation where my strange speech like isn't really a factor anymore. And yeah when you can

> have just conversations that make you feel like a normal player, that is a really cool feeling". (mid-SA interview)

To Brittany, moving from feeling clearly marked as non-native and robotic when she arrived to feeling like "part of the gang" confirmed that she was accepted as part of the host community.

Investments and Imagined Communities

Brittany was clearly invested in the target community at the beginning of the sojourn and sought to learn and use Argentine Spanish during SA. Once she stopped worrying about how she spoke and how that represented her as an outsider, she was able to invest her time and energy in adapting culturally and socially, which led to becoming an insider in a variety of CoPs. During this participation in CoPs, she increasingly approximated target-like norms of Argentine speech.

Despite her integration into the local community, Brittany always thought she would return home after the sojourn. However, while in Argentina, she did not often think about that return. Instead, she put her time and energy into building her life overseas. In fact, she said that she was pleasantly surprised by her flourishing social life since she thought that making a social network abroad would be harder and that she was going to be alone often. On the contrary, in Argentina, she spoke Spanish most of the time, did not have American friends, attended classes, went to friends' houses to drink *mate*, attended *asados* (barbeques), and learned Argentine dances. She mentioned that when she had arrived in Buenos Aires, she had used terms from Chilean Spanish, but her Spanish had changed based on the context she was in. Although her Spanish may change in the future if she is exposed to another variety of Spanish for an extended period of time, she thought it would be hard to revert to using *tú*, as she had been conditioned to use *vos*. In sum, since Brittany did not have Spanish-speaking friends or family in her home community, when she arrived in Argentina, she did not feel tied to any particular dialect of Spanish, nor did she have to worry about whether her home community would approve of her speaking like an Argentine. As such, her investment and her imagined community were rooted in the host community in Argentina throughout the sojourn, which seemed to play an important role in her approximation of BAS norms of all four features under investigation.

5. Discussion

The first research question examined when and to what degree the three focal students studying abroad in Buenos Aires acquired [ʃ] and/or [ʒ], /s/-weakening, *vos*, and SPE. All three participants (Kim, Eddie, Brittany) made rapid gains in target-like production of *sheísmo/zheísmo* and *vos*, with the largest increase generally occurring during the first 2.5 months, reaching 52% (Kim—beginner), 83% (Eddie—intermediate), and 100% (Brittany—advanced) by mid-SA for *sheísmo/zheísmo* and reaching 36% (Kim—beginner), 12% (Eddie—intermediate), and 95% (Brittany—advanced) by mid-SA for *voseo*. In addition, post-SA production rates for *sheísmo/zheísmo* reached 49% (Kim—beginner), 92% (Eddie—intermediate), and 100% (Brittany—advanced) and post-SA use of *vos* verb forms reached 33% (Kim—beginner), 65% (Eddie—intermediate), and 95% (Brittany—advanced). These gains increased as learners' proficiency levels increased, which is consistent with previous literature on the acquisition of these BAS features (Pozzi & Bayley, 2020; Pozzi, 2021).

On the contrary, not all participants approximated target-like norms with respect to the other two features under investigation: /s/-weakening and overt SPE. With respect to /s/-weakening, Kim (beginner) and Eddie (intermediate) did not exhibit the feature at all during SA. Only Brittany (advanced) produced it, reaching 22% mid-SA and 35% post-SA. These findings are in line with previous work, which has found that learners

rarely produce weakened versions of /s/, even after extensive exposure to the variant (Escalante, 2018a), although they do acquire the ability to perceive it over time as proficiency increases (Escalante, 2018b; Schmidt, 2011). The lack of production among the beginning and intermediate learners could be related to the stigmatization of /s/-weakening in Spanish, generally speaking, which might lead students to avoid adopting it in their speech, or to the possible lack of perception of the feature among these learners, as /s/-weakening has been found to be perceived starting at an intermediate-high proficiency level and increasing in the advanced levels (Schmidt, 2011).

The findings regarding overt pronoun use were varied. Kim started SA producing overt pronouns 41% of the time, which is the SPE rate in Dominican Spanish; she used them 31% of the time by mid-SA, approximating the BAS SPE rate of 21–32% (Barrenechea & Alonso, 1977; Soares da Silva, 2006); and she used them 68% of the time post-SA, moving back toward but greatly overshooting the SPE rate in Dominican Spanish (41%, Otheguy et al., 2007). This was perhaps due to having returned to the United States prior to the last interview, where she had been exposed to English and had likely heard Dominican Spanish again among her imagined community at home. Eddie's SPE rates remained relatively stable throughout SA, starting with an overt rate of 4% pre-SA, reaching 6% mid-SA, and ending with an overt pronoun rate of 5%, which is closer to the SPE rate of Andean Spanish (16%, Cerrón-Palomino, 2018) and Mexican Spanish (19%, Otheguy et al., 2007) than that of BAS (21–32%, Barrenechea & Alonso, 1977; Soares da Silva, 2006). Since Eddie's SPE rates did not change much mid- and post-SA after meeting his host mom and Bolivian friends (Andean speakers), his SPE rates were not likely influenced by theirs. Instead, Eddie's SPE rates may be related to his confirmation of his imagined community at home, where he would likely be in contact with Mexican Spanish in his social circles. In contrast, Brittany continually moved within the BAS SPE range of 21–32% (Barrenechea & Alonso, 1977; Soares da Silva, 2006) toward the higher limit of 32% found in Soares da Silva's (2006) study. In particular, she moved from 22% pre-SA to 23% mid-SA and reached 29% post-SA, as she confirmed her imagined community among BAS speakers in Argentina.

The difference between the participants' rapid adoption of *sheísmo/zheísmo* and *vos*, on the one hand, and their non-adoption of /s/-weakening and mixed results with SPE, on the other, may be related to the fact that the first two features are fairly obligatory in BAS, and the latter two are more variable and context-dependent. According to usage-based linguistic theory, our experience with language creates and impacts our cognitive representations of that language (Langacker, 1987, 2000). As input is received, language users process and encode utterances and categorize them based on phonetic form, meaning, and context, building up cognitive representations in their memory (Bybee, 2013). These representations are then strengthened or weakened by incoming utterances, which are sorted and matched by similarity to existing representations. Applying these concepts to the acquisition of variable forms among language learners, it can be argued that learners would be more efficient in processing and organizing forms that are less variable in nature, as a less variable input would provide a more robust representation of that variable in a learner's cognitive system. As such, the degree of variability of a particular feature may play a role in its acquisition.

Additionally, /s/-weakening has been found to index lower socioeconomic status, informal registers, and rapid speech (see Ryant & Liberman, 2016 and sources within) in many parts of the Spanish-speaking world, suggesting that it generally has significant social stigma in those places. In BAS in particular, coda /s/-aspiration is expected before a consonant but is less common and stigmatized before a word that starts with a vowel or in sentence-final position, and /s/-deletion is uncommon and stigmatized in any phonological

context (Colantoni & Kochetov, 2016). In the classroom, learners are mainly exposed to and produce prestige forms, not stigmatized forms. In fact, they may be hesitant to produce stigmatized markers, including those that contain an element of covert prestige, due to a lack of in-group status. That said, our results suggest that stigma and salience may play a role in L2 learners' acquisition of variable features, particularly for beginning and intermediate-level learners, who may not perceive the less salient features or who may not perceive the nuances of the prestige or stigma related to the use of those features in distinct linguistic contexts. While this study did not examine learners' perception of the features under investigation, future research should continue to explore the role of variability, stigma, and salience, as well as learners' awareness and perception of local features.

The second research question examined how participants' experiences, CoPs, investments, identities, and imagined communities relate to their production of the aforementioned BAS features during the sojourn. The findings indicate that learners' commitment to different varieties of Spanish in their home communities before SA may affect not only their investment in the TL and culture during SA, but also their investment in imagined communities post-SA. In fact, since learner participation in CoPs seemed to increase at each proficiency level, the ability to access and participate in CoPs and thus obtain the quantity and quality input necessary to acquire local features may be related to learner proficiency. Finally, learners' racial and ethnic identities influence not only their inclusion (or exclusion) from CoPs but also the ways they are positioned and position themselves in the host community. In particular, when the African American and Mexican American participants felt Othered, they retreated from interactions with Argentines and, in some cases, developed negative evaluations of Argentine culture.

Kim, a beginning Spanish speaker who identified as African American, had limited CoPs and reported experiencing confusion regarding *castellano*. Similar to Deidre in Kinginger's (2008) study, who did not make French friends, opted to interact on the internet, and barely improved her French during SA, Kim went to class and tried to speak Spanish with her host mom but often resorted to watching Netflix in her room, initially approximating BAS norms but moving away from them by the end of SA. She adjusted her investment in the TL community based on how she believed she was perceived by TL users (see Norton Pierce, 1995), moving away from her investment in the host community as she experienced stares and catcalls on the street and felt judged as "barbaric" due to the way she ate. Consequently, Kim tried to get through her stay in Buenos Aires until she could return home to a Spanish-speaking community from the Caribbean that better aligned with her identity as a Black speaker of Spanish. As Wheeler (in press) notes, for African Americans like Kim, learning Spanish entails more than just linguistic acquisition; it also involves learning how to be a Black speaker of Spanish across geographical contexts vis-a-vis sociolinguistic features that align with imagined racialized identities. That is, varieties of Caribbean Spanish tend to be associated with speakers of African ancestry (Potowski & Shin, 2019), which may resonate more with African American language learners, while varieties like BAS may be seen as more "White" Spanish. Moreover, as noted elsewhere, students of color who feel Othered may retract from local interactions (Goldoni, 2017; Quan, 2018; Talburt & Stewart, 1999). Ultimately, Kim moved away from interactions with locals as she embraced her African American and US American identities while confirming her imagined community among Latin American speakers of Spanish back home in the United States, where she hoped to become an immigration lawyer and interact with speakers of the Caribbean dialect of Spanish she preferred.

Eddie, an intermediate learner who identified as Mexican and had not been exposed to Spanish in the home growing up, began SA with several CoPs in place, including a host family, classes with locals, and an internship. However, as has been found with L2

learners (Kinginger, 2008) and HSs in SA (see Quan, 2018; Riegelhaupt & Carrasco, 2000), Eddie faced challenges with his host family that affected his SA experience. Similar to the case of Beatrice in Kinginger's (2008) study, who started SA with a great attitude but retreated from interactions with NSs due to conflicts with her host family, ultimately making minimal linguistic gains, Eddie initially wanted to speak Spanish like an Argentine, but due to conflicts with his hosts over his "smelly [Mexican] food", he moved away from relationships with Argentines and, in some cases, away from target-like norms. Although he moved toward BAS norms throughout SA with respect to two of the target linguistic features, *sheismo/zheismo* and *vos*, he did not approximate BAS norms with respect to the variable features of /s/-weakening or SPE post-SA. Meanwhile, he shifted his investment in the host community to make connections with speakers from Bolivia and Peru, who respected his Mexican identity. Over time, similar to Juan's case in Pozzi's (2021) study, Eddie embraced his Mexican identity and confirmed his imagined community among Spanish speakers in the United States. Moreover, like Julia's case in Peace's (2021) study Eddie ultimately felt more connected to his home community than to the SA community.

Brittany, on the other hand, was an advanced speaker who might be considered a traditional L2 learner, as she had not been exposed to Spanish in her home community in the United States. Even though she had previously studied abroad in Chile, she did not feel tied to any particular variety of Spanish prior to SA in Argentina and, instead, sought to become part of the local community through her linguistic choices and her social interactions. In fact, her co-constructed participation with NSs in a variety of CoPs, including her Argentine friend groups that she made through Tinder and her dance classes, aligned with her deep investment in the TL and culture. Similar to Bill in Kinginger's (2008) study, who reported having four-hour dinners with his host family three times a week about his interests and making great linguistic gains abroad, Brittany reported having a high number of quality interactions with Argentines in diverse CoPs throughout SA, and she approximated BAS norms with respect to all four sociolinguistic features under investigation. She embraced her US American identity, realizing that she could fully participate in Argentine society even though she was not Argentine, and her imagined community was rooted in the host community from the beginning to the end of SA. Unlike Kim and Eddie, Brittany reported no negative incidents due to her racial, ethnic, national, or gender identities. On the contrary, her racialization as a non-Hispanic White Spanish-language learner in BA may have worked to her advantage, considering the many CoPs to which she was able to gain access. As Riegelhaupt and Carrasco (2000) noted, while Lidia, a Mexican American HS of Spanish, was perceived negatively by her host family, her classmate of European descent was viewed positively. Overall, Brittany seemed free to adopt Argentine Spanish, as she had not been committed to an alternative variety of Spanish in her home community prior to the sojourn, nor did her imagined future CoPs conflict with an Argentine identity.

6. Conclusions

This study is one of the first to examine learners' case studies regarding the acquisition of sociolinguistic competence. It is also the first to complement the quantitative analysis of multiple features of BAS, including the underexplored feature of SPE, with qualitative data regarding learners' experiences, CoPs, investments, identities, and imagined communities in SA. The quantitative findings show that all three participants increased their production of the prestigious, salient features *sheísmo/zheísmo* and *vos*, but not the less salient, often-stigmatized feature of /s/-weakening, and the results were mixed with respect to SPE. This may have been the case since the first two features are used categorically among NSs and are characteristic of BAS, whereas the latter two are not only variable but are also not necessarily

associated with BAS in particular. Thus, stigma, salience, and variability may play a role in the acquisition of sociolinguistic variation abroad, particularly for learners at beginning and intermediate levels. Only the advanced speaker, Brittany, approximated target-like norms with respect to all four features under investigation. As such, Brittany may have been more likely to perceive the variable features than the lower-proficiency learners. Thus, future studies should examine not only learners' production of sociolinguistic features, including obligatory and variable forms, but also their perception of them.

With respect to the qualitative results, participants' investments in the target variety and their participation in local CoPs increased at each proficiency level. In this way, higher-proficiency learners may be more capable of accessing and participating in social networks in the host community, which, in turn, might afford them additional opportunities for increasing the quantity and quality of input and interaction and, thus, further approximation of target-like norms of variation. In addition, students' imagined communities differed based on previous exposure and commitment to alternative varieties of Spanish. In particular, the beginning (Kim) and intermediate (Eddie) learners who had previous exposure to alternative dialects of Spanish in their home communities confirmed their imagined communities back home during SA, whereas the advanced learner (Brittany), who did not have such ties prior to the sojourn, was free to invest in her imagined community in Argentina and adopt the target dialect. As such, previous personal ties to different varieties of Spanish may play a role in dialectal acquisition.

The qualitative findings also show how students were positioned and positioned themselves in diverse ways in the host community in relation to their racial, ethnic, cultural, and linguistic identities. For example, learners who felt Othered in the host community when they were stared at and experienced catcalls on the streets (Kim) or robbed and criticized for preparing "smelly" Mexican food (Eddie) ultimately retreated from interactions with Argentines and developed negative evaluations of Argentine culture. With this in mind, SA program stakeholders should provide pre-SA training for students to anticipate the ways they may be positioned abroad, including possible instances of discrimination. For example, programs might provide information regarding challenges that traditionally underrepresented students have faced overseas in the past, as well as opportunities while students are abroad to unpack their SA experiences as they unfold. Moreover, program stakeholders (e.g., host families, local instructors, and program staff) need to be trained in issues of diversity, equity, and inclusion to best support students who might encounter such challenges and avoid decisions that may exacerbate them. As Quan (2018) states, "if the intention is to diversify and be inclusive of all students in the abroad experience, then researchers, educators, and administrators should listen to the experiences of students of color and other underrepresented students (e.g., students with disabilities, LGBTQ students) abroad" (p. 43).

Finally, these results highlight the need to problematize the ways in which the field classifies learners in terms of instruction research. In this study, the focal students' diverse histories with Spanish demonstrate the insufficiency of traditional labels used to categorize their experiences. What the field has often conceptualized as an L2 learner implies that their exposure to Spanish is limited to the classroom. However, in the United States, Spanish is no longer conceived of as a foreign language that is only spoken in faraway lands. Instead, it is increasingly recognized as a local language that is used throughout the country (see Quan et al., forthcoming). Kim's case in particular demonstrates the ways in which students' experiences are becoming more diverse, as they may encounter Spanish in their communities, even if they do not hear it at home. In addition, while HSs are often assumed to be exposed to the language in the home, Eddie's case shows that while he did not hear or use Spanish at home, he self-identifies as Mexican and as a foreign language

learner of Spanish. In fact, only one of our three focal participants seems to reflect what has commonly been conceived of as an L2 learner—a White English-speaking student who studies Spanish as a foreign language and has no prior exposure to the language outside of an academic or immersion context. As such, these labels imposed on language students do not necessarily reflect their lived realities, and the field needs to move beyond imposing this dichotomy on our increasingly diverse students (see Quan et al., forthcoming).

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Article

The Influence of Social Networks During Study Abroad: Acquiring Non-Standard Varieties

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Abstract: Over the past 20 years, researchers have shown increasing interest in social network analysis to understand second language acquisition (SLA), especially in a study abroad (SA) context. To date, few longitudinal studies have examined the joint evolution of the learners' sociolinguistic competence and socialisation during the SA. By shifting the focus from a global view of the study abroad context to a deep analysis of the composition and structure of each learner' social networks in the host country, we aim to provide a better understanding of the development of sociolinguistic competence in SLA (Gautier & Chevrot, 2015). We apply the sociological concept of a social network to sociolinguistics. To explore the sociolinguistic competence of 29 learners, we focus on two well-described sociolinguistic variables in French: the optional liaison and the negative *ne*. We also gathered data on their social networks and provided a deep analysis of each participant's network. We implemented a quantitative approach to analyse and depict the social networks of the learners. Statistically significant relationships were found between changes in the learners' personal network and their use of the two sociolinguistic variables. The development of L2-oriented social networks (in terms of size, speaking time, and frequency) over nine months of the SA helps learners to reduce their use of standard variants. Conversely, the development of L1-oriented social networks during the SA is associated with greater use of standard variants.

Keywords: study abroad; sociolinguistic competence; social network

1. Introduction

Research in second language acquisition (SLA) has been significantly influenced by emergentist theories, including construction grammar, usage-based approaches, connectionism, and dynamic systems theory (Ortega, 2013). These theories have seen strong development in recent years. Mitchell et al. (2013, p. 99) proposed the following definition to qualify emergentist approaches: "From this perspective, the basic idea is that grammatical rules and other aspects of language 'emerge' (that is, are constructed and abstracted) from language use and experience, rather than being either innate, or learned as abstract structures." (Mitchell et al., 2013, p. 99). Ellis et al. (2013) conceived emergentist thinking about language and language acquisition as the conjunction of simple and complex processes. Simplicity relates to constructional grammar, driven by factors such as input frequency or salience, while complexity refers to a dynamic interaction of multiple factors that shape language competence and its conceptualization. The acquisition of first language (L1) and of a second language (L2) is said to be constrained by various psycholinguistic factors, such as the salience or frequency of linguistic forms present in discourse. Numerous

studies, for example, have demonstrated the frequency effects at work at several levels in the language acquisition process (Bybee & Hopper, 2001; Ellis, 2002).

Linguistic structures are therefore emergent, governed by certain regular processes, but changeable because they are recreated by individuals in specific conditions of usage (Kemmer & Barlow, 2000; Ellis & Larsen-Freeman, 2006). The language environment is thus the real source from which individuals build their language skills. As a result, the acquisition of a specific expression or word comes from direct contact with its conditions of usage. Exposure to these conditions in the native community will therefore have a positive influence on L2 learners, as it enables them to observe and practice choices and decisions specific to native speakers of the language (Achard, 2008).

Thus, for emergentist theories, the social environment is one of the keys to understanding second language development, but empirical studies on this topic are still rare. One important question raised by such an approach is as follows: How can we measure an individual's social environment? Social network analysis (SNA) offers a comprehensive view of the social environment and a formal method to determine its influence on language usage. Beckner et al. (2009) recommended this approach to better understand how acquisition processes can be deduced from the structure of networks. SNA aims to highlight the influence of networks on individual behaviour and attitudes. It also offers a methodological approach based on several measures that make it possible to account for connections between individuals in an analytical way.

The study abroad (SA) context is particularly conducive to the study of the relationship between the language environment and language acquisition. The social and linguistic environment in which learners immerse themselves for a year provides a unique setting to observe their evolving social network. The SA is often regarded as an opportunity for rich socialisation in a foreign language, fostering the development of various linguistic, sociolinguistic, and pragmatic skills. This study will examine the relationship between social networks developed in an SA context and the learners' language use. To this end, we are particularly interested in the development of sociolinguistic competence. We want to understand how learners acquire the use and social value of the native sociolinguistic variants to which they are exposed in the host community. Language classroom learning essentially advocates standard language use for a great number of sociolinguistic variables (Mougeon et al., 2010; Regan et al., 2009; Dewaele & Regan, 2001; Gautier & Chevrot, 2021). Variationist research in the SA has shown that learners tend to reduce their use of standard variants during a stay abroad (Gautier & Chevrot, 2015, 2021; Thomas, 2004; Sax, 2003). Thus, it is generally accepted that the SA context offers extensive exposure to an L2 and numerous interactions with native speakers, which often leads to linguistic change.

Recent studies have attempted to define the exact composition of the learners' social environments and to link them to language acquisition. Mitchell (2023) provided a review of various approaches to documenting the SA input and interaction. She shows how studies have evolved from self-report and indirect approaches through questionnaires and language logs to modelling social networks and direct approaches in order to document input and interaction. A growing body of research has demonstrated the utility of SNA in tracking sociolinguistic, phonological, and morphosyntactic acquisition among learners in diverse SA contexts. Kennedy Terry (2017, 2022) has conducted extensive research on the intersection of SLA and sociolinguistics, emphasising the predictive power of social networks during the SA. She has demonstrated that stronger social networks with target-language speakers during the study abroad contribute to the acquisition of sociolinguistic competence. The LANGSNAP project has been instrumental in advancing SNA within the SA research. McManus (2019) investigated the relationship between social networks and language development, demonstrating that stronger host community ties correlate

with greater linguistic gains. Earlier studies from LANGSNAP researchers (McManus et al., 2014; Mitchell et al., 2017) have examined how English-speaking sojourners integrate into French-speaking environments, emphasising the role of social relationships in facilitating or hindering language learning. Additionally, Mitchell et al. (2015) explored how different types of placements during the SA impact linguistic progression, revealing that learners embedded in local social structures exhibit more substantial linguistic development. These studies have underscored the success of SNA in analysing linguistic acquisition during the SA. By mapping the learners' social environments and interactions, researchers have been able to provide a nuanced understanding of the mechanisms that drive language learning beyond formal instruction. The consistent findings affirm SNA's value as a methodological approach in SLA research, particularly in the SA setting.

In this article, we aim to explore how aspects of social networks during the SA are linked to changes in the use of two well-known sociolinguistic variables in French: the optional liaison and the omission of the negative *ne*.

2. Materials and Methods

2.1. Participants

The participants were 29 learners of French as a foreign language, spending two semesters in France at the University of Grenoble (Gautier, 2016). They attended the same course at a French-language-learning centre (Centre Universitaire d'Etudes Françaises), where they received fourteen to sixteen hours of French instruction per week, including language and literature/culture components. The participants' mean age was 21.6 (range: 18–25 years). Half of the students (14) came from the United States and were all native English speakers, while the other half (15) were from China, and all were native Mandarin speakers. At the start of the course, the students' proficiency in French varied slightly; approximately three quarters of the students were placed at the intermediate level (B1), and the other quarter were placed at the upper intermediate level (B2) according to the Common European Framework of Reference for Languages (Council of Europe, 2001). The French language-learning centre assessed their proficiency at the beginning of each semester. The learners volunteered to participate in the project but were not informed of its specific aim.

2.2. The Optional Liaison

The phenomenon of liaison is common in French speech and occurs when a consonant is produced between two words, if the second word begins with a vowel. Liaison generally forms a syllable with the following consonant. For instance, when the adjective *petit* ('small') is combined with the noun *arbre* ('tree'), the sequence can be pronounced /pətitaʁbʁ/. The liaison consonant /t/ appears when the two words are combined. A limited number of consonants are used for liaison: /z/, /n/, /t/, /r/, /p/, and /z/, /n/, and /t/ being the most common (Adda-Decker et al., 1999). Liaison contexts are categorised as either categorical or optional. The optional liaison is a stratified sociolinguistic variable in adult speech. Its realisation varies with speaking style (Ahmad, 1993) and the speakers' socioeconomic background. For example, De Jong (1991) reported that upper-middle-class speakers produce more optional liaisons than lower-working-class speakers.

The distinction between categorical and optional liaisons proposed by Durand and Lyche (2008) was applied in this study. The optional liaison contexts reflect the usage of native French speakers, based on a recent analysis of a large corpus. The contexts include the following:

** After a pre-nominal adjective (e.g., *petit ordinateur* /pətitɔʁdinatœʁ/ vs. /pətiɔʁdinatœʁ/ 'small computer')
** After a plural noun (e.g., *amis heureux* /amizøʁø/ vs. /amiøʁø/ 'happy friends')

** After a form of the verb avoir (e.g., *avaient essayé* /avɛtesɛje/ vs. /avɛesɛje/ 'had tried')
** After a form of the verb être (e.g., *c'est à toi* /setatwa/ vs. /seatwa/ 'it's yours')
** After another verb form (e.g., *ils fument aussi* /ilfymtosi/ vs. /ilfymosi/ 'they also smoke')
** After invariable words, such as prepositions or adverbs (e.g., *chez elle* /ʃezɛl/ vs. /ʃeɛl/ 'in her house')

The realisation of the optional liaison is considered a standard, sometimes prestigious, form, while non-liaison is viewed as non-standard. A study by Adda-Decker et al. (2012) analysed the optional liaison, based on a corpus of recordings of 46 French speakers conversing with friends (Torreira et al., 2010). The speakers of this study (students from the Paris region) rarely used the optional liaison in casual conversations with friends. Based on the same optional liaison contexts as those mentioned above (Durand & Lyche, 2008), the authors note that the rate of the optional liaison does not exceed 11% in the everyday speech of French speakers.

2.3. The Negative ne

Negation in French is expressed using a pre-verbal *ne*, a verbal form, and a post-verbal particle (such as *pas* 'not' or *jamais* 'never'), the most frequent being the item *pas* (i.e., *je ne sais pas;* 'I don't know'). Although it is required in written speech, in spoken French, the pre-verbal *ne* is often omitted. Coveney (1996) considered the negative *ne* to be the most extensively studied and known sociolinguistic variable in French and its omission depends on speaking style and the speakers' socio-economic background, similar to the realisation of the optional liaison. The research has shown that age also has an influence on the omission rate of *ne*. For example, Berit Hansen and Malderez (2004) observed the maintenance rate of *ne* in different age groups. A maintenance rate of 22.3% was observed for people between 51 and 64 years old, while a maintenance rate of 7.5% was observed for people between 24 and 35 years old. Social class has also proved to be a predictive factor in the use of *ne*. By categorising speakers according to three social classes, Ashby (2001) found that speakers of a low socio-economic background have a slightly lower rate of use than the two other social classes. Similarly, Coveney (1996) observed that lower-class speakers maintain *ne* at a rate of 8.2%, while upper-class speakers maintain *ne* at a rate of 16.4%. Despite the differences, the omissions rate reported in these different studies indicate a very low use of the negative *ne* in the everyday speech of French speakers.

2.4. Acquisition of the Optional Liaison and ne by Second Language Learners in the SA

The SA context has become more widely recognised in the field of SLA, as one which provides good access and exposure to sociolinguistic variables in the target language community. Different studies have investigated the impact of the SA on the acquisition of variation, in the form of both cross-sectional studies (comparing groups at home and groups in the target language community) and longitudinal studies of the evolution of sociolinguistic competence before, during, and after the stay abroad (Lemée, 2002; Sax, 2003; Regan et al., 2009; Dewaele, 2004b). These studies have shown that L2 learners who spend time abroad increase their knowledge of non-standard variants and use them at a higher rate than students who have never spent time abroad. It has also been found that L2 learners underuse non-standard variants even with naturalistic exposure to L2, compared to native speakers.

Furthermore, it has been established that the acquisition of categorical liaison is rapid and that advanced learners have a good understanding of this phenomenon (Racine & Detey, 2015). The optional liaison represents greater difficulty because, in addition to the phonological, lexical, and morphosyntactical factors, learners need to grasp the

sociolinguistic aspects. Howard (2004) and Thomas (2002, 2004) have observed that the learners' use of the optional liaison is influenced by two opposing tendencies: maintaining high levels of liaison due to its academic value and decreasing its use to align with native speaker norms. Researchers have been interested in how learners are influenced by the language environment in which they participate. Some studies have compared groups of learners in a language classroom context to groups of learners in an SA context. Thomas (2015) found that the group who had spent ten months in France came closer to nativelike use of the optional liaison. Despite interindividual differences, learners tend to decrease their usage of variable liaison after a stay abroad in France (Howard, 2013; Thomas, 2002).

For the omission of the negative *ne* (Dewaele, 1992; Regan, 1995; Regan et al., 2009), the rate of *ne* production depends on the frequency of contact with native French speakers. The rate of learners (11%) is close to that of native speakers for those who are in contact with the latter (Thomas, 2004). However, it can be much higher (up to 81%) for learners with no contact with native French speakers outside the classroom (Thomas, 2004). Regan (1995) showed in a longitudinal study that *ne* acquisition is influenced by linguistic and extralinguistic factors. She found that, at the end of a year of an SA, learners approach the omission rate of native speakers. This was confirmed in another study (Regan et al., 2009), where the authors noted that the SA learners are more likely to omit the negative *ne* at a rate similar to that observed in native speakers' speech. Students who had never been abroad did not adapt their omission rate depending on the situation of communication (Dewaele, 2004a; Regan et al., 2009; Sax, 2003). Prolonged everyday use of French with native speakers seems to foster the development of stylistic variation. However, even if the students decrease their usage of standard variants after the SA, they maintain a higher retention rate than native speakers.

To summarise, studies of L2 acquisition of variable liaison and *ne* omission are consistent in their findings in two respects. Firstly, the SA context has a positive impact on the L2 learners' use of sociolinguistic variables, as they evolve from formal to more informal usage. Secondly, even if the learners move towards a less formal usage, they do not generally attain the vernacular norms of native speech.

3. Procedure

Data for this longitudinal study were collected over a period of nine months, with three major data collection points scheduled in September (time 1 [T1]), January (time 2 [T2]), and May (time 3 [T3]). At each data collection point, we scheduled two different meetings with participants, and each observation period followed the same process. Firstly, we conducted an interview to elicit the learners' sociolinguistic usage. At the end of the interview, they were given a logbook in which to record all their social interactions over the course of a week. Secondly, at the end of that week, we conducted a second interview during which the learners shared information on their personal networks, based on the information recorded in their logbooks throughout the week.

All the interviews were conducted in French on a one-to-one basis, between a participant and one of the researchers involved in the study who is a native French speaker.

3.1. Interviews for Eliciting Sociolinguistic Usage

Sociolinguistic usage was elicited using interviews, which aimed to prompt natural, spontaneous discourse. Informal conversational topics were used, guiding the learners to speak in an unmonitored style, and were chosen to reflect the learners' interests, such as hobbies and pastimes, holidays, and social life in France. The interviews lasted a mean length of 43 min and were then transcribed into standard orthography using CLAN software (MacWhinney, 2000). Specific codes were included for the realisation or non-

realisation of *ne* and the optional liaison. For the statistical analysis of the usage of the two sociolinguistic variables we used SPSS Statistics version 20.0.[1]

3.2. Instruments for Social Networks Data Collection

Two types of data were used to assess the participants' social interactions during the SA period.

3.2.1. Completing a One-Week Logbook

To obtain a picture of each participant's personal network, first a logbook was used as a name generator, which allows the participants themselves to create a list of contacts with whom they interact on a regular basis. As the sociologists Degenne and Forsé (2004) explained, the choice of a name generator depends on the underlying research question. This study sought to provide a broad view of the different relationships that could be established in the SA context. A name generator was therefore chosen, as it made it possible to capture the learners' interactions as experienced on a day-to-day basis. A logbook approach is more natural and less intrusive than direct observation (Fu, 2007). Moreover, as Degenne and Forsé (2004) explained, the use of a logbook has a clear advantage over verbal reports, as it minimises both memory bias and any retrospective rationalisation on the part of the participants.

The participants had to fill in the logbook every day for one week. The question of how long learners are asked to keep a logbook is a sensitive issue. Too short a period could lead to the logbook being insufficiently representative, but overly too long a period, the participants could get bored and lose motivation and even give up. In previous surveys using logbooks, the timeframe has ranged from one week to one hundred days (for a review of various logbook studies, see Degenne & Forsé, 2004 or Fu, 2007). For this study, the week-long period was agreed upon for two main reasons. First, the logbook could potentially take between 20 and 40 min to fill out per day (Fu, 2007), which translates into approximately 2.5–5 h per week. This seemed to be a reasonable time commitment to ask of the students. Second, other significant studies have also used week-long logbooks to study personal networks (Héran, 1988; Blanpain & Pan Ké Shon, 1998), and produced interesting results with this timeframe.

Instructions on how to fill in the logbook were given orally, and a written reminder was present on the front page. Learners were asked to keep a record of all face-to-face conversations and phone (or video) conversations that they had during the day, in all languages and with all speakers. The logbook included tables to be completed on each page with the following information: conversation, first name(s) of interlocutor(s), duration, place, and language. Learners were asked to fill in the logbook at regular intervals during the day, rather than all at one time. This instruction was given by pointing out that the ideal way to fill out the logbook was just after an interaction. Learners were asked to exclude from the logbook time spent in class, because the focus of this study was on the interactions that took place outside the classroom in their daily lives. The logbooks were given to the learners at the end of the first meeting in each observation period. Learners were also asked to be as rigorous and accurate as possible when completing the logbook, and an initial reading of the data suggests that they followed this instruction. The number of conversations recorded per day for all learners varied from 0 to 57, with an average of 8. This average number of conversations remained relatively constant for each of the three time points (T1: 8.79, T2: 8.39; T3: 7.60) with a slight decrease at T3. The relative stability of the average number of conversations seems to confirm that the students were conscientious in keeping the logbooks in a regular manner.

Following the logbook-keeping week, interviews about personal networks were conducted using the following methodological approach.

3.2.2. Interviews on Personal Networks and Social Practices

The duration of the interviews depended on the number of people present in each learner's personal network, but varied from 30 min to 1.5 h. A computer aid was used to guide these interviews, where all the information provided by the learners was recorded.

As an initial step, we listed all the people mentioned in the logbook. Then, a series of questions were asked about each of these people, which can be summarised as follows:

- Personal characteristics: age, sex, language used, and nationality.
- Location of the relationship: in the host country or in the country of origin.
- Type of relationship: family, friend, acquaintance, etc.
- How often they met that person on a six-point scale, ranging from every day to never. We specified that they had to provide a general frequency for the immediate period.
- Type of activities they shared with that person.
- How long they had known each other.
- People they knew in common. We specified that this referred to people who could interact with each other even in the learner's absence, in order to clarify the question and limit the length of the individual lists.

4. Results

4.1. Sociolinguistic Variables

4.1.1. The Optional Liaison

The Table 1 provides our results for the optional liaison, presented as percentages of standard variants (realised liaison) produced by each learner (n = 29) at the three time points. The table shows the results sorted by nationality, then alphabetically. The realisation percentages were calculated by dividing the number of occurrences of the optional liaison realised by the number of occurrences of possible liaison for each subject.

The mean rate of realisation of the optional liaison decreased markedly between T1 and T3, and this difference was significant (Wilcoxon: z = −2.258, p = 0.002, with a medium effect size, r = 0.42). The difference was mostly noticeable between T2 and T3 (Wilcoxon: z = −2,714, p = 0.007, with a large effect size, r = 0.5), the difference was not significant between T1 and T2.

Table 1. Percentages of standard variants produced out of the total of occurrences of the optional liaison according to learner and longitudinal time point.

		T1		**T2**		**T3**	
Learners	**Nationality**	**Percentage of Optional Liaison Realised (Number/Total Number of Occurrences)**		**Percentage of Optional Liaison Realised (Number/Total Number of Occurrences)**		**Percentage of optional Liaison Realised (Number/Total Number of Occurrences)**	
AND	American	80.90%	(72/89)	63.93%	(39/61)	42.37%	(25/59)
BEV		50.00%	(1/2)	83.33%	(5/6)	44.44%	(4/9)
EMI		28.57%	(2/7)	33.33%	(13/39)	31.25%	(5/16)
HEA		81.48%	(22/27)	75.00%	(21/28)	50.00%	(13/26)
JAC		26.87%	(36/134)	31.82%	(28/88)	23.94%	(45/188)
JEF		60.71%	(34/56)	61.18%	(52/85)	47.50%	(38/80)
KAT		26.15%	(17/65)	36.84%	(49/133)	14.91%	(17/114)
KRI		63.77%	(44/69)	50.60%	(42/83)	47.22%	(34/72)
MAT		59.15%	(42/71)	63.74%	(58/91)	44.44%	(28/63)
MEL		68.42%	(13/19)	51.22%	(21/41)	31.67%	(19/60)
MIC		20.00%	(2/10)	60.00%	(9/15)	11.76%	(2/17)
ROB		83.72%	(36/43)	38.10%	(16/42)	22.73%	(5/22)
SAM		20.37%	(11/54)	36.17%	(34/94)	26.67%	(20/75)
SEA		32.14%	(9/28)	33.33%	(26/78)	30.88%	(21/68)

Table 1. *Cont.*

		T1		T2		T3	
Learners	**Nationality**	**Percentage of Optional Liaison Realised (Number/Total Number of Occurrences)**		**Percentage of Optional Liaison Realised (Number/Total Number of Occurrences)**		**Percentage of optional Liaison Realised (Number/Total Number of Occurrences)**	
CHE	Chinese	66.67%	(14/21)	51.61%	(16/31)	62.50%	(5/8)
HAI		30.30%	(10/33)	26.67%	(8/30)	28.57%	(6/21)
HUA		57.50%	(23/40)	25.81%	(24/93)	28.89%	(13/45)
HUI		11.67%	(7/60)	23.36%	(25/107)	29.03%	(18/62)
LEI		28.57%	(8/28)	43.75%	(21/48)	27.42%	(17/62)
LUO		10.81%	(4/37)	21.62%	(8/37)	12.12%	(4/33)
MEN		25.00%	(7/28)	66.67%	(10/15)	25.00%	(8/32)
RON		67.31%	(35/52)	75.86%	(44/58)	81.03%	(47/58)
SHU		36.00%	(18/50)	22.62%	(19/84)	43.75%	(35/80)
WEN		48.21%	(27/56)	46.15%	(18/39)	67.86%	(19/28)
WUY		25.61%	(21/82)	35.77%	(44/123)	25.61%	(21/82)
XIE		75.00%	(36/48)	81.52%	(75/92)	69.05%	(58/84)
YAP		57.50%	(23/40)	57.78%	(26/45)	42.86%	(18/42)
YAX		24.29%	(17/70)	27.12%	(32/118)	10.09%	(11/109)
YIN		16.67%	(7/42)	2.86%	(1/35)	18.00%	(9/50)
Mean (Standard deviation)		44.25% (23.04)		45.79% (20.37)		35.92% (18.04)	

4.1.2. The Negative ne

The Table 2 presents the percentages of standard realisation of the negative *ne* (*ne* retention) produced by the 29 learners at three time points as well as the number of occurrences. The table shows the results sorted by nationality, then alphabetically.

Table 2. Percentages of standard variants produced out of the total of occurrences of negation according to learner and longitudinal time point.

		T1		T2		T3	
Learners	**Nationality**	**Percentage of Negative *ne* Realised (Number/Total Number of Occurrences)**		**Percentage of Negative *ne* Realised (Number/total Number of Occurrences)**		**Percentage of Negative *ne* Realised (Number/Total Number of Occurrences)**	
AND	American	93.83%	(76/81)	70.83%	(34/48)	35.71%	(30/84)
BEV		83.33%	(5/6)	92.31%	(12/13)	90.91%	(20/22)
EMI		31.82%	(7/22)	53.33%	(32/60)	66.67%	(18/27)
HEA		15.79%	(6/38)	3.33%	(1/30)	0.00%	(0/46)
JAC		12.84%	(14/109)	3.48%	(4/115)	0.00%	(0/198)
JEF		72.55%	(37/51)	72.73%	(72/99)	43.64%	(24/55)
KAT		85.90%	(67/78)	60.15%	(80/133)	50.88%	(58/114)
KRI		95.45%	(63/66)	77.61%	(52/67)	81.82%	(54/66)
MAT		79.27%	(65/82)	27.27%	(24/88)	18.18%	(20/110)
MEL		97.78%	(44/45)	34.00%	(17/50)	14.02%	(15/107)
MIC		33.33%	(5/15)	38.10%	(8/21)	28.57%	(6/21)
ROB		77.78%	(21/27)	18.42%	(7/38)	23.53%	(4/17)
SAM		97.78%	(44/45)	89.02%	(73/82)	54.24%	(32/59)
SEA		75.00%	(12/16)	19.70%	(13/66)	8.89%	(4/45)

Table 2. *Cont.*

Learners	Nationality	T1		T2		T3	
		Percentage of Negative *ne* Realised (Number/Total Number of Occurrences)		**Percentage of Negative *ne* Realised (Number/total Number of Occurrences)**		**Percentage of Negative *ne* Realised (Number/Total Number of Occurrences)**	
CHE	Chinese	38.46%	(15/39)	13.89%	(5/36)	4.17%	(1/24)
HAI		78.57%	(22/28)	46.88%	(15/32)	79.31%	(23/29)
HUA		93.48%	(43/46)	70.37%	(95/135)	36.71%	(29/79)
HUI		40.91%	(27/66)	28.04%	(53/189)	51.90%	(41/79)
LEI		88.24%	(15/17)	42.37%	(25/59)	22.81%	(13/57)
LUO		73.08%	(38/52)	79.25%	(42/53)	53.45%	(31/58)
MEN		61.90%	(26/42)	66.67%	(32/48)	53.95%	(41/76)
RON		82.05%	(32/39)	48.39%	(30/62)	63.49%	(40/63)
SHU		1.59%	(1/63)	0.00%	(0/70)	0.96%	(1/104)
WEN		72.00%	(36/50)	75.00%	(39/52)	58.82%	(20/34)
WUY		79.22%	(61/77)	73.05%	(103/141)	74.49%	(73/98)
XIE		65.45%	(36/55)	62.96%	(85/135)	55.88%	(57/102)
YAP		83.02%	(44/53)	72.97%	(54/74)	81.08%	(30/37)
YAX		22.00%	(11/50)	16.98%	(18/106)	26.87%	(18/67)
YIN		49.23%	(32/65)	42.65%	(29/68)	32.26%	(20/62)
Mean (Standard deviation)		64.88% (28.23)		48.27% (27.46)		41.83% (27.03)	

Similar to the optional liaison, there was a notable overall decrease in the rates of realisation of the standard variant of *ne* negation between the time points. In contrast to the optional liaison, where the reduction mainly occurred between T2 and T3, the decline in the *ne* realisation was evident as early as T2. There was a statistically significant decrease of 16.61% (Wilcoxon, z = 3.525, $p = 0.001$, with large effect size, r = 0.65) between T1 and T2, followed by a significant decrease of 6.44% (Wilcoxon, z = 1.979, $p = 0.04$, with medium effect size, r = 0.37) between T2 and T3.

No significant differences were found between the American and Chinese learners in terms of the rates of realisation of the two sociolinguistic variables (Gautier, 2016).

4.2. Personal Networks Analysis

In this study, we use personal (or egocentric) network analysis, which focuses on the social ties surrounding a single individual, in contrast to complete network analysis, which examines all the connections among members of a defined group. The following section outlines the indices used to define the networks in question. The structural and composition variables were selected based on previous work on social network typologies (Bidart et al., 2011; Brandes et al., 2010; Lubbers et al., 2007).

4.2.1. Structural Aspects of Personal Networks

This research draws on the mathematical analysis of social networks usually conducted in sociology. To determine network structure, many analysts use adjacency matrices to calculate structural indices, such as density and centrality measures. From now on, we will call the learner whose personal network is being analysed *ego*, and we will call each of this learner's contacts *alter*.

- Size and number of ties: an essential criterion is the size of the personal network, i.e., the total number of alters cited by ego. The number of links between the alters is also a basic indicator of how alters are connected within the social network.
- Density: The simplest structural parameter is density. It represents the proportion of existing relationships to the number of possible relationships across the network. In a

non-directed network, the number of possible links corresponds to n (n − 1)/2 (with n corresponding to the number of points of the network, i.e., to the number of alters). Density is generally expressed as a proportion. The higher the density, the stronger the cohesion within the alters' networks.

- Measures of centrality: Centrality is defined by several measures that are complementary to density. In social network analysis, researchers have observed that some alters play a 'more important' role than others. Some people may have many contacts within the network while others have very few. Centrality creates the link between the general structure of the network and the specific position of each of its members (Degenne & Forsé, 2004). In this analysis, the most used centrality measures have been taken into account (Bidart et al., 2011; Borgatti et al., 2013), namely *betweenness*, *closeness*, and *eigenvector centrality*. *Betweenness* (Freeman, 1979) is —"the extent to which a particular point lies 'between' the various other points in the graph" (Scott, 2000, p. 86), while *closeness* (Freeman, 1979) is the proximity of each individual to the others in the network, and *eigenvector centrality* is the degree to which an individual is connected to highly connected individuals (Bonacich, 1972).
- Isolates: when an alter is not connected to any other network member. This indicator makes it possible to determine whether the network is more or less interconnected.

Density and measures of centrality were calculated using the UCINET (Borgatti et al., 2002), which is a software package for analysing social network data.

4.2.2. Compositional and Interactional Aspects of Personal Networks

Following Lubbers et al. (2010) and Brandes et al. (2008), the network composition was described using four classes of alters based on the types of international relations.

- Originals: alters from the same country as *ego*, living in the country of origin.
- National peers: alters from the same country as *ego*, living in France.
- Hosts: alters who come from and live in France.
- Transnationals: alters from other countries, living in France.

For each class, the percentage of alters present in the network was calculated. We also measured the strength of ties based on the frequency of interaction, the number of shared activities, and the length of the relationship.

For the interactional aspects of the personal networks, the two indicators considered were the language mostly used in conversations between ego and each alter and the amount of interaction time reported in the logbook.

4.3. Development of Sociolinguistic Competence and Personal Networks

Previous analyses have shown that the learners' overall use of the optional liaison and the negative *ne* decreases over the SA. However, this reduction was not uniform, as some learners increased their use of standard variants or maintained similar rates across time points. In addition, the learners' social networks showed significant differences in terms of composition, structure, and interaction (Gautier, 2019). Some have social networks primarily centred on French speakers, while others are mostly connected to speakers of their L1. Some have small networks, others larger. Some networks are made up of a large proportion of national peers, and others of a large proportion of hosts. Our aim now is to understand to what extent the personal networks developed during the stay abroad are related to changes in the learners' sociolinguistic competences.

To analyse the changes in the use of sociolinguistic variables in relation to the development of personal networks, we adopted a two-step approach. First, we summarised the various dimensions describing changes in network indicators by performing a principal component analysis (PCA) on the differences between T1 and T3 (e.g., the difference be-

tween the percentage of alter hosts in T3 and that in T1). Based on a correlation matrix, the PCA reduces large sets of variables into a smaller number of factors, each representing a cluster of correlated variables. To gain a deeper understanding of network dynamics, we conducted separate PCAs on the differences in network indicators across structural, compositional, and interactional aspects (see Section 3.2). In our analysis, the extracted factors (e.g., Factor 1 and Factor 2 in Table 3 for structural indicators) represent dimensions capturing the changes in the learners' network indicators. In a PCA, the contribution of each variable and each individual to the extracted factors is also calculated (Dancey & Reidy, 2007). In our analysis, individual contributions reflect patterns of change in each learner's social network between T1 and T3.

In the second step, we performed Spearman's correlations between the learners' contributions to each factor—representing changes in their network—and variations in their use of sociolinguistic variables between T1 and T3 (see Table 4). Changes in sociolinguistic usage were quantified for each of the two variables as the difference between realisation rates at T3 and T1. The difference was computed as T3−T1, ensuring that a negative value indicates a decrease in standard variants, while a positive value signifies an increase.

By examining the correlation between changes in factors representing network indicators and changes in sociolinguistic usage, we can identify which transformations in personal networks are associated with the development of sociolinguistic competence. This approach places greater emphasis on the variation over time rather than on the differences in scores between individuals (Gautier, 2016).

4.3.1. Changes in Structural Aspects of Personal Networks and in Sociolinguistic Competence

The Table 3 presents the results of the PCA on the changes in the structural aspects of personal networks. It reveals two factors explaining 62.27% of the variance. The values corresponding to the variables with the highest contributions to each factor are highlighted in bold. This presentation facilitates the identification of the most influential variables in the construction of the principal components.

Table 3. PCA of changes in structural aspects of personal networks between T1 and T3.

	Factor 1	**Factor 2**
Changes in density	**0.920**	−0.036
Changes in the size (number of ties)	**0.740**	−0.112
Changes in closeness centrality	**0.717**	**0.557**
Changes in betweenness centrality	0.195	**0.863**
Changes in eigenvector centrality	**0.608**	0.038
Changes in the number of isolates	0.251	**−0.537**
Variance	39.64%	22.63%
Cumulated variance	39.64%	62.27%

The primary variables contributing to the first factor include increases in density, number of ties, closeness centrality, and eigenvector centrality. This factor accounts for 39.64% of the total variance. The four variables are positively correlated. The second factor is mainly determined by changes in closeness centrality, betweenness centrality, and the number of isolates. The negative relationship observed with the number of isolates indicates that, between T1 and T3, a lower number of isolates in the learners' networks correlates with higher closeness and betweenness centralities. This component explains 22.63% of the variance.

Factor 1 suggests that networks become more interconnected between T1 and T3. Our network analysis indicates that high density often results from strong relationships with national peers. We explored this trend further by correlating the change in density between T3 and T1 with the change in the proportions of various relationship types (hosts, transnationals, national peers, and originals). Only the correlation between changes in density and the proportion of national peers is significant, showing that a denser network corresponds to a higher proportion of national peers in the students' networks between T1 and T3 (Rho = 0.433, $p = 0.01$).

Previous studies have shown that a high level of interconnection between the members of a network favours the retention of the same linguistic variants between individuals (Milroy, 1987, 2002). This factor should therefore be linked to an increase in the realisation of standard variants. Conversely, looser networks have been associated with innovation and linguistic change (Milroy, 1987, 2002). We hypothesise that changes in network structure have an impact on changes in the use of sociolinguistic variables. At T1, we know that the learners, as a whole, have high rates of use of standard variants. Table 4 presents the results of the correlations between the factors derived from the PCA representing changes in the structural indicators and changes in usage of the two sociolinguistic variables between T1 and T3. Statistically significant results are indicated in bold for clarity. Asterisks are used to indicate the level of statistical significance associated with each correlation coefficient, allowing a rapid assessment of the reliability of the relationships observed.

Table 4. Correlations between changes in structural aspects of networks and changes in the usage of the two sociolinguistic variables.

	Factor 1	**Factor 2**
Changes in the percentage of the optional liaison realised	**0.388** * (29)	−0.226 (29)
Changes in the percentage of the negative *ne* realised	0.251 (29)	−0.251 (29)

Factor 2 does not show a statistically significant correlation with the changes in the use of the sociolinguistic variables between T1 and T3, but Factor 1 is significantly related to optional liaison use (Rho = 0.388. $p < 0.05$). This result indicates that as density, number of ties, closeness centrality, and eigenvector centrality increase between T1 and T3, the usage of the optional liaison also increases.

Thus, the interconnection of networks with national peers appears to be associated with the use of standard variants. This hypothesis holds only for the optional liaison.

4.3.2. Changes in Compositional Aspects of Personal Networks and in Sociolinguistic Competence

The composition of the personal networks refers to the four types of relationships that ego has with alters, as previously described (see Section 4.2.2). Table 5 presents the results of the PCA of changes in the compositional indicators of the personal networks. It reveals three factors explaining 65.30% of the variance.

Table 5. PCA of changes in compositional aspects of personal networks between T1 and T3.

	Factor 1	Factor 2	Factor 3
Changes in % of national peers	**0.826**	−0.050	0.480
Changes in % of hosts	0.363	0.142	−0.060
Changes in % of original	0.012	0.013	**−0.927**
Changes in % of transnationals	**−0.904**	−0.090	0.254
Changes in frequency of interaction	0.096	**−0.855**	0.273
Changes in length of the relationship	0.218	0.251	−0.286
Changes in number of shared activities	0.183	**0.793**	0.286
Variance	24.58%	20.78%	19.93%
Cumulated variance	24.58%	45.37%	65.30%

The first factor can be summarised as follows: as the number of national peers in the network increases, the number of transnationals decreases. This factor explains 25.58% of the variance. The second factor is characterised by a decrease in the average of the frequency of interaction and an increase in the average number of shared activities with an alter. It explains 20.78% of the variance. Finally, the third factor is focused on a single variable: the change in the percentage of the originals (alters from the same country as *ego*, living in the country of origin). It explains 19.93% of the variance. We hypothesise that the learners whose network composition is more oriented towards national peers during their stay (Factor 1) will tend to increase their use of standard variants. Table 6 presents the results of the correlations between the factors derived from the PCA representing changes in the compositional indicators and changes in usage of the two sociolinguistic variables between T1 and T3.

Table 6. Correlations between changes in compositional aspects of networks and changes in the usage of the two sociolinguistic variables.

	Factor 1	Factor 2	Factor 3
Changes in the percentage of the optional liaison realised	**0.416** * (29)	0.025 (29)	0.043 (29)
Changes in the percentage of the negative *ne* realised	**0.425** * (29)	−0.059 (29)	0.046 (29)

Factors 2 and 3 are not significantly correlated with the difference in the rate of realisation of the standard variants between T1 and T3. Factor 1 exhibits significant positive correlations with the rates of realisation of *ne* and the optional liaison (for the optional liaison, Rho = 0.416, $p < 0.05$ and for *ne*, Rho = 0.425, $p < 0.05$). Our hypothesis is therefore confirmed: the more networks are oriented towards individuals from the same country of origin, the more learners use standard variants.

4.3.3. Changes in Interactional Aspects of Personal Networks and in Sociolinguistic Competence

In this section, we explore the possible correlations between changes in interactional aspects of the social network and changes in sociolinguistic usage.

Interactional aspects are represented by the percentage of L1 speakers (English or Mandarin speakers), L2 speakers (French speakers), and L1/L2 speakers (those who can use both languages) within the learners' personal network. These aspects are also defined by the number of hours per week the learners spend using the L1, the L2, or a combination of both (L1/L2). Table 7 presents the results of the PCA on the changes in the interactional dimensions of personal networks between T1 and T3. It reveals two factors that explain 75.04% of the variance.

Table 7. PCA of changes in interactional aspects of personal networks between T1 and T3.

	Factor 1	**Factor 2**
Changes in % of L1 speakers	**−0.898**	−0.272
Changes in % of L2 speakers	**0.855**	−0.355
Changes in % of L1/L2 speakers	0.064	**0.978**
Changes in interactional time in L1 (number of hours/week)	−0.482	−0.162
Changes in interactional time in L2 (number of hours/week)	**0.892**	−0.036
Variance	51.36%	23.67%
Cumulated variance	51.36%	75.04%

This first factor explains 51.36% of the variance. It suggests that during their stay, as the learners' networks shift towards L2 speakers, their conversation time in L2 increases, while the number of L1 speakers decreases. The second factor, which explains 23.67% of the variance, is specifically determined by the proportion of L1 and L2 speakers engaged in the same conversation. Our general hypothesis posits that learners who increase both the number and length of their conversations with L2 speakers between T1 and T3 (Factor 1) will likely decrease their use of standard variants during this period. Table 8 presents the results of the correlations between the factors derived from the PCA representing changes in the interactional indicators and changes in usage of the two sociolinguistic variables between T1 and T3.

Table 8. Correlations between changes in interactional aspects of networks and changes in the usage of the two sociolinguistic variables.

	Factor 1	**Factor 2**
Changes in the percentage of the optional liaison realised	**−0.389** * (29)	0.160 (29)
Changes in the percentage of the negative *ne* realised	**−0.488** * (29)	0.211 (29)

Factor 1 is significantly and negatively correlated with changes in the rates of realisation of the standard variants for the two sociolinguistic variables (for LF, Rho= −0.389, $p < 0.05$ and for *ne*, Rho = −0.488, $p < 0.05$). Thus, our hypothesis is confirmed: as interactions with L2 speakers increase during their stay, their conversational time in French also increases, and the number of L1 speakers in their network decreases, leading to a decrease in their use of the standard variants of *ne* and the optional liaison between T1 and T3.

5. Discussion

Analyses linking social networks to L2 acquisition have often been carried out on a small sample of subjects, making results difficult to generalise through statistical analysis. In our study, we followed 29 learners over a nine-month period, collecting data at three time points to track changes in their personal networks and sociolinguistic competence. From collection to analysis of the network data, we used tools from sociological research, which enabled us to qualify and quantify the learners' social networks from multiple perspectives. By integrating structural, compositional, and interactional indicators into our analysis, we were able to link changes in these variables to the development of sociolinguistic competence using statistical methods.

Our findings demonstrate significant links between the realisation rates of the two sociolinguistic variables (optional liaison and *ne* omission) and the three network indicators (structural, compositional, and interactional) between T1 and T3. Specifically, these are as follows:

- Network structure: an increase in network density during the stay was associated with a rise in the use of the standard variant of the optional liaison. Denser networks typically include more national peers.
- Network composition: an increase in the number of national peers coupled with a decrease in the number of transnationals during the stay was linked to an increase in the use of the standard variants for both variables.
- Interactional dynamics: an increase in L2 speakers in the personal network corresponding to more interaction time in the L2 and fewer L1 speakers was linked to a decrease of the standard variants of the negative *ne* and the optional liaison.

In short, learners who developed increasingly dense networks, particularly with more national peers, tended to use more standard French forms. Conversely, those who expanded their networks to include more speakers of French and increased their interaction in French showed a shift toward non-standard usage. The most probable explanation for these trends is that learners who have greater social interaction with L2 speakers are more likely to be exposed to non-standard sociolinguistic variants. Conversely, it can be assumed that those who increasingly socialise with peers of the same national origin remain influenced by the more standard sociolinguistic usage of their language teachers (between 34% and 48% liaison realisation and between 55% and 68% *ne* realisation, as reported by Gautier, 2016, p. 299).

These findings answer our research question regarding the impact of social networks during the SA on sociolinguistic usage. They also account for some of the individual variation observed in the development of sociolinguistic competence. Future research directions include looking more closely at the interviews conducted with learners to explore how network changes during the SA were sometimes part of a deliberate effort to get closer to native speakers and increase their L2 input. For instance, during the third observation period, an American learner shared how she actively sought to spend more time with French friends to improve her language skills:

> "A month ago, I was often with my American friends, and it was just in class that I was speaking French. Then I remember my host mom saying, 'I think your French is getting worse, what's happening?' So, I decided to change, started calling my French friends more, and made more effort. I'm happier now because I'm putting in more effort outside the classroom." (MEL) (our translation)

Similarly, a Chinese learner reflected on how living with native speakers improved her ability to communicate in French:

> "I don't know if it's arrogant to say this, but I think I do better than others when I talk with French people or other foreigners. I'm not afraid or embarrassed anymore. I think living in a flat-share helped—even though it's not perfect, I've learned how to start conversations with French people or foreigners." (YAX) (our translation)

Both learners reported significant changes in their social networks during their SA, with an increase in interactions with French speakers. Their experiences suggest that these network changes may be part of a conscious strategy to improve their L2 proficiency. This research provides valuable insights into the link between social network reconfiguration in the host country and changes in sociolinguistic competence during L2 acquisition. The network analysis could be further refined by examining the quality and evolution of relationships—for instance, by distinguishing between strong and weak ties, or considering the stability of these ties over time. Future studies could particularly focus on how enduring, close relationships with native speakers influence sociolinguistic usage.

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Notes

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Article

Functional Prestige in Sociolinguistic Evaluative Judgements Among Adult Second Language Speakers in Austria: Evidence from Perception

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Abstract: This study explores the perception of (Austrian) standard German and Austro-Bavarian dialect varieties by 111 adult speakers of German as a second language (L2) in Austria, tested through 'smart' and 'friendly' judgements in a matched-guise task. Our goal was to determine whether L2 speakers, both at the group level and as a function of individual differences in standard German and dialect proficiency, reflect the attitudes of Austrian speakers by (a) judging the dialect higher in terms of friendliness in solidarity-stressing situations (e.g., in a bakery) and (b) attributing the standard variety a higher indexical value in terms of intelligence in status-stressing settings (e.g., at the doctor's office), a phenomenon in Austrian-centered sociolinguistics known as 'functional prestige'. Bayesian multilevel modeling revealed that L2 speakers do not adopt attitudinal patterns suggestive of functional prestige and even appear to reallocate certain constraints on sociolinguistic perception, which seems to depend on individual differences in varietal proficiency.

Keywords: sociolinguistic competence; sociolinguistic perception; matched guise; functional prestige; adult second-language learners; Bayesian mixed-effects models

1. Introduction

Language attitudes can broadly be defined as "evaluative reactions to different language varieties" (Dragojevic, 2017, p. 2). Standard and nonstandard language varieties, for instance, often carry distinct socio-indexical value, meaning that individuals may attach different social meanings to particular linguistic features and, by extension, to particular language varieties. For example, while speakers of a standard language are often judged as having high status (i.e., intelligence), speakers of nonstandard varieties are typically evaluated more favorably in terms of solidarity (i.e., friendliness). Research has repeatedly identified that expert (i.e., first-language [L1]) speakers in a community are largely consistent in the social judgements and socio-indexical elements they attach to language variation (Coupland & Bishop, 2007; Giles & Powesland, 1975; Lambert et al., 1960; Preston, 2013; Trudgill & Giles, 1978; see for Bavarian-Austria Bellamy, 2012; Soukup, 2009). In light of this, a growing strand of variationist second language acquisition (SLA) research has begun investigating the extent to which second language (L2) speakers (in migrant communities) adopt the attitudinal patterns observed among speakers in the target-language population. The present study adds to this scope of research (see, e.g., Chappell & Kanwit, 2022; Clark & Schleef, 2010; Davydova et al., 2017; Ender et al., 2017, 2023; Ender, 2020; Kaiser et al., 2019; Michalski, 2021; Stotts, 2014; Schmidt, 2020; Wirtz & Pfenninger, 2023, 2024).

We studied L2 speakers of German living in the Austro-Bavarian setting. Using Bayesian multilevel statistical modeling, we address to what extent these L2 speakers have inter-individually acquired evaluative judgement patterns characteristic of the target-language community. We focus on participants' evaluative judgements of the prestige and social attractiveness of (Austrian) standard German and Austro-Bavarian dialect varieties.[1] More specifically, we report the results of a matched-guise judgement task investigating L2 speakers' acquisition of attitudinal patterns suggestive of 'functional prestige', that is, whether participants (a) judge the dialect variety higher in terms of friendliness in solidarity-stressing situations (e.g., in a bakery) and (b) attribute the standard variety higher indexical value in terms of intelligence in status-stressing situations (e.g., at the doctor's office). Additionally, since previous findings show that dialect proficiency can be a strong predictor of differences in evaluative judgements (e.g., Chappell & Kanwit, 2022; Ender, 2020), we integrate into the investigation whether variation in varietal proficiency (i.e., proficiency in standard German and in the Austro-Bavarian dialect) can predict the acquisition of evaluative judgements reflective of functional prestige.

2. Theoretical Background

Speakers of a standard or other socially prestigious language variety are typically judged higher in terms of status traits (e.g., intelligence, professionalism, wealth) and are attested an overall higher prestige in status-stressing situations (e.g., Dragojevic, 2017). By contrast, speakers of nonstandard language varieties are often downgraded (i.e., judged less positively) on such status traits, but they may be rated more favorably in terms of solidarity (e.g., friendliness and likeability), especially in solidarity-stressing contexts. Similar patterns hold true for the Austro-Bavarian context (Bellamy, 2012; Kaiser, 2006; Moosmüller, 1991; Soukup, 2009; Unterberger, 2024; Vergeiner et al., 2021): speakers of a standard German variety are considered more educated, intelligent, and polite, while Austro-Bavarian dialect speakers are typically perceived as more humorous, natural, easy going, and likeable (Bellamy, 2012; Soukup, 2009; Vergeiner et al., 2019, 2021).

Nonstandard varieties, however, may also possess 'covert prestige' (see Labov, 1966; Trudgill, 1972). Covert prestige refers to cases where nonstandard speakers are judged positively in terms of solidarity traits (e.g., friendliness and likeability), against the grain of the overall higher prestige of standard languages. This concept captures the idea that nonstandard varieties with a low mainstream social value may have high value in local, solidarity-stressing settings such as in a local bakery or with friends or family (e.g., Wolfram & Schilling-Estes, 2006), although these dispositions may not be overtly expressed or readily admitted to by those who hold them (Trudgill, 1972). While certain facets of covert prestige are observable in the Austro-Bavarian context (e.g., dialect varieties are judged more positively on solidarity traits in local settings), the general concept may not provide the best description of the attitudinal patterns found in Austria.

Soukup (2009) investigated the attitudes towards standard German and the Austro-Bavarian dialect among 242 Austrians (age range: 19–36 years) in the Austro-Bavarian dialect region, specifically, in Linz in Upper Austria. The stimuli consisted of brief monologues in a status-stressing context (i.e., in a communication seminar) spoken by speakers of a standard German and Austro-Bavarian dialect variety. The speakers of the dialect variety were judged as more natural, honest, friendly, emotional, relaxed, and likeable than their standard-speaking peers, while speakers of standard German were perceived as more polite, intelligent, educated, gentle, serious, and refined. On the basis of this study, Soukup (2009, p. 128) suggests the concept of 'functional prestige' to describe the attitudinal behavior found in the Austro-Bavarian context (see also, e.g., Kaiser et al., 2019). The conceptual demarcation between 'functional' and 'covert' is found in the notion that there are certain

things a speaker can do *with each* of the varieties (Soukup, 2009). In other words, functional prestige expresses the subjective adequacy of standard German and dialect varieties for certain functions and situations, being, in turn, determined by the subjectively deemed higher affective or cognitive value of a respective variety. As a further distinction between 'functional' and 'covert', the prestige of many nonstandard varieties in Bavarian-speaking Austria is not necessarily hidden but rather functional and socially quite variable. That said, attitudes towards vernacularity are subject to substantial variation across the lifespan (e.g., in the context of regional dialects of American English: Dossey et al., 2020) and, in the L2, even across a period as short as three months (Wirtz & Pfenninger, 2024).

With respect to sociolinguistic competence in the L2, that is, "the capacity to recognize and produce socially appropriate speech in context" (Lyster, 1994, p. 263; see also Kanwit, 2022; Kanwit & Solon, 2023), the ability to perceive social meaning in the speech of others is essential (see, e.g., Geeslin & Long, 2014; Geeslin, 2018; Howard et al., 2013; Regan et al., 2009; Regan, 2010). Sociolinguistically competent speakers can convey a wealth of information via language variation, such as (a) expressing their identity via variable structures that denote membership to certain social groups or (b) by (intuitively) evoking socio-indexical interpretations (e.g., competence, sympathy, humor) from a listener by employing a range of standard, regional, and local dialect varieties. Acquiring sociolinguistic competence in the L2 is, thus, equally characterized by the acquisition of complex interpretive abilities (Chappell & Kanwit, 2022; Clark & Schleef, 2010; Davydova et al., 2017; Geeslin, 2018; Geeslin et al., 2018) as it is by learning to style shift and use registers appropriately (Howard et al., 2013; Mougeon et al., 2010; Regan, 2010).

In the Austro-Bavarian context, Ender et al. (2017) and Kaiser et al. (2019) demonstrated that adolescent and adult L2 speakers rated the standard German variety more positively than the dialect variety. That said, L2 speakers' varietal judgements appear to be complexly intertwined with individual difference variables such as dialect proficiency, in that higher proficiency in the Austro-Bavarian dialect is related to overall higher ratings of dialect varieties (Ender, 2020). These results, however, were strictly based on L2 speakers' overall impression of the varieties. This approach necessarily neglects possible differences between the indexical elements of status and solidarity and, moreover, the effects of these indexical elements in combination with contextual variables, such as the status- or solidarity-stressing nature of a situation, on L2 speakers' evaluative judgements (see Kaiser et al., 2019). Wirtz (in press) addressed this shortcoming by analyzing how 40 adult speakers of L2 German and with L1 English evaluated standard German and the Austro-Bavarian dialect on the indexical domain of status (i.e., intelligence judgements) and solidarity (i.e., friendliness judgements). He found that these L2 speakers demonstrated judgement patterns consistent with functional prestige (i.e., more positive attitudes towards standard German in terms of intelligence and more positive attitudes towards the dialect variety in terms of friendliness). These rating patterns, however, may arguably be an artifact of sociolinguistic transfer (Durrell, 1995), i.e., transferring sociolinguistic information from the L1 to the L2 variation environment. Under a qualitative analytical lens, Ender et al. (2023) found among L2 users with heterogeneous language backgrounds that participants who attributed the dialect higher overall judgements demonstrated attitudinal behavior more confluent with target-like norms.

The previously discussed research on L2 speakers' attitudinal patterns in the Austro-Bavarian context has (a) only considered comparatively small samples (i.e., approximately 40 L2 participants in each respective study), (b) fallen victim to sample- and design-related confounders (e.g., sociolinguistic transfer), or (c) neglected how differences in evaluative judgements of standard German and dialect varieties manifest as a function of the indexical elements of status and solidarity. Such factors make it difficult to determine whether L2

speakers, indeed, adopt attitudinal patterns confluent with the notion of 'functional prestige' or whether the results are simply an artifact of design-related discrepancies. Here, we attempt to address these shortcomings by analyzing the evaluative judgements of standard German and the Austro-Bavarian dialect on the indexical domains of status and solidarity among 111 adult speakers of German as an L2 living in the Bavarian-speaking dialect regions in Austria. We take into account how contextual conditions (in a doctor's office vs. in a bakery) in combination with a respective language variety (standard German vs. dialect) can differently influence L2 speakers' socio-indexical evaluations, and also whether these evaluations may be sensitive to differences in L2 speakers' self-reported proficiency in standard German and in the Austro-Bavarian dialect.

3. Materials and Methods

3.1. Aim and Research Questions

The aim of this study is to examine the question as to whether adult speakers of L2 German adopt evaluative judgements mirroring the conceptual notion of 'functional prestige.' In this vein, the following exploratory research questions are addressed:

RQ1: To what extent do adult L2 speakers' attitudinal patterns regarding standard German and dialect varieties display (signs of) 'functional prestige'?

- RQ1a: To what extent is the dialect-speaking salesperson judged as more friendly than the standard German-speaking salesperson?
- RQ1b: To what extent is the standard German-speaking doctor judged as more intelligent than the dialect-speaking doctor?

RQ2: To what extent do differences in self-reported standard German and Austro-Bavarian dialect proficiency (i.e., varietal proficiency) predict the acquisition of attitudinal patterns suggestive of functional prestige?

- RQ2a: To what extent is the dialect-speaking salesperson judged as more friendly than the standard German-speaking salesperson as a function of self-reported varietal proficiency?
- RQ2b: To what extent is the standard German-speaking doctor judged as more intelligent than the dialect-speaking doctor as a function of self-reported varietal proficiency?

3.2. Participants

In total, 111 L2 speakers (78 women and 33 men) from Lower Austria, Upper Austria, Salzburg, Vienna, and Carinthia completed the online experiment (see Figure 1). The pool of respondents consists of people in young and mature adulthood, with 22 having started learning German at a relatively young age (i.e., under 16). The present dataset can be characterized as a convenience sample, and the participants were recruited via fliers and word of mouth. The questionnaire was closed (and, thus, the sample size determined) once the response rates had stagnated. Due to the convenience sample, it was not possible to stratify by sociolinguistic factors such as age or gender, as is otherwise typical of variationist sociolinguistics work (e.g., Labov, 1972), and the sample is, therefore, also characterized by marked heterogeneity in terms of place of birth, L1, and occupational status. There was a total of 50 different countries of birth, with the most common being the USA (n = 8); Ukraine (n = 7); China and Italy (n = 6, respectively); and Korea, Russia, and the United Kingdom (n = 5, respectively). There was a total of 37 reported L1s, the most common being English (n = 18); Arabic, Russian, and Spanish (n = 7, respectively); and Italian and Ukrainian (n = 6, respectively). The most often reported current occupation was student (n = 25), and other professions included teacher, truck driver, salesperson, hairdresser/barber,

and engineer, among others. Our participants, moreover, reported a high degree of multilingualism, both in terms of further native languages and proficiency in a (or multiple) second or foreign language(s) in addition to German. Regarding additional foreign/second languages, the most reported were English (n = 70), French (n = 19), and Spanish (n = 17), with a mean of 1.9 (SD = 0.9) reported additional foreign or second languages spoken in addition to German. The participants were highly educated, with the majority holding at least one university degree (bachelor's degree: n = 32; master's degree: n = 20; doctoral degree: n = 3) or enrolled in a university program (enrolled in a Bachelor's degree: n = 30; enrolled in a Master's degree: n = 10). Only 13 participants reported a school-leaving certificate as their highest education, and 3 reported not having an educational degree. Finally, the participants differed in terms of their self-reported varietal proficiency, captured via aggregated 100-point slider scale self-reports on how L2 speakers judged their standard German and Austro-Bavarian dialect proficiency in terms of reading, writing, listening, and speaking. Table 1 outlines the participants' self-reported proficiency and additional relevant socio-demographic information.

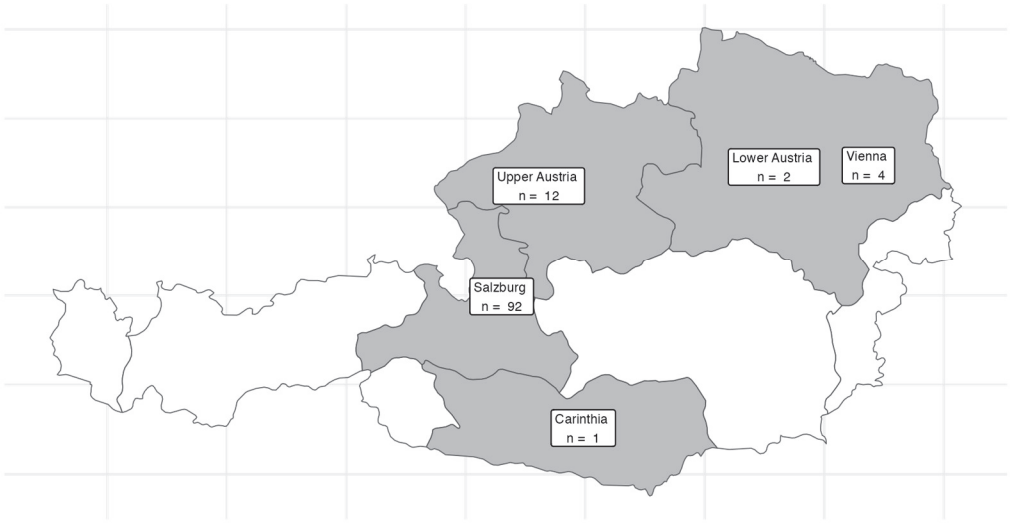

Figure 1. Regional distribution of participants.

Table 1. Participant overview.

	Mean	Median	SD	Range
Self-reported standard German proficiency	61.4	64.8	24.3	5.0–100.0
Self-reported dialect proficiency	23.8	15.0	23.0	0.0–97.8
Age	31.8	28.5	10.7	19.0–71.0
Age of onset (for German)	24.3	22.5	11.5	1.6–58.0
Length of German acquisition (years)	7.4	5.0	8.2	0.0–54.0
Length of residence (LoR)	4.9	3.3	5.9	0.1–43.5

What is more, this participant pool does justice to the call in Long (2022, p. 430) to investigate uncommonly studied language pairs in variationist SLA (that is, other than strictly speakers of L1 English acquiring L2 French or Spanish), and importantly that "learners in these under-researched contexts will reflect a broad diversity of linguistic, cultural, and social backgrounds".

3.3. Tasks and Procedure

This rating task consisted of a classic within-person matched-guise design (Lambert et al., 1960), in which the participants rated four verbal stimuli spoken by two male speakers (approximately 7 min). The stimuli in question comprised everyday greeting se-

quences, two of which were produced in an (Austrian) standard German variety and two of which were in an Austro-Bavarian dialect variety. The standard language stimuli correspond to a broad and usage-oriented definition of spoken standard language. Herein, we assume that the Austrian standard can evince regional characteristics, but it nonetheless represents the most supra-regional and also the most formal way of speaking among educated Austrian speakers (Elspaß & Kleiner, 2019). This also corresponds to the idea of the matched-guise design, which envisages that speakers express themselves in two different varieties: in this case in an Austro-Bavarian dialect and an Austrian standard variety. The dialectal greetings contained salient dialect features (see, e.g., Kaiser et al., 2019 for a more extensive description of the matched-guise tasks). These features are primarily phonetic in nature, such as *a*-darkening and *l*-vocalization. Morphosyntactic differences, such as the cliticized realization of the second personal plural (e.g., dial. *mechtens* vs. standard German *möchten Sie*), were only included in unavoidable cases in which the authenticity of the language use in the guises would have suffered. Table 2 demonstrates the marked, and perceptually very salient, differences between varieties:

Table 2. Excerpts from the matched-guise task.

Variety	Stimuli
Salesperson	
Standard German	Guten Morgen! [ˈguːtn̩ ˈmɔʁgn̩] Was hätten Sie denn gern? [ʊas ˈhɛtn̩ siː dən gɛʁn] Ich könnt Ihnen heute den Bergkäse aus Heumilch empfehlen, [ɪç kʰœnt ˈiːnən ˈhɔɤ̯tə dən ˈbɛʁkˌ̍kɛːsə aʊ̯s ˈhɔɤ̯mɪlç ɛmpˈfɛːlɪn̩] der wäre heute im Angebot. [dɛːɐ̯ ˈʊɛːʁə ˈhɔɤ̯tə ɪm ˈaŋgəboːt] Möchten Sie einmal kosten? [ˈmøçtn̩ siː ˈaɪ̯mmaːl ˈkʰostn̩] Ich schneide Ihnen ein kleines Stück ab. [ɪç ˈʃnaɪ̯də ˈiːnən aɪ̯n ˈkʰlaɪ̯nəs ʃtʏkʰ ap] Sie werden sehen, [siː ˈʊɛːɐ̯dn̩ ˈsɛːən] das ist etwas ganz Gutes. [das ɪst ˈɛtʊas gans ˈguːtəs]
Austro-Bavarian Dialect	Gua Morgn! [gʊ ˈmɔːɐ̯ŋ̍] Wos hättens denn gern? [ʊɔːs ˈhɛːdn̩s dɛn gɛːɐ̯n] I kunnt eana heit den Bergkas aus Heimüch empföhn. [ɪ kʰʊnt ˈɛːɐ̯ne haːɪ̯d̍ dɛn ˈbɛːɐ̯gˌ̍kʰaːs aʊ̯s ˈhaɪ̯myːç ɛmpˈfœːɣ̯n] Der war heit im Angebot. [dɛːɐ̯ ʊaː haːɪ̯d ɪm ˈɔŋgɛboːd] Mechtens amou kostn? [ˈmɛçtn̩s ˈamɔɪ̯ ˈkʰostn̩] I schneid eana a kloans Stückerl owa. [iː ʃnaːɪ̯d ˈɛːɐ̯ne ɐ klɔ̃ːẽ̯s ˈʃtɪkɐl ˈɔːʊɐ] Werdns sehn, [ˈʊɛːɐ̯dn̩s ˈsɛːn̩] des is gonz wos Guads. [deːs iːs gɔns ʊɔːs gʊːa̯ds]
English (literal translation)	Good morning! What would you like? Today I can recommend the mountain cheese made from hay milk, which would be on sale today. Would you like a taste? I'll cut you a small piece. You'll see, it's something really good.
Doctor	
Standard German	Grüß Gott! [gʁyːs gɔt] Ich bin der Herr Doktor Falch. [ɪç bɪn dɛːɐ̯ hɛɐ̯ ˈdɔktɐ̯ fɐlç] Jetzt haben Sie leider ein bisschen warten müssen. [jɛ͡ts haːmˌ̩ siː ˈlaɪ̯də aɪ̯n ˈbɪsçən ˈʊaːtn̩ ˈmʏsn̩] Ich habe gerade noch schnell eine Überweisung und einen Befund geschrieben. [ɪç haːbə gəˈʁaːdə nɔx ʃnɛl ˈaɪ̯nə ˌyːbɐˈʊaɪ̯sʊŋ ʊnt ˈaɪ̯nn̩ bəˈfʊnt gəˈʃʁiːbm̩] Die Patientin vor Ihnen hat das ganz dringend gebraucht. [diː paˈt͡sie̯ntɪn fɔɐ̯ ˈiːnən hat̍ das gans ˈdʁɪŋənt gəˈbʁaʊ̯xt] Aber jetzt hab ich Zeit für Sie. [ˈaːbe jɛ͡tst hap ɪç t͡saɪ̯t fyːɐ siː]
Austro-Bavarian Dialect	Griaß God! [gʁɪa̯s gɔːd] I bin da Herr Doktor Falch. [iː bɪn dɐ hɛɐ̯ ˈdɔktɐ̯ falç] Jetzt homs leider a bissi wortn miassn. [ɪɐ̯t͡s hɔːms ˈlaɪ̯də ɐ ˈbɪsl̩ ˈʊɔɐ̯tn̩ ˈmɪɐ̯sn̩] I hob grod no schö a Überweisung und an Befund gschriebn. [iː hɔːb gʁɔːd noː ʃnœː ɐ ˌyːbeˈʊaɪ̯sʊŋ ʊnd ɐn bɛˈfʊnt ˈgʃʁiːbm̩] Die Patientin vor eana hot des gonz dringend braucht. [diː paˈt͡sie̯ntɪn fɔɐ̯ ˈɛːɐ̯ne hɔːd̍ deːs gɔns ˈdʁɪŋɛnt ˈbʁaʊ̯xt] Owa ietz hob i Zeit für Sie. [ˈɔːʊɐ jɛ͡ts hɔːb iː t͡saːɪ̯d fyːɐ siː]
English (literal translation)	Good morning! I am Dr Maier. Unfortunately, you had to wait a little while. I've just quickly written a referral and a report. The patient in front of you needed them urgently. But now I have time for you.

The greeting sequences and speakers were moreover tailored to reflect different contextual conditions in the form of different occupations: one speaker played the role of a delicacies salesperson, the other of a doctor. These contextual conditions were chosen to capture possible differences in the functional prestige of the different varieties, that is, that speakers of a standard variety could be perceived as more intelligent in status-stressing situations (i.e., at the doctor's office), whereas speakers of a dialect variety might be judged as more friendly in solidarity-stressing contexts (i.e., in a bakery). This choice was also informed by prior work from linguistics and psychology underscoring that attitudinal behavior is contextually situated (Gawronski et al., 2014; Levon & Ye, 2020), and thus, "the evaluation of a behavior in one context does not necessarily apply in another" (Levon et al., 2021, p. 361). In line with matched-guise designs, the same speaker recorded the salesperson stimuli in both a standard German and a dialect variety, and the other speaker recorded the doctor stimuli in both varieties, which resulted in a total of four stimuli by two speakers. Importantly, the listeners were not informed that the same speaker recorded the stimuli in both varieties; the participants were exclusively asked to judge the respective speaker.

On each task trial, the participants were presented with four stimulus greeting sequences and were asked to rate the stimuli on a particular scale. Following Ender et al. (2017), Kaiser et al. (2019), and Dossey et al. (2020), one scale focused on the subjective indexical element of status ("How intelligent is this person?" [German: *Wie intelligent ist diese Person?*]) and the other on solidarity ("How friendly is this person?" [German: *Wie freundlich ist diese Person?*]). Rating responses could be selected on a 100-point slider scale, ranging between "not at all intelligent" to "very intelligent" (German: *gar nicht intelligent—sehr intelligent*) and "not at all friendly" to "very friendly" (German: *gar nicht freundlich—sehr freundlich*), respectively. The slider scales allow us to capture participants' evaluative judgements on a continuous scale, which reflects the notion that speech—and, by extension, sociolinguistic perception—is gradient rather than categorical by nature (e.g., Kutlu et al., 2022).

Importantly, since we set out to gather data on a heterogeneous sample of L2 speakers, the survey was administered in standard German, and this because it was unfeasible to provide the survey in multiple different first languages. Of course, this may come with the caveat that the instructions and scales in standard German may influence participant response patterns, a limitation which we acknowledge. That said, it is typical of matched-guise designs administered to L1/expert speakers to provide instructions and scales in the respective standard variety as well. Any potential variety-related biases that may occur would, thus, also be present in comparable studies of L1/expert speakers (e.g., Kaiser et al., 2019).

The experimental procedure was fully computerized and administered online via Limesurvey. The presentation of the stimuli was blocked, in that each participant was asked to rate each speaker on one scale (e.g., friendliness) before proceeding to the next scale (e.g., intelligence). The order of the scale blocks was randomized, and the order in which stimuli were presented within each scale block was randomized.

3.4. Data Analysis

Bayesian mixed-effects models were fitted using the *brms* package (Bürkner, 2017) in *R* (R Core Team, 2020). We analyzed the friendliness and intelligence evaluative judgements in two respective models as a function of the stimulus's *contextual condition* (i.e., salesperson vs. doctor; treatment coded; reference level: 'salesperson') and *variety* (i.e., variety of the respective stimulus; treatment coded; reference level: 'dialect') and their two-way interaction. Given that the rating data were necessarily bounded by 0 and 100 by virtue of the slider scale, we used the beta distribution (a canonical distribution family for propor-

tion data), which maps the model estimates to the log odds space using the logit linking function. The advantage of the beta distribution is that it is bound to values between 0 and 1; however, it does not include 0 and 1. The rating data were, thus, first divided by 100, and values equal to 0 were manually set to 0.0001, and values equal to 1 were manually set to 0.9999. The random effects specifications included by-participant random intercepts.

The model formula described above was used to fit the data for the friendliness and intelligence ratings with 2000 iterations (1000 warmup). Hamiltonian Monte-Carlo sampling was carried out with 4 chains in order to draw samples from the posterior predictive distribution. The models were fitted with regularizing, weakly informative priors (Gelman et al., 2017; Vasishth et al., 2018) for the intercept term and all coefficient parameters, which were normally distributed and centered at 0 with a standard deviation of 5 (in log-odds space). Importantly, these priors were intended to aid in model computation, but they were not informative enough to influence the resultant model estimates.

To determine how probable RQ1a and RQ1b are, we proceed, using Bayesian hypothesis testing, by computing the probability from the posterior distribution that the difference δ between two conditions is larger than zero. We judge there to be compelling evidence if (a) $\delta > 0$; (b) zero is not included in the 95% highest density interval (HDI; i.e., a type of credible interval, basically the Bayesian analog to the Frequentist confidence interval) of δ; and (c) the posterior $P(\delta > 0)$ is close to one (i.e., $\geq$0.95, Franke and Roettger, 2019). This Bayesian approach has the added advantage of allowing us to directly gauge the *probability* that a hypothesis holds true (conditional on the data, a data-generating model, and the prior specifications).

Finally, to test RQ2a and RQ2b concerning whether varietal proficiency (i.e., proficiency in standard German and in the Austro-Bavarian dialect) predicts the acquisition of attitudinal patterns confluent with the notion of functional prestige among individuals with L2 German, we computed Bayesian multilevel models in the same way as detailed above, with the addition of self-reported standard German and dialect proficiencies as predictor variables in the interaction with the *contextual condition* and *stimulus variety*. We follow the same procedure as outlined for RQ1a and RQ1b, the additional element being that we explore whether the differences in question become more or less pronounced with higher or lower self-reported varietal proficiency. To this end, we employ Bayesian visual methods for significance testing. We judge there to be compelling evidence if the 95% HDI of a difference δ at a select level of proficiency is greater than 0 (see also, e.g., Pfenninger, 2021 for a similar method using generalized additive modeling). Note that in these analyses, we initially included age of onset of acquisition of L2 German and participants' length of residence in Austria as control variables. As these did not significantly predict differences in evaluative judgements, they were removed from the models and not further analyzed.[2]

4. Results

Figure 2 and Table 3 display the descriptive statistics on L2 speakers' attitudinal behavior. As we can see, there is a high degree of variation in the range of evaluative judgement patterns recorded for each contextual condition (salesperson vs. doctor), indexical domain (friendliness vs. intelligence), and variety (standard German vs. Austro-Bavarian dialect). Given the prominent variance, and also in light of the repeated measures stemming from the within-person matched-guise design, Bayesian mixed-effects models were run.

Figure 3 illustrates the conditional effects of the resultant Bayesian multilevel model. As noted, Bayesian models produce an entire distribution of probable values (i.e., the posterior distribution) for each effect, and the density plots below illustrate the predicted proba-

bilities of L2 speakers' evaluative judgements at the group level. Higher and steeper peaks indicate more likely values, that is, more probable evaluative judgement scores on the respective indexical domain and for the respective contextual condition and variety. The visualization shows that L2 speakers, at the inter-individual level, are predicted to rate the standard German variety higher across nearly all indexical domains and contexts. Only L2 speakers' friendliness ratings of the doctor are comparatively similar between the two varieties: that is, the distributions of the standard German and the dialect variety overlap to a large degree.

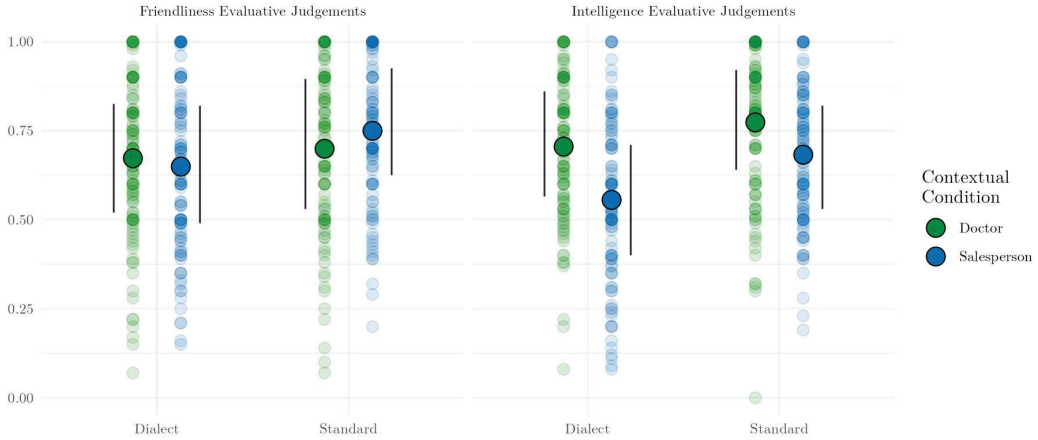

Figure 2. Descriptive overview of evaluative judgements. The semitransparent points display each individual's evaluative judgements, while the solid points display the respective group mean. The lines beside each respective set of judgements represent the interquartile range.

Table 3. Descriptive statistics of evaluative judgements.

Variety	Contextual Condition	Indexical Domain	Mean	Median	SD	Range
Dialect	Doctor	Friendliness	0.67	0.70	0.22	0.07–0.99
Dialect	Doctor	Intelligence	0.71	0.71	0.19	0.08–0.99
Dialect	Salesperson	Friendliness	0.65	0.65	0.23	0.15–0.99
Dialect	Salesperson	Intelligence	0.56	0.55	0.22	0.08–0.99
Standard	Doctor	Friendliness	0.70	0.71	0.23	0.07–0.99
Standard	Doctor	Intelligence	0.77	0.80	0.20	0.00–0.99
Standard	Salesperson	Friendliness	0.75	0.75	0.20	0.20–0.99
Standard	Salesperson	Intelligence	0.68	0.70	0.19	0.19–0.99

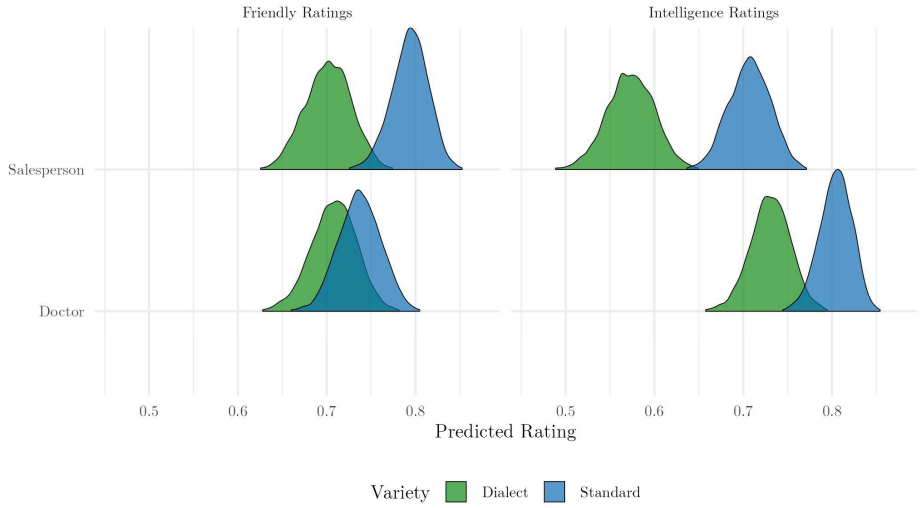

Figure 3. Posterior distributions of the predicted ratings of the standard German- and dialect-speaking salesperson and doctor in terms of friendliness and intelligence. Density plots estimate the probability density of the data at different values.

4.1. To What Extent Do L2 Speakers Acquire Attitudinal Patterns Suggestive of Functional Prestige?

In order to address RQ1a and RQ1b, which target the degree to which participants have acquired attitudinal patterns suggestive of 'functional prestige' of standard German and dialect varieties, we make use of Bayesian hypothesis testing. Attitudinal behavior consistent with functional prestige would need to be observed on two fronts, which we have operationally defined in the form of two hypotheses, confluent with the two sub-research questions:

1. **H1**. *The dialect-speaking salesperson is judged as more friendly than the standard German-speaking salesperson (i.e., dialect is perceived as more friendly in a solidarity-stressing context than is the standard German variety).*
2. **H2**. *The standard German-speaking doctor is judged as more intelligent than the dialect-speaking doctor (i.e., standard German is perceived as more intelligent in a status-stressing context than is the dialect variety).*

Using the posterior distributions of the conditional effects (i.e., the distributions visualized in Figure 3), we can compare the relevant conditions to directly calculate the probability that the aforementioned two facets of functional prestige are met.

Figure 4 shows the results of the two Bayesian hypothesis tests. H1 visualizes the difference between L2 speakers' friendliness ratings of the dialect-speaking salesperson and standard German-speaking salesperson. H2 illustrates the difference between L2 speakers' intelligence ratings of the standard German-speaking doctor and the dialect-speaking doctor. Positive values on the x-axis indicate evaluative judgement patterns consistent with functional prestige (H1: the dialect is rated more positively in terms of friendliness; H2: standard German is rated higher in terms of intelligence), whereas negative values suggest rating patterns inconsistent with functional prestige (H1: standard German is rated more positively in terms of friendliness; H2: the dialect is rated more positively in terms of intelligence). Note that these are difference *distributions*: Higher and steeper peaks indicate more probable values for the difference between the two respective conditions. When the difference distribution does not overlap with zero, the difference between conditions can be interpreted as significant.

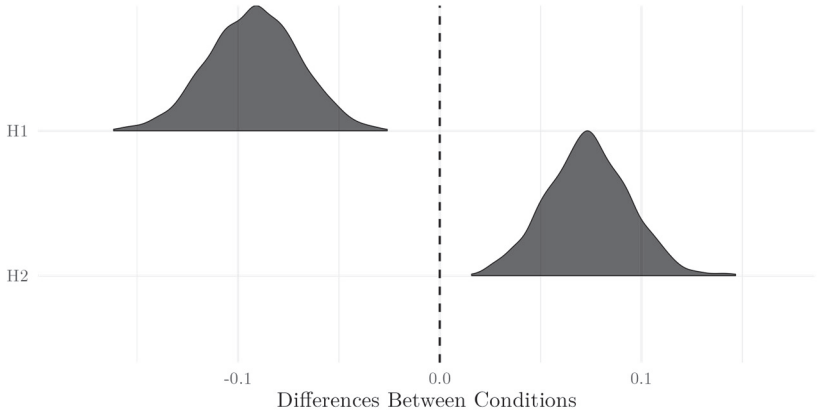

Figure 4. Posterior distributions displaying the probability density of differences between conditions in the computed hypotheses. H1: varietal differences between friendliness ratings of the salesperson; H2: varietal differences between intelligence ratings of the doctor. Distributions not including zero indicate a significant difference between conditions.

Regarding H1, the difference between L2 speakers' friendliness ratings of the dialect- and standard German-speaking salesperson is significant, but in the opposite direction of the specified hypothesis (median $\delta = -0.09$, HDI = $[-0.14, -0.05]$, $P(\delta > 0) = 0\%$). In other

words, participants rated the *standard German-speaking* salesperson as more friendly than the dialect-speaking one. Conversely, H2 holds true, in that participants judged the standard German-speaking doctor as more intelligent than the dialect-speaking one (median $\delta = 0.07$, HDI = [0.03, 0.11], $P(\delta > 0) = 99.98\%$).

4.2. To What Extent Does Self-Reported Proficiency Predict the Acquisition of Attitudinal Patterns Suggestive of Functional Prestige?

As a next step, visual methods for significance testing allow us to see where and in what ways participants' acquisition of attitudinal behavior confluent with the notion of functional prestige differs as a function of varietal proficiency. In the same way as described above, we computed differences between conditions that would be indicative of the acquisition of evaluative judgements reflective of functional prestige and checked whether the differences in question become more or less pronounced with higher or lower self-reported varietal proficiency (i.e., proficiency in standard German and in the Austro-Bavarian dialect). The results from this procedure are shown in Figures 5 and 6. The shading represents the predicted credible intervals. Green shading indicates a significant difference (i.e., the 95% HDI of the estimated difference does not include zero) in the direction consistent with functional prestige (e.g., the dialect-speaking salesperson is rated higher in terms of friendliness than the standard German-speaking salesperson), and red shading a significant difference in the opposite direction.

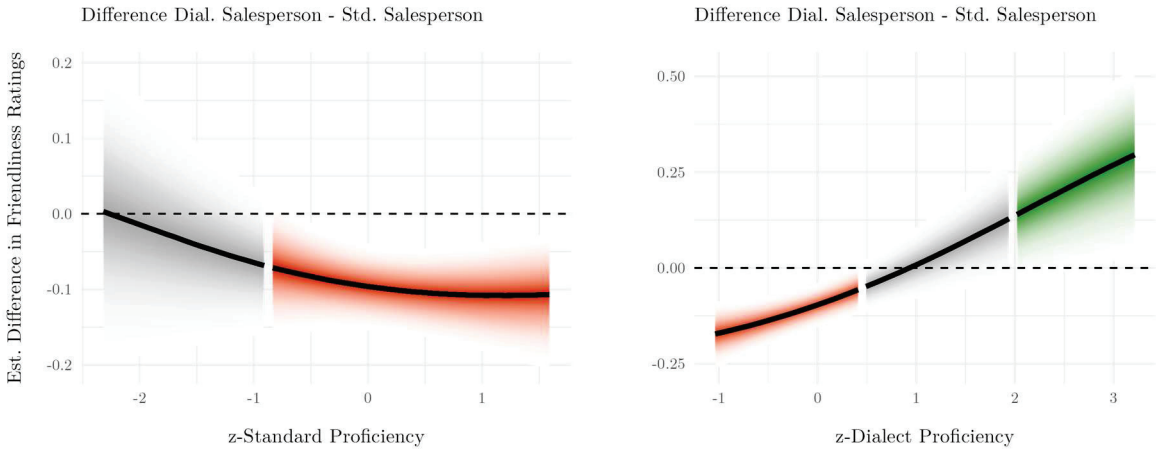

Figure 5. Difference plots visualizing the estimated differences in varietal friendliness ratings. These difference plots illustrate the estimated differences in varietal friendliness ratings between the dialect-speaking salesperson and standard German-speaking salesperson (y-axis, positive values indicate that the dialect-speaking salesperson was rated higher in terms of friendliness) as a function of standard German and dialect proficiency (x-axis). Red and green shading indicates that the 95% HDI of the estimated difference does not include zero (i.e., the difference in the compared evaluative judgements is statistically significant), and grey shading indicates no significant difference. Darker shading in the respective color indicates more probable values.

With respect to the friendliness ratings, Figure 5 illustrates that L2 speakers with higher dialect proficiency (that is, approximately 2 SDs above the mean, translating to a self-reported dialect score of 54/100) rate the dialect-speaking salesperson higher. Conversely, individuals with average and below-average dialect proficiency rate the standard German-speaking salesperson higher in terms of friendliness. What is more, individuals across nearly all standard German proficiency levels seem to attribute the standard German-speaking salesperson higher friendliness ratings.

Figure 6 illustrates that individuals with average and above-average standard German proficiency (i.e., above approximately 60/100) and also average and below-average

dialect proficiency (i.e., below approximately 24/100) rate the standard German-speaking doctor as more intelligent.

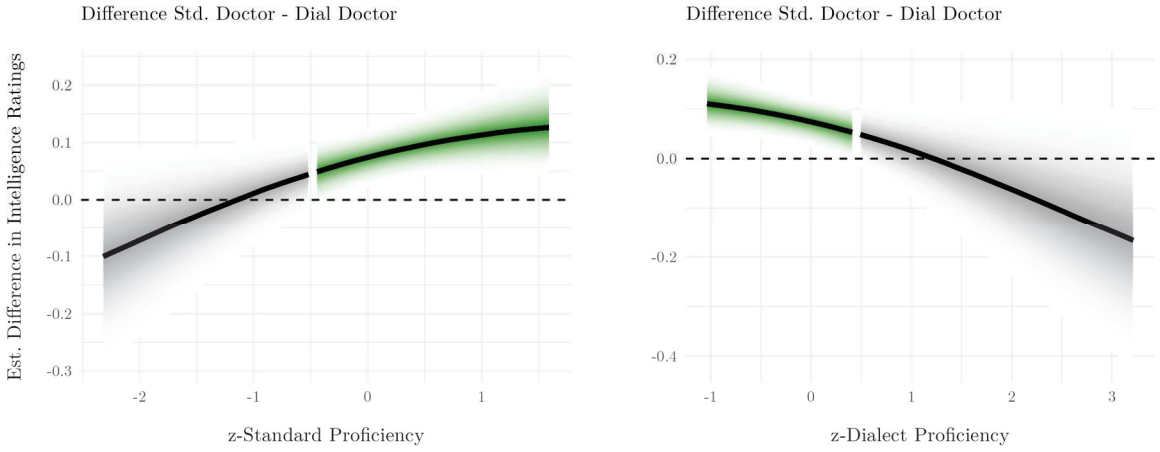

Figure 6. Difference plots visualizing the estimated differences in varietal intelligence ratings. These difference plots illustrate the estimated differences in varietal intelligence ratings between the standard German-speaking doctor and dialect-speaking doctor (y-axis, positive values indicate that the standard German-speaking doctor was rated higher in terms of intelligence) as a function of standard German and dialect proficiency (x-axis). Green shading indicates that the 95% HDI of the estimated difference does not include zero (i.e., the difference in the compared evaluative judgements is statistically significant), and grey shading indicates no significant difference. Darker shading in the respective color indicates more probable values.

5. Discussion

The overarching goal of the present study was to provide a snapshot analysis of the extent to which individuals with L2 German living in the Bavarian-speaking parts of Austria acquire attitudinal patterns suggestive of 'functional prestige' of standard German and dialect varieties (i.e., more positive attitudes towards the dialect variety in terms of friendliness in solidarity-stressing settings and more positive attitudes towards the standard German variety in terms of intelligence in status-stressing contexts) and whether self-reported varietal proficiency predicts the acquisition of attitudinal behavior consistent with the concept of functional prestige. On the whole, our results support previous findings by Kaiser et al. (2019) indicating that L2 speakers attribute more critical evaluations to the dialect as compared to the standard German variety, notably both in terms of friendliness and intelligence judgements. Additionally, the findings support Kaiser et al.'s (2019, p. 359, our translation) hypothesis that L2 speakers "sometimes evince independent socio-indexical interpretations that also differ from L1 speakers." Specifically, Bayesian modeling and hypothesis testing facilitated compelling evidence against the assumption that L2 speakers replicate indexical interpretations of variation represented by target-language speakers in the Austro-Bavarian setting (see, e.g., Bellamy, 2012; Kaiser et al., 2019; Soukup, 2009), although there is a certain multidimensionality at play here.

As we see it, the fact that participants at the group level attribute the standard German-speaking salesperson higher friendliness judgements as opposed to the dialect-speaking salesperson may be a manifestation of 'transformation under transfer', that is, "the reallocation of the relative importance of variable input constraints in the output variation" (Meyerhoff & Schleef, 2012, p. 405). In other words, constraints typical of the target-language community and suggestive of functional prestige as concerns the subjective indexical element of *solidarity* were reversed at the inter-individual level. Arguably, this reallocation of constraints may also be a consequence of the increased perceptual difficulty of Austro-Bavarian dialect varieties. The analysis bringing varietal proficiency into the

picture consolidates this interpretation, revealing that only participants with low dialect proficiency (and with standard German proficiency of varying levels) rated the standard German-speaking salesperson higher in terms of friendliness. Conversely, L2 speakers with higher dialect proficiency do not seem to evince the same transformation under transfer patterns as those with low dialect proficiency, likely because the confounding nature regarding the perceptual difficulty of Austro-Bavarian dialect varieties disappears or is at least mitigated.

On the other side of the coin, the L2 speakers in this sample indeed displayed seemingly potential indicators of functional prestige of the standard German variety on the indexical domain of status, that is, higher evaluations of standard varieties when intelligence and education are in the contextual foreground, by judging the standard German-speaking doctor as more intelligent than the dialect-speaking one. That said, we are hesitant to interpret these findings as evidence of partial acquisition of attitudinal behavior reflective of functional prestige. This is because the standard German variety was, at least as the group-level tendencies indicated, judged higher cross-contextually and on both the indexical domain of status and solidarity. L2 speakers' preference for the standard language variety appears to be a comparatively robust finding, both in perception and production data. For instance, Ender et al. (2017) identified that adolescent L2 speakers in Austria provide overall more favorable judgements of standard-language speakers, and Wirtz et al. (2024) highlighted that adult L2 speakers of German produce primarily standard language variants. In light of this, what we are observing is likely not some form of limited acquisition of attitudes confluent with the notion of functional prestige, bounded to the standard German variety and indexical dimension of status, but rather a reflection of how increased perceptual difficulty of Austro-Bavarian dialect varieties for L2 speakers of German influences their respective evaluative judgement patterns, as also noted above.

The findings from the analysis of individual differences in varietal proficiency further consolidate this interpretation. Here, we found no significant differences between the intelligence judgements of the standard German- and dialect-speaking doctor for individuals with (above-)average dialect proficiency. Rather than acquiring only select facets of attitudinal behavior reflective of functional prestige, then, it would seem that as the perceived perceptual difficulty of the Austro-Bavarian dialect decreases (as a result of increased dialect proficiency), so too does the preference for standard German over the dialect. This finding highlights the critical link between language attitudes and linguistic practice. Specifically, is has been asserted that the degree of correlation between linguistic behavior and variant or variety preference is not a mere question of frequency or intensity of exposure but rather a matter of "whether or not native speaker conventions align with learners' own social identities and orientations to language learning" (van Compernolle & Williams, 2012, p. 246). In other words, L2 speakers' use of (in-)formal variants is closely intertwined with their personal relationship with prescriptive versus informal (or innovative) forms, with their willingness or refusal to align to the respective target-language speaker conventions, and, more generally, with their ultimate goals in SLA (see also, e.g., Ender, 2017; Ender et al., 2023; Kinginger, 2008; Regan, 2013, 2022; Wirtz et al., 2024).

To summarize the findings regarding the two research questions, that is, (a) whether individuals with L2 German in Austria acquire attitudinal patterns suggestive of functional prestige in the same way as L1/expert speakers of German in Austria and (b) whether the acquisition of evaluative judgements reflective of functional prestige is conditioned by variation in varietal proficiency, the short answer to both questions is no. At the inter-individual level, participants rate the standard German variety more positively overall. Granted, this effect becomes more nuanced when considering individual differences in varietal proficiency, such that individuals with above-average dialect proficiency seem to rate

dialect varieties more positively in general, a finding that is confluent with Ender (2020). That said, higher dialect proficiency does not seem to be associated with L2 speakers' acquisition of attitudinal patterns suggestive of functional prestige. This is because, while individuals highly proficient in the dialect variety rated the dialect-speaking salesperson higher in terms of friendliness, they did not rate the standard German-speaking doctor higher with respect to intelligence: in fact, L2 speakers with high dialect proficiency even tended to rate the dialect-speaking doctor higher, although the difference was not statistically significant. In other words, the L2 acquisition of the socio-situational constraints on variation that would give rise to evaluative judgement patterns consistent with functional prestige is not given at the group level and also does not seem to be predicted by individual differences in varietal proficiency.

Content-wise, the current study is, in part, also an answer to Wirtz' (in press) call to investigate a larger, more heterogeneous sample of L2 learners of German in terms of their evaluative judgements (see also Long, 2022) and also Kaiser et al.'s (2019) request to increase the sample size of L2 speakers considered so as to more wholly capture the attitudinal tendencies of L2 speaker populations in the Austrian setting. We suggested earlier that the results in Wirtz (in press), who found in his sample of 40 speakers of L2 German with L1 English that participants indeed demonstrated attitudinal behavior consistent with that of target-language speakers, may be a result of sociolinguistic transfer, given that English-speaking sociodialectal landscapes often house similar indexical interpretations of standard and nonstandard varieties/variants in terms of solidarity and status as in the Austro-Bavarian setting. The findings at hand allude to evidence that, indeed, Wirtz (in press) was likely capturing mechanisms of sociolinguistic transfer from L1 English, which would explain the discrepancies between his participant pool and the one at hand. In this spirit, his sample was subject to a different 'starting point' in terms of evaluative judgements than are speakers of L2 German with other L1s and, thus, different social categorizations of variation in their respective L1 speech communities. Given the heterogeneity of L1s in the present sample, however, an L1-specific analysis of potential sociolinguistic transfer effects was not possible but presents an interesting and worthwhile avenue for future research (see also Ender, 2021). A similar argument can be made above and beyond the scope of differences in the L1. Specifically, while the analyses did not differentiate between culture, ideologies, personal experience with language variation, etc., future research should strive to more concretely operationalize sample diversity among L2 speakers.

6. Conclusions and Future Directions

The Austro-Bavarian landscape is characterized not only by sociolinguistic variants but also entire sociolinguistically functional varieties/codes, for example, standard German and Bavarian dialect varieties. Along these lines, German is regarded as a language with a particularly extravagant range of variation (Barbour & Stevenson, 1998). In the context of additional language learning, this breadth of sociolinguistic variation does not come without challenges (Ender, 2022; Wirtz, in press). In order to successfully participate in social, commercial, and academic interactions, L2 speakers must learn to understand, interpret, and decode subtle indicators of social and socio-contextual information communicated via sociolinguistic variation (Ender et al., 2017; Ender, 2020; Kaiser et al., 2019; Chappell & Kanwit, 2022). The present study explicitly explored whether speakers of L2 German living in Austria acquire attitudinal patterns suggestive of functional prestige, that is, whether they (a) judge the dialect higher in terms of friendliness in a solidarity-stressing situation and (b) attribute the standard variety a higher indexical value in terms of intelligence in a status-stressing setting. We also addressed the issue as to whether the

acquisition of attitudes reflective of functional prestige may be conditioned by individual differences in varietal proficiency (i.e., proficiency in standard German and the Austro-Bavarian dialect), especially seeing as variation in dialect proficiency has been found to be a strong predictor of variation in evaluative judgements (e.g., Ender, 2020; Chappell & Kanwit, 2022).

Our findings provide initial evidence that speakers of L2 German in Austria do not seem to acquire the socio-situational constraints on variation that would give rise to evaluative judgement patterns consistent with functional prestige. At the group level, Bayesian multilevel modeling indicated that L2 speakers tend to rate standard German varieties more positively, both in terms of intelligence and friendliness. Individual differences in varietal proficiency do, however, seem to impact variation in L2 speakers' evaluative judgements. For example, whereas the group-level analysis illustrated that the standard German-speaking salesperson was rated higher in terms of friendliness, the model integrating varietal proficiency indicated that individuals with above-average dialect proficiency judged the dialect-speaking salesperson as more friendly. That said, while varietal proficiency seems to be related to apparent *preferences* for a variety (e.g., individuals with high dialect proficiency appear to prefer dialect varieties, regardless of the indexical domain, and vice versa), it did not predict the acquisition of attitudinal patterns suggestive of functional prestige more generally.

As with any cross-sectional study, this snapshot portrait of inter-individual tendencies is to be taken with a grain of salt. As Lowie and Verspoor (2019, p. 203) maintain, group studies such as this can "give us valuable information about the relative weight of individual factors that may play a role in L2 development," but are not necessarily "representative for a longer period of time and cannot predict much about any individual's behavior at any point in time." So, while the Bayesian multilevel modeling approach used here can neutralize individual variation within the group and, thus, "allow for adequate generalizations in the frequency domain, such generalizations are not warranted in the time domain" (Pfenninger, 2021, p. 12; see also Lowie & Verspoor, 2015). Along these lines, Wirtz and Pfenninger (2024) and Ender et al. (2023) underscore the dynamic nature and the influence of individual beliefs on attitudinal development and the range of contextual and socio-affective factors that play a role in the development of sociolinguistic evaluative judgements. While our results in the present study indeed suggest that L2 speakers do not adopt target-like attitudinal patterns, it is yet comparatively understudied how attitudinal preferences develop at the individual level over time and which factors may contribute to these changes. In light of this, we require more studies exploring the intra-individual variability (i.e., change over time) of evaluative judgements (see also Geeslin & Schmidt, 2018) in the Austro-Bavarian context and beyond.

Finally, it was notable that neither age of onset of acquisition nor length of residence in the target-language community were significant predictors of differences in learners' evaluative judgements, a finding which indeed runs counter to previous conclusions about learners' sociolinguistic perception drawn on the basis of L2 learners of Spanish (e.g., Chappell & Kanwit, 2022) and English (e.g., Davydova et al., 2017). While it is acknowledged that L2 learners only very rarely achieve L1-like patterns of sociolinguistic variation, even with substantial exposure to the target-language community (e.g., Howard et al., 2013), widening the range of individual differences may represent a useful step forward in variationist SLA to more clearly ascertain potential rationales for convergence to or divergence from target-like patterns of variation. For example, this study considered a diverse sample of participants in terms of L1s and socioeconomic backgrounds, all of whom had migrated to the Austro-Bavarian context, although likely for different reasons. As previous SLA research has shown, differences in migratory experience may

help in explaining language acquisitional outcomes (e.g., Forsberg Lundell & Bartning, 2015), and Diskin and Regan (2015) have demonstrated that differences in learners' rationales for migrating to a certain host community may affect their acquisition of variable structures (e.g., discourse–pragmatic features). In addition to developing methods to tease apart the effects of differences in migratory experience on SLA, future research may consider accounting for individual differences in psycho-social variables as well, for example, personality traits, as these have repeatedly been found to correlate with L2 skills (e.g., Forsberg Lundell & Sandgren, 2013; Forsberg Lundell et al., 2018, 2023a, 2023b) and may, thus, feasibly correlate with learners' differential ability to adopt and/or to attribute target-like indexical value to variable features of the target language.

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Notes

1 Note that in German-speaking sociolinguistics, the term 'dialect' is used in the spirit of 'local base dialect' or 'local vernacular' and is not synonymous to 'any language variety'. Additionally, we employ the term 'Bavarian' in its dialectological sense. It refers to eastern varieties of Upper German, which are spoken in most parts of Austria.

2 For more detailed information about the strengths of Bayesian data analysis over Frequentist methods, the interested reader is referred to McElreath (2015) as well as to Vasishth et al. (2018), Franke and Roettger (2019), and Garcia (2021) for tutorials on Bayesian inferential statistics geared towards the language sciences. For conceptual advantages of Bayesian analysis in sociolinguistics and SLA, we refer readers to Gudmestad et al. (2013) and Wirtz and Pfenninger (2023).

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Article

Acquisition of Variation in the Use of *alors*, *donc*, *fait que* by Advanced French-as-a-Second-Language Learners in Ontario, Canada

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Abstract: This study examines the acquisition of sociolinguistic variation in the use of French connectors *alors/donc/fait que* 'so' by two groups of advanced French-as-a-second language (FL2) learners in Ontario: (i) high school French Immersion (FI) students and (ii) university students. It considers two types of functions fulfilled by these connectors: (i) the grammatical function of expressing consequence between two clauses and (ii) a range of discursive functions, a dual focus not present in previous research, which considered only one or the other of these two types of functions. Our study shows that: (i) although these two FL2 groups' use of the connectors is distant from the norms of FL1 speech, the university students achieve a more advanced level of acquisition of this case of variation than do the FI students, reflecting the positive effect of continued learning of French at the postsecondary level; (ii) 'level of opportunities to interact in French with native speakers' has a greater positive impact on the acquisition of *alors/donc/fait que* than 'time spent learning French'; and (iii) both groups of students evidence incomplete acquisition of the linguistic constraints of connector choice.

Keywords: acquisition of sociolinguistic variation; connectors; discourse markers; FSL learners; time spent learning French; contacts with native speakers

1. Introduction

The Government of Canada's (2018) Action Plan for Official Languages as a way to identifies promoting a bilingual Canada as a way to build bridges between speakers of English/other languages and Francophones. In Ontario (Canada's most populous Anglophone province), an essential aspect of advanced bilingualism is the development of French-as-a-second language (FL2) learners' sociolinguistic competence. In line with this, in its high school FL2 curriculum, the Ontario Ministry of Education identifies sociolinguistic variation as an important aspect of advanced FL2 competence. In this respect, the FL2 curriculum states that students will be able to "identify sociolinguistic conventions associated with a variety of social situations in diverse French-speaking communities and use them appropriately in spoken interactions" (Ontario Ministry of Education, 2014, p. 65).

Such considerations are at the heart of a strand of research examining the acquisition of sociolinguistic variation by advanced second-language (L2) learners. This research views successful acquisition of variation as learners' knowledge of the full repertoire of native variants, their use of variants at nativelike frequencies, and their observance of the (extra-)linguistic constraints on variation adhered to by native speakers. Early studies

focused on sociolinguistic variation in English by L2 learners, such as Ellis's (1987) study of variable past tense use in narrative discourse and Adamson and Regan's (1991) investigation of the variable realization of –ing. In the following decades, this strand of L2 acquisition research has expanded considerably in terms of the range of languages and sociolinguistic variables investigated.

As part of this strand of research, the present study examines the acquisition of sociolinguistic variation in the use of French connectors *alors/donc/fait que* by two groups of advanced FL2 learners in Ontario: (i) high school French Immersion (FI) students and (ii) university students. In analyzing the speech of these students, it considers two types of functions fulfilled by *alors/donc/fait que*. Along with other researchers (e.g., Dessureault-Dober, 1974; Blondeau et al., 2022; Bigot & Papen, 2021), we distinguish: (i) the grammatical function of expressing consequence between two clauses (see examples 1–4 in Section 3.2) and (ii) a range of discursive functions (e.g., turn taking, pause filling, topic introduction—see examples 5–10 in Section 3.2), a dual focus not considered in previous research, which considered either the grammatical function (e.g., Rehner et al., 2003) or the discursive ones (Lemée, 2025; G. Sankoff et al., 1997).

The present study contributes to current understandings in three main ways. The first is by showing that continued learning of French at the postsecondary level leads to a more advanced level of acquisition of this case of variation in that the university students display more nativelike frequencies of use of *alors/donc/fait que* than do the FI students. In the second contribution we compare for both groups of FL2 students the relative impact on the acquisition of *alors/donc/fait que* of 'time spent learning French' versus 'level of opportunities to interact in French with French-as-a-first-language (FL1) speakers'. Our study shows for the FI students that time spent learning French is more influential than opportunities to interact with FL1 speakers but for the university students that level of opportunities is the better predictor of acquisition. The third contribution is to show that the advantage afforded by postsecondary learning of French does not extend to the acquisition of nativelike linguistic constraints on connector choice. In arriving at these findings, we use spoken Montreal FL1 French as an acquisition benchmark.

2. Previous Research

2.1. Sociolinguistic Competence of FL2 Learners

In reviewing past research on FL2 sociolinguistic competence, we focus on studies of advanced FL2 learners in Canada, the bulk of which has examined two groups: (i) Ontario high school FI and university FL2 students and (ii) young adult FL2 learners residing in Montreal, Quebec. This focus reflects the direct relevance of such research to the present study and the fact that the results of the Canadian research are in line with those of studies of FL2 learners in other countries (e.g., Dewaele, 2007; Howard, 2006; Howard et al., 2006; Regan, 2022a, 2022b; Regan et al., 2009; Sax, 2003; Kennedy Terry, 2022). Further, the focus on Canadian FL2 learners provides a principled means to narrow down the vast body of FL2 sociolinguistic studies, since as Howard et al. (2013) and Long (2022) point out, French is among the most-studied languages by L2 variationist researchers. Our review considers the FL2 students' repertoire of sociolinguistic variants, the frequency with which they use them in comparison with FL1 speakers, and the impact of (extra-)linguistic factors on such frequency.

Previous research on the acquisition of sociolinguistic variation by the Canadian FL2 learners mentioned above has examined cases of morphosyntactic, lexical, and phonological variation, as well as the use of discourse markers. It has found that even though these learners have acquired many of the variants used by FL1 speakers, there are some gaps in their repertoire of variants, notably an absence of several hyper-formal and socially marked

vernacular variants in the speech of FI and FL2 university students in Toronto, Ontario (R. Mougeon et al., 2010; F. Mougeon & Rehner, 2015) and of several discourse markers in the speech of university FL2 students in Thunder Bay, Ontario (Lemée, 2025). Lastly, these same authors have found that some of the lesser advanced learners make occasional use of non-native forms instead of the expected FL1 variants (e.g., use of the infinitive instead of the future tense).

In relation to variant frequency, previous research has found that compared to FL1 speakers, Canadian FL2 learners tend to overuse formal variants and underuse informal ones and that the extent of such overuse/underuse is conditioned by learners' level of opportunities to interact with FL1 speakers. For instance, use of formal subject pronoun *nous* 'we' (compared to its informal counterpart *on*) is 45% for Ontario FI students (Rehner et al., 2003), sits at 25% for Ontario FL2 university students (F. Mougeon & Rehner, 2015), and is at a low of only 3% for Montreal FL2 learners (Blondeau et al., 2002), almost matching the frequency documented in FL1 speech.

Previous research has also found that the magnitude of the differences between FL2 learners and FL1 speakers in frequency of variant use is conditioned by the socio-stylistic salience of the variants. For instance, Blondeau et al. (2002) found that FL2 Montreal learners use complex non-clitic plural pronouns (socially-marked vernacular variants) significantly less often than do FL1 speakers but delete negative particle *ne* 'not' (a near categorical feature of ordinary FL1 speech) at a level of frequency close to that of FL1 speakers. Lastly, previous research has found that the systemic properties of sociolinguistic variants may have either a negative or positive impact on their acquisition by FL2 learners. For instance, in research on the acquisition of variable schwa deletion and/l/deletion in subject pronouns *il/ils* 'he-it/they', R. Mougeon et al. (2010) found that FI students almost never delete/l/but delete schwa some of the time. According to the authors, this difference reflects that in English it is possible to delete schwa in some contexts, while/l/is undeletable in final position.

With respect to the acquisition of linguistic constraints on variant choice, previous research has found that FL2 speakers do not uniformly adhere to FL1 linguistic constraints. Uritescu et al. (2004) and Thomas (2002) found, respectively, that FI students and Ontario FL2 university students have acquired the hierarchy of FL1 phonetic constraints on schwa deletion, and Blondeau et al. (2002) found that anglophone FL2 speakers in Montreal have acquired FL1 morphosyntactic constraints on subject doubling. However, Rehner and Mougeon (1999) and Thomas (2002) found respectively that FI students and Ontario FL2 university students have not learned the FL1 constraint on *ne* deletion associated with the type of postverbal negator. Lastly, R. Mougeon et al. (2010) found that FI students sometimes demonstrate their own linguistic constraints. For example in relation to variable use of restrictive adverbs *juste/seulement/rien que* 'only', R. Mougeon and Rehner (2001) found that FI students sometimes use *juste* left of the verb, a context where FL1 speakers never use it.

Finally, R. Mougeon et al. (2010) in their investigation of FI students' acquisition of variants expressing futurity (periphrastic vs. inflected future tenses) and those expressing restriction (adverbs *juste*, *seulement*, etc. 'only') found that level of extra-curricular exposure to FL1 speech had a greater positive impact than time spent learning French. F. Mougeon and Rehner (2009), for their part, found that time spent learning French had no significant impact on FL2 university students' acquisition of informal pronoun *on* in contrast with the strong effect of time spent in a Francophone environment. These results are generally in line with those of previous studies on the acquisition of sociolinguistic variants by non-Canadian FL2 learners (see Dewaele & Regan, 2002; Dewaele, 2004 for a review of these studies).

2.2. Use of alors, donc, and fait que by Canadian FL1 Speakers

As will become clear in the methodology section, Quebec French is the variety of Canadian French to which most of the FL2 speakers in our study have been exposed. Therefore, we limit our review of studies on variable use of *alors/donc/fait que* by FL1 speakers to those based on Quebec French corpora.

The first such study is by Dessureault-Dober (1974) and is based on a sample of 25 speakers from the 1971 Sankoff and Cedergren corpus of Montreal French. It found that these speakers used *fait que*—a form that occurs in Quebec French and in other varieties of Canadian French— and *alors*—a feature of standard French—at roughly comparable levels of frequency but used *donc*—another standard variant—only marginally. Beyond these general frequencies, Dessureault-Dober found that: (i) *alors* was used primarily by older high-socio-economic (SES) speakers, (ii) the younger high-SES speakers were evidencing a shift toward *fait que*—the vernacular variant which was solidly entrenched in the low-SES speakers' speech, and (iii) topic (in)formality influenced variant choice—formal topics being associated with more frequent use of *alors* and informal topics with greater use of *fait que.*

A second study, by Blondeau et al. (2022), draws on the full 120 speakers in the 1971 Sankoff and Cedergren Montreal corpus and on a corpus collected in Montreal 40 years later (50 speakers). The authors found that over 40 years: (i) the frequency of *alors* decreased sharply at the expense of *donc* and (ii) the frequency of *fait que* rose markedly. They also confirmed Dessureault-Dober's finding of *alors'* association with high-SES speech and revealed that *donc* was also associated with high-SES speakers and that the steady rise of *fait que* was led by lower-SES women. Lastly the authors examined the impact of the linguistic functions of the connectors on speaker choice. They distinguished two types of functions: (i) the grammatical function of expressing a consequence between two clauses and (ii) discursive functions such as 'turn yielding' or 'pause filling'. They found that discursive functions favor the use of *fait que* and the grammatical function favors the use of *alors* and *donc*.

A third study, by Beaulieu et al. (2019), examined the use of *alors/donc/fait que* by high-SES speakers interviewed on the French-Canadian Broadcasting Corporation network during a news series aired from 2008 to 2013. The results showed an overall frequency of 57% for *donc*, 43% for *alors*, and no use of *fait que*, suggesting that standard *alors* and *donc* are deemed as more appropriate than *fait que* in formal communication situations, echoing Dessureault-Dober's (1974) finding of the impact of topic (in)formality on the use of *alors/donc* vs. *fait que.*

2.3. Grammatical Use of alors, donc, fait que, and so by Canadian FL2 Speakers

Two studies examined the acquisition of *alors/donc/fait que* by Canadian FL2 speakers. Rehner and Mougeon (2003) focused on the FI corpus used for the present paper, and Rehner and Beaulieu (2008) focused on a subsample of the FL2 university corpus considered in the present paper. Both studies considered the grammatical use of these connectors. Table 1 presents the results of these studies and includes data on the grammatical use of the connectors by FL1 speakers, taken from Blondeau et al.'s (2022) analysis of the second Montreal spoken French corpus (see Section 3.1.3 for a description of the FL1 corpora). As can be seen, in sharp contrast to the Montreal FL1 speakers, both FL2 groups strongly favor standard *alors* and make no use of vernacular *fait que*. With respect to *donc*, the FI students use it less frequently than the FL1 speakers, but the difference is only relative, and the FL2 university students use it somewhat more often than the FL1 speakers. Lastly, as Table 1 shows, these two studies found that the FL2 groups make some use of English connector *so*, a form that is absent in the 2012 Montreal corpus.

Table 1. Grammatical use of *alors*, *donc*, *fait que* and *so* in FL1 and FL2 speech.

Speakers	*Alors*	*Donc*	*Fait que*	*So*	Total
FL1 Montreal (2012)	(68) 4%	(388) 22%	(1323) 74%	0	1779
FL2 Immersion	(484) 78%	(96) 15%	0	(44) 7%	624
FL2 University	(578) 73%	(195) 25%	0	(14) 2%	787

According to Rehner and Mougeon (2003), their findings reflect that the FI students have had limited or no opportunities to hear French outside the immersion classroom, a setting in which teachers use *alors* and *donc* almost exclusively. As for Rehner and Beaulieu (2008), they found that those university students with some exposure to FL1 French via short stays in a Francophone environment had a higher rate of *donc* and a lower use of *so* than the remaining students.

2.4. Use of Discourse Markers by Canadian FL2 Speakers

Three studies have investigated the acquisition of French discourse markers by Canadian FL2 speakers. G. Sankoff et al. (1997) examined a corpus of 17 young adult Anglophone FL2 speakers residing in Montreal; Lemée (2025) used a corpus of 15 FL2 university students collected in Thunder Bay, Ontario; and Rehner (2004) used the corpus of 41 FI students examined in the present study. In contrast with the FI students, the Montreal FL2 speakers have had significantly higher levels of exposure to FL1 French via extra-curricular or community activities, or in their neighborhood and, for some of them, on their jobs. While Lemée does not provide information on the FL2 university students' extra-curricular exposure to French, she considers them as advanced learners of French since they have continued to learn French beyond high school, and they all intend to teach French as a second language.

These three studies arrived at the following general findings. The range of discourse markers used by the FL2 speakers is narrower than that found in FL1 speech. Thus, several of the markers documented in FL1 speech are either absent or used by only a limited number of the FL2 speakers. For instance, Lemée found that *t'sais* 'you know', *pis*, 'and/then', and *ben* 'well' are not used by the Thunder Bay FL2 university students. Sankoff et al. found that discourse marker *bon* 'well/good' is used by only four of the 17 Montreal FL2 speakers and that pause filler *là* (a ubiquitous feature of FL1 Quebec French) is used to a non-negligible extent by only five of the 17 FL2 speakers. In Rehner's study, *là* is almost completely absent in the speech of the 41 FI students (FL2 speakers who have had limited opportunities to interact with FL1 speakers). As noted by Sankoff et al. and Rehner, the marked under-use of *là* and *bon* reflects in part that both markers lack an English discursive counterpart. Conversely, discourse markers with an English discursive equivalent (e.g., *comme* 'like') are used by the great majority of the FL2 speakers in their studies. Thus, for some of the discourse markers examined by these authors, inter-systemic factors can either hinder or facilitate acquisition.

Another illustration of the impact of inter-systemic transfer shown by all three studies is the occasional use of English discourse markers during French interviews. These include 'you know', 'like', and 'well'. As noted by Lemée, such cases of direct transfer from English are mostly in the speech of the least advanced FL2 leaners.

Discursive *alors/donc/fait que* are among the discourse markers included in the G. Sankoff et al. (1997) and Lemée (2025) studies. In Table 2, we provide the frequencies reported by these authors for *alors/donc/fait que* and for the conjunction *so* (for the Thunder Bay corpus). To lend perspective, we have included the frequencies documented by Blondeau et al. (2022) for discursive *alors/donc/fait que* in their analysis of the 1971 and 2012 FL1 Montreal corpora[1]. Table 2 also includes the frequencies found for *alors/donc/fait*

que and *so* reported by Lemée in her analysis of a small corpus of FL1 speech collected in Thunder Bay.

Table 2. Discursive use of *alors*, *donc*, *fait que* and *so* in FL1 and FL2 speech in Thunder Bay and Montreal.

Speakers	*Alors*	*Donc*	*Fait que*	*So*	Total
FL1 Montreal (1971)	(1000) 48%	(22) 1%	(1078) 51%	0	2100
FL1 Montreal (2012)	(41) 2%	(372) 16%	(1928) 82%	0	2341
FL1 Thunder Bay	(134) 26%	(184) 36%	(134) 26%	(64) 12%	516
FL2 Montreal	(55) 83%	0	(6) 9%	(5) 8%	66
FL2 Thunder Bay	(130) 78%	(23) 14%	0	(11) 7%	164

As Table 2 shows, both FL2 groups overuse discursive *alors* compared to their respective FL1 benchmark norms. Both FL2 groups also make some use of discursive *so*, a form that like grammatical *so* is absent in Montreal FL1 French (see Section 3.2 for examples of grammatical and discursive uses of this connector). Thus, the occasional use of this form by the FL2 speakers is likely yet another case of transfer of a discourse marker from English. However, in the case of the Thunder Bay FL2 students, it may also in part result from exposure to the local variety of French, since, as is shown by Table 2, the Thunder Bay FL1 corpus does include this form[2]. Where the two groups of FL2 speakers differ is in their patterns related to *donc* and *fait que*. The FL2 speakers in Montreal do not use *donc* at all, in keeping with its virtual absence in the 1971 FL1 benchmark corpus. In contrast, the FL2 students in Thunder Bay use this variant, in line with its non-negligible frequency in contemporary varieties of Canadian French, indicated by its presence in the FL1 Thunder Bay and 2012 FL1 Montreal corpora. As for *fait que*, the table shows that the Montreal FL2 speakers make some use of it, while the FL2 students in Thunder Bay do not. Further, the few FL2 Montreal speakers who had learned the discursive use of *fait que* were those whose social networks brought them into close contact with FL1 speakers who made regular use of the vernacular (see G. Sankoff et al., 1997). Lastly, the overall limited to non-use of *fait que* across the FL2 corpora contrasts sharply with the frequencies documented in the FL1 benchmark corpora (an issue we address in the Section 5).

3. Methods

3.1. Corpora

The present study draws on two spoken French corpora collected in Ontario among FL2 learners, one from FI high school students and the other from university students. To measure the learners' progress towards nativelike use of the connectors, we use as comparative benchmarks the findings of studies using three corpora of FL1 speech, namely Sankoff and Cedergren's corpus of FL1 Montreal (1971) spoken French; Blondeau, Frenette, Martineau, and Tremblay's corpus of FL1 Montreal (2012) spoken French; and Lemée's corpus of spoken French collected in Thunder Bay, Ontario from 2013 to 2020.

3.1.1. FI High School Student Corpus

The FL2 Immersion high school student corpus was collected by R. Mougeon and Nadasdi in 1996 via semi-directed one-on-one interviews with 21 Grade 9 students (age 14–15) and 20 Grade 12 students (age 17–18) that focused on a variety of topics encouraging the students to speak about issues of interest to them. The students also filled out a questionnaire gathering information on the frequency with which they used French and other languages in and out of the FI classroom. The FI program in which the students were enrolled is housed in English-medium schools located in the greater Toronto area and is characterized by 50% French-medium instruction in Grades 5 to 8, followed by 20% from

Grades 9 to 12. Further, in the schools where the program is located, the great majority of the administrative, teaching, and maintenance staff and students are not French speakers. In other words, the classrooms where these students took their courses in French and the resource rooms attached to the FI program were about the only school settings in which the students had the opportunity to use and be exposed to French. Outside of the school in daily life, the students reported never or only marginally using French, reflecting the local scarcity of Francophones. However, some students reported having had opportunities to interact with FL1 speakers via stays of varying lengths in a Francophone environment, for the most part in Quebec. Sixteen students reported having stayed in a Francophone environment for less than seven days, eleven students from seven to thirteen days, and thirteen students for more than two weeks.[3] These short stays mostly took place during trips organized by the schools where students were unlikely to have had the occasion to experience intensive interactions with FL1 speakers.

3.1.2. FL2 University Student Corpus

The FL2 university student corpus was collected by F. Mougeon in 2005 and 2008 on the bilingual (French-English) campus of a university in Toronto. Data collection consisted of surveys and semi-directed one-on-one interviews conducted with 40 1st year and 40 4th year students. Both cohorts included relatively equal proportions of students from traditional FSL programs (i.e., Core French) and FI programs (1st year: Core = 21, FI = 19; 4th year: Core = 17, FI = 23). The interviews followed a similar protocol to that used with the FI high school students. All the university students were taking undergraduate FL2 courses and some were taking courses in other subjects taught through the medium of French. The students reported interacting to varying extents in French on the campus with FL1 staff, administrators, service providers, and fellow students. They also reported varying levels of commitments to using French off campus, either in Toronto (e.g., social contacts with FL1 speakers, part-time work in a local Francophone business) or outside of Toronto (e.g., trips to visit friends in Quebec). This information on the students' use of French on and off campus was used to calculate a global index of commitments to use French (F. Mougeon & Rehner, 2015). In the present study, we use these authors' categorization of the 80 students according to three levels of engagement: 29 minimally engaged, 29 moderately engaged, and 22 highly engaged.

3.1.3. FL1 Corpora

Like the corpora of FL2 speech used by the present study, all three FL1 corpora mentioned above were collected with one-on-one semi-directed interviews. The FL1 Montreal (1971) corpus includes a total of 120 speakers, and it is stratified according to speaker age, SES and gender (D. Sankoff et al., 1976). The FL1 Montreal (2012) corpus includes a total of 50 speakers, and it is also stratified according to age, SES, and gender (see Blondeau et al., 2022). As for the Thunder Bay corpus, it includes 15 speakers, mostly females and ranging in age from 17 to 78. These speakers' SES is unknown (see Lemée, 2025).

3.2. Data Analysis

As mentioned above, the present study examines the acquisition of both the grammatical and discursive uses of the connectors. This differs from previous studies that focused on one or the other of these uses. Further, our study expands the number of tokens considered in its quantitative analyses since it uses the entire data set of 80 FL2 university students instead of the subset of 61 students examined by Rehner and Beaulieu (2008).

The grammatical function examined is that of consequence between two clauses or sentences (examples 1–4). The discursive functions are primarily that of topic closure

(examples 5–8) and, secondarily, topic introduction (example 9), and pause filling (see example 10). These examples are taken from the FL2 corpora.

Grammatical Function

1. *ma soeur a eu un emploi **alors** elle ne peut pas aller* (FI)
   'my sister has a job **so** she cannot go'
2. *les examens c'est surtout sur le vocabulaire **donc** je peux apprendre les mots* (University)
   'the exams are mostly on the vocabulary **so** I can learn the words'
3. *puis quatre mois de coop **ça fait que** on finit en même temps* (University)
   'then four months in the coop program **so** we complete [the term] at the same time'
4. *nous avons le même âge **so** alors ça c'est bon* (FI)
   'we are the same age **so** so that is good'

Discursive Functions

Topic Closure

5. Student: *j'ai pas étudié le l'espagnol depuis deuxième année ou troisième année **alors*** (pause) Interviewer: *donc il faudrait reprendre (University)*
   Student: 'I stopped studying Spanish after second or third year **so** (pause)' Interviewer: 'so you should start taking it again'
6. Student: *ahm well je suis catholique **donc*** (pause) Interviewer: *oui mais tu pourrais être catholique et aller dans une école publique* (FI)
   Student: 'um well I am catholic **so** (pause)' Interviewer: 'yes but you could be catholic and go to a public school'
7. Student: *je prends les études internationales maintenant **fait que*** (pause) Interviewer: *donc nécessairement vous vous y intéressez* (University)
   Student: 'I am taking international studies **so** (pause)' Interviewer: 'so necessarily you are interested in that'
8. Student: *je suis bon dans les sciences et les mathématiques **so*** (pause) Interviewer: *d'accord donc l'année prochaine tu suis combien de cours* (FI)
   Student: 'I am good at science and math **so** (pause)' Interviewer: 'alright so next year how many courses are you taking?'

Topic Introduction

9. Student: *pourquoi je vote pour cette personne?* Interviewer: *ouais* Student: ***alors** maintenant je m'implique plus dans ça* (University)
   Student: 'why do I vote for this person? ' Interviewer: 'yeah' Student: '**so** now I am more involved in that'

Pause Filling

10. *je ne sais pas comment dire mais uhm **so** ils ont décidé de déménager* (FI)
    'I don't know how to say it but um **so** they decided to move out'

All of the tokens of the connectors that were produced by the FI and university students were extracted from the transcriptions of the recordings and were coded for a statistical analysis of their frequencies according to several factors, which allowed us to examine the research questions mentioned below. The evaluation of the statistical significance of intergroup differences in the frequency of use of *alors/donc/fait que* and *so* was assessed via GoldVarbX (Tagliamonte, 2006). GoldVarb calculates variant use frequencies as percentages and assesses the impact of (extra-)linguistic factors on such use, as indicated through factor effect values ranging from 0.01 (a highly disfavoring effect) to 0.99 (a strong favoring effect). Categorical use or non-use of a variant is indicated with the short form "k.o."(knock out) in

the GoldVarb analysis. Statistical significance rates, calculated by GoldVarb, are provided for the intergroup comparisons, with 0.05 as the significance threshold.

3.3. Research Questions

The present study expands on previous research on the acquisition of *alors/donc/fait que* by FL2 learners in several ways. First, it is the first study that compares high-school FI students with university students, with previous research having examined only one or the other of these two groups of FL2 learners. Thus, our study asks whether the FL2 university students achieve a more advanced level of acquisition of the connectors than do the FI students, suggesting a positive effect of continued learning of French at the postsecondary level. Second, this study seeks to answer the question, as in previous research on the acquisition of sociolinguistic variation by FL2 learners, does the factor of 'time spent learning French' have a greater positive impact on the acquisition of *alors/donc/fait que* than the factor 'level of opportunities to interact in French with FL1 speakers'. Lastly, the present study investigates the question of what impact the linguistic functions of the connectors (i.e., grammatical vs. discursive) have on variant choice and to what extent such impact matches that documented in FL1 speech. This question was also not investigated in previous research.

4. Results

The results are presented below in response to the research questions guiding the study.

4.1. Does Postsecondary Study Lead to a More Advanced Acquisition of the Connectors?

Tables 3 and 4 provide an overview of the intergroup frequencies of grammatical and discursive uses of *alors/donc/fait que* and *so* by the FI and FL2 university students and FL1 speakers. These intergroup frequencies were examined via GoldVarb univariate analyses. As can be seen, the university students are, by and large, more advanced than the FI students in their acquisition of the connectors, both for the grammatical and discursive functions. For *donc*, this is indicated by the higher percentages and factor effects for the FL2 university students compared to the FI students and by the (near) lack of statistical significance of the differences between the FL2 university students' use and that of the FL1 benchmarks. For *so*, the FL2 university students' more advanced acquisition is shown by their lower grammatical and discursive uses compared to the FI students, which bring them closer to the non-use by the FL1 speakers. In fact, the 18% rate of discursive *so* for the FI students makes this their second most frequent variant, indicating the importance of L1 transfer in their discursive repertoire of connectors. With respect to *fait que*, the FL2 university students' advantage is indicated by the presence (albeit marginal) of this highly frequent FL1 variant in its grammatical and discursive functions, a use that was absent in the subsample examined by Rehner and Beaulieu (2008) (see Section 2.3). This use, while marginal, contrasts with the complete absence of *fait que* in the FI students' speech. As for *alors*, the university students are once again ahead of the FI students in their grammatical use of this variant with a statistically significantly lower rate (even if it is still far from the FL1 norm). While the same lower rate is not evident for the university students' discursive use of *alors*, it must be kept in mind that the FI students' overreliance on discursive *so* is at the expense of *alors*, making it look as if they are closer to the FL1 norms.

Table 3. GoldVarb analyses of the frequencies of grammatical use of *alors*, *donc*, *fait que* and *so* by FL2 Immersion and FL2 university students and FL1 Montreal (2012) benchmark.

Groups	*Alors*		*Donc*		*Fait que*		*So*		Total (*N*)
	(N) %	Effect	(N) %	Effect	(N) %	Effect	(N) %	Effect	
FL2 Immersion	(506) 83	[.59]	(81) 13	[.37]	0	k.o.	(26) 4	[.68]	613
FL2 University	(1058) 74	[.46]	(346) 24	[.56]	(3) 0.2	--	(21) 2	[.42]	1428
Significance	*<0.001*		*<0.001*		*NA* *		*<0.001*		
FL2 Immersion	(506) 83	[.97]	(81) 13	[.39]	0	k.o.	(26) 4	--	613
FL1 Montreal (2012)	(68) 4	[.23]	(388) 22	[.54]	(1323) 74	--	0	k.o.	1779
Significance	*<0.001*		*<0.001*		*NA*		*NA*		
FL2 University	(1058) 74	[.92]	(346) 24	n.s.	(3) 0.2	[.02]	(21) 2	--	1428
FL1 Montreal (2012)	(68) 4	[.13]	(388) 22		(1323) 74	[.96]	0	k.o.	1779
Significance	*<0.001*		*0.108*		*<0.001*		*NA*		T = 3820

* NA: not applicable.

Table 4. GoldVarb analyses of the frequencies of discursive uses of *alors*, *donc*, *fait que* and *so* by FL2 Immersion and FL2 university students and FL1 Montreal (2012) benchmark.

Groups	*Alors*		*Donc*		*Fait que*		*So*		Total (*N*)
	(N) %	Effect	(N) %	Effect	(N) %	Effect	(N) %	Effect	
FL2 Immersion	(291) 72	[.45]	(43) 11	[.40]	0	k.o.	(71) 18	[.80]	405
FL2 University	(535) 78	[.53]	(131) 19	[.56]	(4) 1	--	(15) 2	[.31]	685
Significance	*0.02*		*<0.001*		*NA*		*<0.001*		
FL2 Immersion	(291) 72	[.99]	(43) 11	[.41]	0	k.o.	(71) 18	--	405
FL1 Montreal (2012)	(41) 2	[.33]	(372) 16	[.52]	(1928) 82	--	0	k.o.	2341
Significance	*<0.001*		*0.008*		*NA*		*NA*		
FL2 University	(535) 78	[.98]	(131) 19	[.54]	(4) 1	[.006]	(15) 2	--	685
FL1 Montreal (2012)	(41) 2	[.23]	(372) 16	[.48]	(1928) 82	[.82]	0	k.o.	2341
Significance	*<0.001*		*0.047*		*<0.001*		*NA*		T = 3431

4.2. Does the Level of Opportunities to Interact in French Have a Greater Positive Impact on Acquisition than Time Spent Learning French?

Tables 5 and 6 present the results of multivariate GoldVarb analyses comparing the predictive value of 'opportunities to interact in French with FL1 speakers' with 'time spent learning French' for the grammatical and discursive uses of the connectors. Data were collected and analysed from the FI and the FL2 university student corpora presented in Sections 3.1.1 and 3.1.2 above. Note that *fait que* was excluded from these analyses due to its limited use by the FL2 students. That said, it should be pointed out that three of the four students who make some grammatical and discursive use of this variant are highly-engaged university students, while only one is in Year 4. As Tables 5 and 6 show, opportunities to interact with FL1 speakers is clearly more influential than time spent learning French for the FL2 university students' grammatical and discursive uses, while the picture is less straightforward for the FI students. Beginning with the university students, for both uses there is greater spread in the percentages and effects for level of engagement indicating its greater influence compared to year of study. In fact, year of study is influential only for their grammatical and discursive use of *so*, whereas engagement is influential for their grammatical and discursive uses of *alors* and *donc* and their grammatical use of *so*. In contrast, for the FI students, both factors are influential without a clear pattern emerging. For instance, grade is more influential than time spent in a Francophone environment for their use of discursive *alors*, whereas this pattern flips for their use of grammatical *so*. Both factors appear to have a roughly equal influence on the FI students' use of grammatical and discursive *donc*.

Table 5. GoldVarb analyses of the impact of extra-linguistic factors on grammatical use of *alors*, *donc* and *so*.

Groups	Factors	*Alors*		*Donc*		*So*	
		(N) %	**Effect**	**(N) %**	**Effect**	**(N) %**	**Effect**
				FL2 Immersion			
Francophone Environment	<7 days	(184) 92	.67	0	k.o.	(17) 9	.80
	7–13 days	(119) 72	.34	(38) 23	n.s. **	(8) 5	.69
	2 weeks +	(199) 82	.47	(43) 18		(1) 0.4	.15
Grade	9	(222) 88	.59	(14) 6	.32	(16) 6	n.s.
	12	(284) 78	.44	(67) 19	.61	(10) 3	
Significance		*0.009*		*<0.001*		*<0.001*	
				FL2 University			
Engagement	Low	(280) 88	.64	(27) 8	.30	(13) 4	.74
	Mid	(493) 92	.76	(36) 7	.25	(8) 0.7	.43 *
	High	(285) 50	.20	(283) 49	.82		
Year of Study	1st	(388) 83		(61) 13	n.s.	(16) 3	.74
	4th	(670) 70		(285) 30		(5) 0.5	.38
Significance		*<0.001*		*<0.001*		*0.007*	

* Due to the low number of tokens of *so*, there was an interaction for engagement. Therefore, we have regrouped the mid and high categories. ** n.s.: (not significant) no significant factor effect has been found.

Table 6. GoldVarb analyses of impact of extra-linguistic factors on discursive uses of *alors*, *donc*, and *so*.

Groups	Factors	*Alors*		*Donc*		*So*	
		(N) %	Effect	(N) %	Effect	(N) %	Effect
FL2 Immersion							
Francophone	<7 days	(106) 66		(6) 4	.33	(48) 30	.79
Environment	7–13 days	(71) 72		(11) 11	.56	(17) 17	.69
	2 weeks +	(106) 80		(26) 20	.66	(1) 1	.10
Grade	9	(91) 63	.40	(4) 3	.29	(49) 34	.68
	12	(200) 77	.56	(39) 15	.62	(22) 8	.40
Significance		*0.007*		*0.009*		*<0.001*	
FL2 University							
Engagement	Low	(184) 91	.67	(11) 5	.27	(8) 4	n.s.
	Mid	(241) 90	.66	(21) 8	.35	(4) 2	
	High	(110) 51	.18	(99) 46	.85	(4) 1	
Year of	1st	(178) 80	n.s.	(32) 14	n.s.	(10) 5	.73
Study	4th	(357) 77		(99) 21		(5) 1	.38
Significance		*<0.001*		*<0.001*		*0.008*	

Tables 5 and 6 also allow us to zero in on the influence of opportunities to interact in French with FL1 speakers (including stays in a Francophone country, bilingual jobs, interacting with Francophone staff on campus, and building a network of bilingual and Francophone friends). A clear effect of this factor is observable at the highest level of engagement for the university students. Specifically, these students display dramatically lower levels of grammatical and discursive *alors* (50% and 51%) *alors* and dramatically higher levels of grammatical and discursive *donc* (49% and 46%) than do their counterparts with mid or low engagement levels. As for the FI students, the influence of time spent in a Francophone environment (e.g., short stays in a Francophone family) is more complex. For grammatical and discursive *donc* and for grammatical *alors*, it is the group of FI students with the least time spent who stand out. In contrast, for *so*, it is the FI students with the most time spent in a Francophone environment whose grammatical and discursive use of this connector comes closer to approximating FL1 benchmark norms.

4.3. Do the FL2 Students Respect the FL1 Linguistic Constraints on Connector Choice?

To determine if the FL2 students adhere to the linguistic constraints on connector choice documented in FL1 Montreal spoken French (see Section 2.2), we have performed GoldVarb analyses measuring the impact of the linguistic functions of the connectors (discursive vs. grammatical) in the spoken French of the FI students, the FL2 university students, and the FL1 Montreal speakers (2012 corpus). The results are presented in Table 7. For the FL1 speakers, we see their use of *alors* and *donc* is favored by the grammatical function and *fait que* by the discursive functions. For the university students, we see that they favor *donc* to fulfill the grammatical function, but unlike the FL1 speakers, they favor *alors* to fulfill discursive functions. That said, this non-native association is weak, as indicated by the small spreads within the percentages and factor effects and the almost non-significant X^2 value computed by GoldVarb. Like the FL1 speakers, the university students use *fait que* more often discursively than grammatically. However, this difference rests on a very small number of tokens and is unsurprisingly judged as statistically non-significant by GoldVarb. Lastly, with developmental *so*, the analysis reveals an absence of statistically significant frequency differences. As for the FI students, like the FL1 speakers, they favor *alors* to fulfill the grammatical function and use *donc* more often grammatically than discursively, however this difference is judged statistically non-significant by GoldVarb.

Finally, with respect to *so*, the FI students strongly favor its discursive use, demonstrating trouble curbing their use of this English discourse marker. This non-negligible discursive use of *so* has the serendipitous consequence of bringing down their frequency of discursive *alors* to make it fit more closely with the FL1 linguistic constraint.

Table 7. GoldVarb analysis of the influence of linguistic functions on connector choice by FL1 Montreal (2012) speakers, FL2 immersion and FL2 university students.

	Alors			*Donc*			*Fait que*			*So*		
	N	**%**	**Effect**	**N**	**%**	**Effect**	**N**	**%**	**Effect**	**N**	**%**	**Effect**
FL1 Montreal (2012)												
Grammatical	68	3.8	.61	388	21.7	.55	1334	74.5	.44	0	0	
Discursive	41	1.8	.42	373	16	.46	1918	82.2	.55	0	0	
Significance		*<0.001*			*<0.001*			*<0.001*				
FL2 University												
Grammatical	1058	74.1	.48	346	24	.52	3	0.2	--	21	1.5	--
Discursive	535	78.1	.54	131	19.1	.45	4	0.6	--	15	2.2	--
Significance		*0.046*			*0.009*			*NS*			*NS*	
FL2 Immersion												
Grammatical	506	82.5	.56	81	13.2	--	0	0	--	26	4	.35
Discursive	291	71.9	.41	43	10.6	--	0	0	--	71	18	.72
Significance		*<0.001*			*NS*			*NA*			*<0.001*	

5. Discussion

5.1. Postsecondary Study Leads to a More Targetlike Acquisition of Sociolinguistic Variants

Beginning with whether postsecondary study leads to more advanced acquisition, our results show that, overall, the FL2 university students achieve a higher level of acquisition of the variable use of grammatical and discursive *alors*/*donc*/*fait que* than do the FI students. Specifically, the university students make less frequent use of standard *alors*, more frequent use of standard *donc*, more frequent use of vernacular *fait que*, and less frequent use of developmental *so*. Thus, they are closer to FL1 sociolinguistic norms than are the FI students. To understand if the university students' more advanced acquisition extends beyond the connectors, Table 8 sets our findings alongside two previous studies of sociolinguistic variation in the speech of these two FL2 groups, namely standard subject pronoun *nous* versus informal *on* (Rehner et al., 2003; F. Mougeon & Rehner, 2015) and standard use of *ne* in negative sentences versus its informal non-use (Rehner & Mougeon, 1999; Rehner, 2010). The table also provides information on these variants in FL1 speech and in FI teachers' in-class speech. While no classroom corpus is available for university instructor speech, the FI teacher data provide a sense of the type of educational input that these FL2 university students would have received earlier in their studies.

While Table 8 shows that both FL2 groups are quite far from FL1 frequencies and are much closer to pedagogical norms of teachers' classroom speech, the university students' more advanced acquisition is also reflected in the *nous* vs. *on* and *ne* use vs. non-use variables. For each variant, the university students' rates are closer to FL1 norms than are those of the FI students. Specifically, the university students make greater use of the informal variants that are frequent in FL1 speech and less use of the standard variants that are privileged in the educational input. These patterns are reminiscent of those of FL2 learners living in Montreal (e.g., Blondeau et al., 2002) and FL2 learners with study abroad experience (e.g., Regan et al., 2009) and reflect, as we have seen, that the university students have had more opportunities to interact with FL1 speakers than have the FI students.

Table 8. Frequencies of sociolinguistic variants in the speech of FL1 Montreal speakers, immersion teachers, FL2 immersion students, and FL2 university students.

Variants	FL1 Montreal Speech * %	Immersion Teachers' In-Class Speech %	FL2 Immersion Students' Speech %	FL2 University Students' Speech %
Alors **	4	76	83	74
Donc **	22	23	13	24
Fait que **	75	1	0	0.2
So **	0	0	4	2
Nous	2	17	45	25
On	98	83	55	75
Ne use	0.5	71	70	58
Ne non-use	99.5	29	30	42

* *Alors*/*donc*/*fait que*/*so* (2012 Montreal corpus); *nous*/*on* and *ne* use/*ne* non-use (1971 Montreal corpus). ** For the four groups of speakers, the frequencies for the four connectors are for their grammatical use.

5.2. Level of Opportunities to Interact in French Has a Greater Positive Impact on Acquisition than Time Spent Learning French

The results show that opportunities to interact with FL1 speakers is a better predictor of acquisition than is time spent learning French. This is clearly shown for the FL2 university students' grammatical and discursive use of the connectors (see Table 7). While more years spent studying French only lowers grammatical and discursisve *so*, those students with high levels of engagement are at a clear advantage over their less-engaged counterparts for the other connectors. In fact, in comparison with the FL1 speakers, the highly-engaged university students are overusing grammatical and discursive *donc*, but not *alors* or *so*. Further, with respect to the highly underused connector *fait que*, as pointed out above, the majority of the students who produced this variant are highly-engaged university students, while only one is in Year 4. The stronger impact of level of engagement on the FL2 university students' acquisition of the connectors is in line with the findings of F. Mougeon and Rehner's (2009) study of the acquisition of the variable use of *on* vs. *nous* by these same students and of other cases of sociolinguistic variation by non-Canadian university FL2 students (see Section 2.1).

For the FI students, the pattern is less straightforward, with opportunities to interact with FL1 speakers and time spent learning French both influencing the grammatical and discursive use of these forms. Grade 12 FI students are at an advantage over their Grade 9 counterparts for the grammatical and discursive use of each of the connectors, except for grammatical *so*. For the impact of opportunities to interact with FL1 speakers, it is the group of FI students with the least time spent in a Francophone environment who stand apart in terms of their grammatical and discursive use of *donc* and their grammatical use of *alors*. In contrast, for *so*, it is the FI students with the most time spent in a Francophone environment whose grammatical and discursive uses of this connector come close to approximating FL1 benchmark norms. That opportunities to interact with FL1 speakers have less of a clearly positive impact on the acquisition of the connectors by the FI students than is the case for the FL2 university students may reflect that the FI students' extra-curricular level of exposure to FL1 French is not as high as that of the university students.

To understand properly the pattern of increased *donc* use with greater FL1 contacts for both the FI and FL2 university students, one needs to consider the impact of the students' educational input. As pointed out above (see Table 8), FI teachers' in-class speech features overwhelming preference for *alors* (78%) and moderate use of *donc* (20%) (Rehner et al., 2003). Thus, as the students progress in their learning via more years spent learning French and greater community-based exposure to the language, they move away from the norms of

educational input and get closer to the FL1 norms of 18% *donc* and 3% *alors*. Another factor that may contribute to the university students' increased use of *donc* at *alors*' expense is that some are targeting the learning of a more formal register as they advance towards career decisions (F. Mougeon & Rehner, 2015). This may explain, in part, why the highly-engaged university learners are overusing grammatical and discursive *donc*. What is interesting with the case of the variable use of *alors*/*donc*/*fait que* is that community-based exposure brings about the rise of a formal variant (i.e., *donc*), unlike past research that has amply documented this beneficial effect on the acquisition of informal non-standard variants by L2 speakers (cf. Bayley et al., 2022; Howard et al., 2013).

In considering the marginal to non-use of *fait que* by the FL2 students in spite of its very high frequency in FL1 Montreal speech (grammatical = 74%, discursive = 82%), one can invoke again the impact of educational input, which features only 1% *fait que* in FI teachers' in-class speech (R. Mougeon et al., 2010), whereas other non-standard variants such as *ne* deletion or subject pronoun *on* for *nous* are more frequent in such speech (Rehner & Mougeon, 1999; Rehner et al., 2003). As mentioned in the literature review, these FL2 learners are not alone in their marginal to non-use of this connector. Recall that the FL2 university students in Thunder Bay (Lemée, 2025) make no use of this form, and the FL2 speakers in Montreal (G. Sankoff et al., 1997) use it less than 10% of the time despite their increased opportunities to interact with FL1 speakers. These strikingly convergent findings across settings for FL2 speakers with differing levels of opportunities to interact in French suggests that some additional factor is at work. What may be at play is that *fait que* is often realized as a phonetically reduced form ([fak] or [fek]) in Canadian spoken French (cf. Blondeau & Tremblay, 2022 for Montreal French and Falkert, 2006 for Acadian French spoken in the Madeleine Islands). This reduction may lower the perceptual salience of this form for FL2 speakers, who may fail to hear it and consequently fail to associate this reduced form with *fait que* even when exposed to its use. In fact, some FL2 students in our own university classes were unable to hear this connector in videos played for them with the specific purpose of introducing them to this form. The weak perceptual salience of this connector suggests the need for targeted pedagogical interventions aimed at raising learners' awareness of this variant and at providing them with information on its socio-stylistic status.

With respect to the decline in the use of *so* as time spent learning French and opportunities to interact with FL1 speakers increase, this pattern suggests a developmental trajectory for *so*. This is unlike the use of English discourse marker 'like' (versus its French equivalent *comme*) by the same FI students examined here (Rehner, 2004). In the case of 'like', increased interactions with FL1 speakers did not result in its decreased use, leading Rehner to conclude that it was not a developmental variant but rather an automatized feature of their English that they had difficulty suppressing in their spoken French.

5.3. The FL2 Students Respect Some of the FL1 Linguistic Constraints on Connector Choice

Our study has shown that in FL1 speech the grammatical function is favorable to the use of *alors* and *donc*, and the discursive functions are favorable to the use of *fait que*. Analysis of the FL2 students' speech has revealed that each student group has acquired one the FL1 linguistic constraints and a different constraint in each case (the association of *alors* with the grammatical function for the FI students and the association of *donc* with the grammatical function for the university students). However, the FI students' acquisition of the linguistic constraint for *alors* may be serendipitous and an indirect consequence of their non-negligible use of discursive *so*. As for the university students, they exhibit a reversed non-native constraint for *alors* (i.e., more frequent use of this connector when it fulfills the discursive functions than the grammatical one). Thus, while the university students

exhibit frequencies of connector use that are closer to the FL1 norms than are those of the FI students, they do not have the edge in relation to the linguistic constraints on connector choice.

This less-than-complete acquisition of the linguistic constraints is very much in line with past studies of the FI students, or the university students, or other FL2 learners even when they have had extensive opportunities to be exposed to FL1 speech (see Blondeau et al., 2002). That said, when considering the few studies that allow for a direct comparison between the FI and university learners, the picture is more complex. The findings of Uritescu et al. (2004) versus Thomas (2002) allow for a comparison of these two groups' acquisition of the linguistic constraints for schwa deletion, and those of Rehner and Mougeon (1999) versus Thomas (2002) for *ne* use/non-use. The comparison reveals that both groups acquired the hierarchy of FL1 phonetic constraints on schwa deletion, namely that the word internal context is much more favourable to deletion than is the context of monosyllabic words. In both of these contexts, the FL2 university students were closer to FL1 frequencies than were the FI students. In contrast, neither FL2 group learned the FL1 constraint on negation, namely that *ne* non-use is more frequent with postverbal negator *pas* than with other postverbal negators. While the university students' rates of non-use were almost identical across the two contexts, the FI students demonstrated a non-native constraint with higher frequencies of *ne* non-use with postverbal negators other than *pas*. Thus, like the present study, the FI and university students have acquired some FL1 linguistic constraints but not others and have exhibited non-native linguistic constraints.

6. Conclusions

In line with the scope of this volume, the present study has focused on two groups of FL2 learners representing different stages in the acquisition of sociolinguistic variation. It is the first study where these two groups are compared systematically. While this comparison allows for important insights into the development of sociolinguistic competence, it is based on only one sociolinguistic variable. Thus, there is the opportunity to undertake this type of comparative research with other cases of variation. An opportunity also exists to expand this comparative analysis of the acquisition of sociolinguistic variation by placing these FL2 groups on a broader FL1–FL2 speaker continuum, facilitated by the availability of additional corpora collected with the same methodologies. Two of our previous studies, which examined the development of linguistic competence by focusing on the acquisition of difficult aspects of French morphosyntax, have made use of this FL1–FL2 speaker continuum (i.e., R. Mougeon et al., 2024; Rehner et al., 2022). In these studies, the FI and university students were compared with groups of bilingual FL1 speakers from majority and minority Francophone communities in Ontario who evidence differing degrees of dominance in French and English. This comparison has brought to light differences and similarities in the linguistic competence of student groups on this broader speaker continuum, revealing, for example, that in situations where French and English come into contact the concepts of FL1 and FL2 speakers are more relative than absolute. Thus, in the future we hope to expand our research on the development of sociolinguistic competence by investigating the variable use of the connectors and of other sociolinguistic variables across the FL1–FL2 continuum.

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Notes

1 Since G. Sankoff et al. (1997) collected their FL2 corpus among young adults interviewed in 1992–1993, the 1971 FL1 data provide a better comparative benchmark than the FL1 2012 data. The latter, however, are more appropriate for a comparison with the Thunder Bay FL2 data since these data were collected by Lemée from 2013 to 2020.

2 All four connectors, including *so*, have been documented as discourse markers in FL1 speech in other Ontario Francophone communities, including Belle River (near Windsor) and Hearst (Butterworth, 2020) and Welland (Blondeau et al., 2022).

3 Data on length of stay in a Francophone environment has not been provided by one student.

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Article

The Impact of Virtual Exchanges on the Development of Sociolinguistic Competence in Second Language Spanish Learners: The Case of *Voseo*

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Abstract: This study investigates how sociolinguistically informed instruction and virtual exchanges affect the use of the second-person singular pronouns (*usted*, *tú*, and *vos*) by adult second language learners of Spanish enrolled in a third-semester course at a four-year college. The results from written contextualized tasks and oral discourse completion tasks show that participants who engaged in virtual exchanges with native speakers from Guatemala, Honduras, and El Salvador (experimental group) significantly improved their use of *vos* compared to those who did not participate in these exchanges (control group). Both groups increased their use of *tú* and *vos* over time, with notable differences between written and oral tasks. These findings provide empirical support for incorporating virtual exchanges into language learning curricula, demonstrating their effectiveness in teaching regional dialectal features such as *voseo*. Additionally, by focusing on the often-overlooked regionally variable pronoun *vos*, this study enriches the existing literature on Spanish language instruction and opens new avenues for research on dialectal variation and sociolinguistically informed pedagogy.

Keywords: adult second language learners of Spanish; Central American Spanish; forms of address; sociolinguistic competence; sociolinguistically informed pedagogy; virtual exchanges; *voseo*

1. Introduction

The teaching and learning of certain sociolinguistic elements in the Spanish classroom have been debated (Geeslin & Long, 2014). One particular contentious issue is whether specific pronouns and their accompanying verbal and morphological forms, utilized only in certain geographical regions, should be included in the curriculum. A prime example of this debate centers on the second-person singular pronoun *vos*. Despite being used by one third of Spanish speakers worldwide (Morgan et al., 2017), this pronoun is frequently omitted from both curricula and textbooks, leaving it to individual teachers to decide whether or not to teach it.

In recent years, the understanding of how explicit teaching affects the use of the second-person singular pronoun *vos* has been limited (Salgado-Robles et al., in press). Because of this scarcity of research, a closer examination of the pedagogical strategies surrounding the explicit instruction of this form that lead to learners' acquisition and use of the form where appropriate could shed light on the effectiveness of certain instructional practices and also inform curricular development.

The current study addresses this issue by examining the effect of telecollaboration on the use of the second-person singular pronouns. By exploring how these interactions influence the development of *vos*, this study aims to provide insight into the effectiveness of using telecollaboration with speakers who regularly employ *vos* on the development of *vos* by learners in intermediate Spanish courses.

2. Background

2.1. The Sociolinguistic Competence of Spanish Learners

Sociolinguistic competence refers to the ability of an individual to use language appropriately and effectively in diverse social contexts. It encompasses an understanding of social and cultural norms, alongside the skill to adapt language use based on factors such as the audience, setting, and purpose of communication. Sociolinguistic competence involves not only linguistic proficiency but also the knowledge of dialects, registers, politeness conventions, and other sociocultural aspects that shape communication (Geeslin & Hanson, 2023).

Labov (1966) defined sociolinguistic variation as the choice between one or more forms to fulfill the same or similar function, as interpreted by Geeslin and Garrett (2018), which indicates that "variation between forms can fall along two axes" (p. 18): vertical and horizontal. Vertical variation occurs when learners alternate between two or more forms, at least one of which is non-target-like (Rehner, 2002), while horizontal variation occurs when speakers choose between two or more forms that are target-like (Adamson & Regan, 1991). For instance, vertical variation would involve choosing between (*usted*) *sabés* and (*usted*) *sabe*, whereas horizontal variation would entail choosing between (*tú*) *sabes*, (*vos*) *sabés*, and (*usted*) *sabe*. The latter, the development of sociolinguistic competence by second language (L2) learners, informs the current study.

Recently, there has been a growing interest in L2 Spanish acquisition research focused on exploring learners' ability to understand and produce variable L2 patterns in contextually sensitive ways. This involves examining the processes through which learners develop their sociolinguistic competence. However, the majority of studies investigating the sociolinguistic competence of Spanish second or heritage language learners focus on students who have had exposure to a Spanish-speaking environment during their academic studies. This area of research explores how learners can directly benefit from interactions with native speakers abroad. These studies aim to measure the factors contributing to this development, including both linguistic and extralinguistic variables (see George, 2022, for a comprehensive review of this research).

2.2. Dialectal Feature Under Investigation

Most of the U.S. Hispanic population, which exceeds 65 million Spanish speakers (including native, heritage, and second language speakers), originates from Latin America (U.S. Census Bureau, 2024). This population of Spanish speakers is the second largest globally, following Mexico. In Latin America, a widespread characteristic among Spanish speakers is the use of *vos* as the second-person singular pronoun, prevalent across various countries and territories in the region. Morgan et al. (2017) used census data and official estimates and concluded that *vos* is used by 150 million *voseantes* in Latin America out of a Spanish-speaking population of 400 million, which represents that one third of Spanish-speakers use *voseo*.

The three-tiered system of second-person singular pronouns is employed in some parts of Latin America to denote the degree of respect or familiarity and consists of one formal pronoun, *usted*, and two informal pronouns, *tú* and *vos* (Real Academia Española & Asociación de Academias de la Lengua Española, 2023). In many geographic regions, vos may coexist with *usted* and *tú*. *Usted* conveys respect and distance; *tú* signifies a

moderate level of familiarity without deep trust; and *vos* represents the greatest level of familiarity and solidarity. *Voseo* is widespread in at least eight Latin America countries: five in Central America (Costa Rica, Guatemala, Honduras, Nicaragua, and El Salvador) and three in South America (Argentina, Paraguay, and Uruguay). Furthermore, *voseo* is deeply embedded in everyday language and cultural identity and is present in various regional areas in many Latin American countries (e.g., Bolivia, Colombia, Chile, Ecuador, Mexico, and Peru) (Benavides, 2003; Carricaburo, 2015; Lipski, 2007, 2023; Quesada Pacheco, 2013).

Table 1 displays the second-person singular regular verb paradigms. These are commonly used in three Central American countries: Guatemala, Honduras[1], and El Salvador. The main differences between the *tú* and *vos* verb forms is the stress on the final syllable for the *vos* form. With verbs that end in -ir, the *vos* form uses a different vowel in the final syllable -i compared to the *tú* form, which uses -e. Similarly, in the imperative, verbs that end in -ir use -i in the final syllable for *vos*.

Table 1. Three-tiered system of verbal paradigm in Central American (Guatemala, Honduras, and El Salvador) Spanish (Benavides, 2003; Carricaburo, 2015; Lipski, 2007, 2023; Quesada Pacheco, 2013).

	Present Indicative	**Imperative**
usted	*habla, come, escribe*	*hable, coma, escriba*
tú	*hablas, comes, escribes*	*habla, come, escribe*
vos	*hablás, comés, escribís*	*hablá, comé, escribí*

Table 2 illustrates the second-person singular stem-changing verbs also utilized in Guatemala, Honduras, and El Salvador. The main difference between *tú* and *vos* verb forms is that *vos* forms do not exhibit the stem change like the *tú* forms do. The endings for the *vos* forms correspond to the ones in Table 1 for regular verbs.

Table 2. Three-tiered system of stem-changing verb paradigm in Central American (Guatemala, Honduras, and El Salvador) Spanish (Benavides, 2003; Carricaburo, 2015; Lipski, 2007, 2023; Quesada Pacheco, 2013).

	Present Indicative	**Imperative**
usted	*niega, quiere, siente*	*niegue, quiera, sienta*
tú	*niegas, quieres, sientes*	*niega, quiere, siente*
vos	*negás, querés, sentís*	*negá, queré, sentí*

There are three types of *voseo*: authentic *voseo* and two types of mixed *voseo* (Félix-Brasdefer, 2019, p. 222).

Some examples of authentic *voseo* are seen in (1):

(1) Y vos, ¿cómo te llamás?
Cerrá la puerta, no te quedés afuera.

Some examples of mixed pronominal *voseo*, where the pronoun *vos* is used with verbal morphology that belongs to *tú*, are shown in (2):

(2) Y vos, ¿dónde vives?
Cierra la puerta, vos.

Some examples of mixed verbal *voseo*, or when the pronoun *tú* (together with its forms *te, ti, tu*, and *tuyo*) is used with verbal morphology that belongs to *vos*, are shown in (3):

(3) Y tú, ¿dónde vivís?
Y tú, ¿te querés dormir con tus primos? o ¿preferís quedarte en tu casa?

2.3. Empirical Studies Examining Morphosyntactic Development by Spanish Language Learners

Research on the acquisition of morphosyntactic variation by L2 and heritage language (HL) Spanish learners abroad has focused on the production of clitics (Geeslin et al., 2010; Salgado-Robles, 2011, 2014, 2018, 2020), subject expression (Denbaum, 2020; Linford, 2016; Linford et al., 2018; Salgado-Robles, 2017), verb tenses (Geeslin et al., 2012; Geeslin et al., 2013; Kanwit & Solon, 2013; Whatley, 2013), and forms of address (George, 2018, 2019; George & Salgado-Robles, 2021; Hoffman-González, 2015; Pozzi, 2017; Pozzi et al., 2023; Reynolds-Case, 2013; Ringer-Hilfinger, 2013; Salgado-Robles & George, 2019, 2023; Salgado-Robles et al., in press).

In the realm of address form acquisition research, investigations conducted by Hoffman-González (2015), Pozzi (2017), and Pozzi et al. (2023) investigate the development and use of *vos* among university learners engaged in study abroad (SA) programs in Argentina. To the best of our knowledge, the forthcoming work by Salgado-Robles et al. marks the first study exploring the development and use of *vos* by high school students in a mixed Spanish classroom in the United States. Other studies on the acquisition of forms of address have concentrated on the informal second-person plural, *vosotros*, while studying in Spain (George, 2018; George & Salgado-Robles, 2021; Salgado-Robles & George, 2019, 2023).

Hoffman-González (2015) examines the use of *vos* by learners in a SA setting, focusing on seven Spanish learners (two Spanish heritage speakers of Mexican descent and five L2 learners of Spanish descent) during a semester in Buenos Aires, Argentina. While the findings indicate a slight increase in *vos* usage during study abroad (with pre-study abroad production rates of 46.1% and post-study abroad rates of 59.6%, representing a 13.5% increase), the author attributes this modest change to tasks that did not effectively prompt the use of *vos*. Additionally, pre-study abroad interviews were conducted up to five weeks after the program began, and post-study abroad interviews were conducted several weeks after its conclusion. Furthermore, one of the tasks aimed at eliciting *vos* was administered towards the end of the interviews, possibly leading to participant fatigue, as suggested by the author.

Pozzi (2017) explores the production of *vos* by L2 learners, involving 23 English speakers over a five-month semester in Buenos Aires, Argentina. Through a multivariate analysis of more than 1200 tokens of *tú* and *vos*, the study reveals that learners utilized *vos* verb forms over 70% of the time by the end of their stay. Various factors, including social networks, proficiency level, mood, and task, significantly influenced this use. Particularly noteworthy is the finding that learners with stronger social networks tended to use *vos* verb forms more frequently, and those with higher proficiency levels employed these forms more than their lower-proficiency counterparts.

Pozzi et al. (2023) presents a case study on the pragmatic development of address forms in a US-based Spanish heritage speaker of Mexican descent, Juan, throughout an 11-week SA program in Argentina. Research instruments included a background questionnaire, pre- and post-program written elicitation tasks, four interviews, and 16 recordings of naturalistic interactions during host family dinners and service encounters. The results reveal a decrease in Juan's use of *vos* during elicitation tasks, with no instances of *vos* observed in naturalistic recordings. However, there was an increase in his metapragmatic awareness, particularly concerning the social implications of address forms. These findings are linked to Juan's bicultural identity formation, investment, and shifting involvement in the host community. The study underscores the importance of combining elicited and

naturalistic data with qualitative insights and moving beyond normative models that solely compare heritage speakers' pragmatic choices to those of monolingual native speakers.

Salgado-Robles et al. (in press) examine the development of the second-person singular pronouns (*usted*, *tú*, and *vos*) by 53 adolescent learners of Spanish, both HL and L2 speakers, participating in a beginner-level Early College Program in New York City. The results of the written Fill-in-the-Blanks Task and the Oral Discourse Completion Task show the increased usage of all three forms from the beginning to the end of the semester by both heritage and second language learners, with variations in task type (oral vs. written). These findings suggest the benefits of mixed classes containing both heritage and second language learners on the development of sociolinguistic competence for both types of learners and advocate for incorporating regional linguistic diversity at the beginner level.

In summary, these four studies provide the initial insights into the acquisition of a prevalent morphosyntactic characteristic of Latin American Spanish by American English-speaking Spanish students.

2.4. The Integration of Sociolinguistics into the Spanish Classroom

To deepen our comprehension of how educational input shapes the sociolinguistic competence of language learners, scholars have proposed approaches aimed at cultivating critical language awareness (CLA) (Loza & Beaudrie, 2022). There has been a persistent call from scholars for a sociolinguistically informed pedagogy in language classrooms, which enhances students' critical awareness regarding language attitudes, ideologies, variation, and other aspects such as multilingualism (Leeman, 2014, 2018; Martínez, 2003). In the context of CLA, Geeslin and Long (2014) elaborate on the depth of knowledge required by instructors to incorporate sociolinguistics, offer practical advice for enhancing linguistic diversity in language instruction, and propose strategies for staying informed about current pedagogical methods and recent research developments.

Voseo is strikingly absent from the U.S. Spanish instructional curricula, which prevents language learners from being exposed to this form of address. Most secondary and post-secondary Spanish learners are unaware that *voseo* is widespread across Latin American countries, reflecting their rich linguistic diversity and cultural heritage. The inconsistency in U.S. education has been documented in the literature. What follows are studies about the presentation of *vos* in the 21st century Spanish classroom.

Pearson (2006) explores the incorporation of digital audio technology into a Spanish dialectology course to enhance students' understanding of language variation, with a particular focus on *voseo*. Similarly, Uber (2008) discusses how forms of address convey relationships and social norms. Among individuals of similar social status, informal symmetrical treatment (the *tú* or the *vos* forms of address) signifies solidarity and intimacy. Conversely, in interactions between people of different social positions, asymmetric treatment (some use the *tú/vos* forms of address; others use the *tú* form only) highlights and maintains power differences. Formal symmetrical treatment (the *usted* form of address) can denote social distance, respect, or courtesy. Due to the complexity of *voseo*'s morphology and nuances for Spanish learners, Uber provides practical workplace advice. For example, non-native speakers should start with *usted* for all interlocutors, switching to *tú* or *vos* only when the interlocutor initiates informal address or explicitly suggests it. Likewise, Kingsbury (2011) engages students in analyzing excerpts from "Rosaura a las diez", focusing on how different characters use *usted*, *tú*, and *vos*. This approach to dialect awareness in the classroom challenges students to rethink common assumptions about sociolinguistic variation. Kingsbury also suggests that students research *voseo* as an extension activity when studying Argentine literature.

Shenk (2014) provides a comprehensive examination of *vos* variants and how educators can incorporate them into the classroom. She advocates for the inclusion of *vos* in teaching primarily for sociolinguistic reasons, aligning her argument with the ACTFL's world-readiness standards for language learning, which encompass five key areas: communication, cultures, connections, comparisons, and communities. In terms of communication and community goals, students enhance their communication skills by learning to recognize and appropriately respond to *voseo*. Furthermore, presenting evidence-based sociolinguistic information on language variation helps establish connections, as this awareness enriches students' understanding of other disciplines through the foreign language. Within the culture and comparison goals, students gain insights into the relationships and practices associated with the pronouns *usted*, *tú*, and *vos* within a community, and they can compare these with how formality, intimacy, and solidarity are expressed in their native language. To achieve this, Shenk suggests a series of activities aimed at increasing students' sociolinguistic awareness in the Spanish classroom. She concludes that it is essential to start teaching *vos* in Spanish classrooms, or at least give it more attention, to better prepare students for communication in the diverse Spanish-speaking world. Additionally, Cameron (2017) notes that despite the millions of *vos* speakers, "the twentieth century did not see a single article published in Hispania that suggested incorporating instruction on *voseo* into the language classroom" (p. 67). He also points to increasing trends in SA destinations and immigration to the U.S. from *voseante* regions. These factors highlight the need to include *voseo* into the twenty-first-century Spanish curriculum.

Moreover, LeLoup and Schmidt-Rinehart (2018) conducted a survey involving 177 U.S. Spanish teachers and 560 U.S. college students to assess the treatment of *vos* in Spanish language textbooks and instruction at the postsecondary level in the U.S. Their findings revealed that *voseo* is largely ignored in textbooks, not taught by educators, and consequently not learned by students. To address this issue, they provide specific recommendations for curricular and instructional improvements. Similarly, Griffin (2019) thoroughly examines the presentation of *voseo* in various Spanish textbooks used at the postsecondary level, concluding that *vos* is rare and nearly absent in most textbooks despite being used in more than half of Spanish-speaking countries. Griffin argues for the integration of this informal second-person singular form in the classroom, citing the number of U.S. college students studying abroad in *voseante* regions, the immigrant population from Central American countries in the U.S., and the millions of *voseo* speakers throughout Latin America as key reasons. In line with the findings of LeLoup and Schmidt-Rinehart (2018) and Griffin (2019), Potvin (2022) presents a qualitative and quantitative analysis of 30 Spanish textbooks published over the last four decades to verify the presence of *voseo*. Given its minimal representation, Potvin offers arguments from linguistic, acquisitional, and pedagogical perspectives to support its inclusion in textbooks.

These studies emphasize the significance of understanding and being knowledgeable about dialectal variation, such as the inclusion of *voseo* in Spanish classroom instruction and curricula, as a crucial element for students to cultivate their sociolinguistic and, consequently, communicative competence. Furthermore, embracing a CLA approach in language education, as advocated by Beaudrie and Loza (2023), can foster "inclusive and transformative learning spaces for their students" (p. 154).

2.5. The Effects of Virtual Exchange on Language Learning

Although the term "virtual exchange" (VE) is relatively recent, the concept itself has been around for a while. In foreign language education, VE is often referred to as telecollaboration (Dooly & O'Dowd, 2018) or online intercultural exchange (O'Dowd & Lewis, 2016) and entails "connecting language learners in pedagogically structured interaction

and collaboration" (Dooly & O'Dowd, 2018, p. 14). VEs (also known as service provider VE or SPVE, Klimanova & Vinokurova, 2020; Marull & Kumar, 2020; Tecedor & Vasseur, 2020), such as those facilitated by Boomalang, Conversify, LinguaMeeting, or, inter alia, TalkAbroad, are conversational platforms that enable students to engage in synchronous interactions with native speakers of the target language. These online platforms allow individual students or small groups of students to interact with native speakers for up to 45 minutes at a time. These exchanges typically involve structured interactions guided by educational goals and often include tasks that promote language practice, cultural understanding, and collaborative learning. Specifically, LinguaMeeting's main features include connecting language learners with native speakers (or trained language coaches), ensuring coaches work closely with the material used in partnered schools for the discussions to be closely tied to the content of the course, providing feedback to instructors on learners' performance, tracking attendance, and recording sessions, among other capabilities.

Recent studies have explored the impact of VEs on language learning, highlighting their benefits for language proficiency, cultural competence, and student engagement. Cuervo Carruthers (2017) investigated how intermediate-level college Spanish students' attitudes toward the Spanish language and culture improved through structured online conversations with native speakers on the TalkAbroad platform. This positive shift in perceptions was mirrored in the findings of Mathieu et al. (2019), who, through the use of TalkAbroad in Spanish and French courses, demonstrated that students' engagement in authentic exchanges not only enriched their cultural knowledge but also enhanced their intercultural competence by exposing them to diverse cultural products, practices, and perspectives.

Similarly, Sama and Wu (2019) observed that integrating VEs into an intermediate Italian course fostered significant gains in oral proficiency, fluency, and affective learning outcomes. They found that a combination of classroom instruction, virtual practice, and reflection promoted learner autonomy and self-regulation, encouraging a willingness to embrace new challenges. This trend of increased engagement and positive language outcomes was further supported by Klimanova and Vinokurova (2020), who explored beginner Russian learners' readiness for intercultural exchanges via LinguaMeeting, emphasizing the platform's potential to facilitate meaningful language interactions.

Marull and Kumar (2020) extended this line of inquiry to online Spanish courses at the post-secondary level, finding that the majority of students reported improvements in language abilities and cultural understanding through a series of 12 LinguaMeeting sessions, which offered practical applications of linguistic skills in real-world scenarios. Concurrently, Tecedor and Vasseur (2020) focused on the development of intercultural communicative competence (ICC) among Spanish learners, noting that VEs effectively integrated cultural content and supported ICC growth, although some ethnocentric tendencies persisted, underscoring the need for tailored instructional approaches.

In exploring critical cultural awareness, Warner-Ault (2020) demonstrated how TalkAbroad conversations helped intermediate Spanish students reflect on their cultural identities and values, leading to improved oral proficiency and cultural understanding. Fernández-Cuenca and Muller (2021) built upon these findings by showing that task type and preparation significantly influenced engagement levels in virtual sessions, particularly in terms of vocabulary acquisition and personal development.

The importance of VEs for fostering intercultural competence was also highlighted by Varo Varo (2021), who, through online meetings between advanced Spanish conversation students and their Colombian counterparts, observed growth in all ICC areas despite some limitations in quantitative gains. Finally, García (2023) illustrated how integrating cultural standards into a Spanish course via LinguaMeeting enabled students to

connect cultural practices and perspectives, demonstrating a nuanced understanding of intercultural dynamics.

Collectively, these studies reveal that VEs provide a valuable platform for language learners to deepen their linguistic and cultural competencies, fostering a more holistic approach to language education that transcends the traditional classroom setting. VEs enable participants to encounter diverse dialects, enhancing their grasp of regional pronunciations, lexical variations, and idiomatic expressions, promoting greater respect for linguistic diversity. Previously, educators faced challenges providing such opportunities due to limited access to native speakers. However, VEs have made this feasible, offering a practical and affordable alternative, particularly for learners unable to pursue full-immersion SA experiences due to personal or financial constraints (Henshaw & Hetrovicz, 2023). Given the scant knowledge about the impact of teaching *vos* in the Spanish classroom, this study seeks to bridge this gap by benefitting from telecollaboration and integrating VEs into the curriculum.

2.6. Research Questions

Based on the literature review highlighting the limited understanding of the impact of teaching *vos* in the Spanish classroom, this study aims to address two primary research questions:

- Research Question 1: How do the singular forms of address (*usted*, *tú*, and *vos*) differ from Time 1 (T1) to Time 2 (T2) in two types of tasks by participants?
- Research Question 2: How does the production of the singular forms of address (*usted*, *tú*, and *vos*) by the experimental group (EG), who had access to VE with Spanish native speakers, differentiate from the control group's (CG's) performance longitudinally (T1 vs. T2)?

3. Method

3.1. Participants

Fifty-eight American English-speaking Spanish students were recruited from two third-semester Spanish classes at a four-year college in the United States. Participants were divided into two groups based on the assessment method of their Spanish oral skills. The EG (N = 30; 12 male and 18 female) engaged in five 30-minute VEs throughout the semester with coaches from Guatemala, Honduras, and El Salvador via the LinguaMeeting platform, while the CG (N = 28; 10 male and 18 female) did not engage in the virtual conversations and instead had their oral skills assessed through an interview at the end of the semester. All participants completed an online consent form, a background questionnaire, and a placement test designed by the department.

Formal classroom instruction comprised three 90-minute sessions per week spanning the entire 16-week semester. These sessions were led by the same instructor, who had received training in communicative and sociolinguistic methods for teaching Spanish (Geeslin & Long, 2014; Loza & Beaudrie, 2022). The instructor, a native of Central America, typically used the *voseo* form of speech.

Both the EG and CG received instruction on when and how to use *vos* in contextually appropriate situations according to Central American Spanish, as shown in Tables 1 and 2. To reinforce this instruction, students engaged in various structured communicative activities that required them to apply *vos* in contextually appropriate places to demonstrate their understanding. For the EG, these activities began after their first VE session.

Once the students grasped the concept and the instructor felt more comfortable with their progress, the instructor began using *vos* with both the EG and CG. Although students were encouraged to use *vos* with each other during these activities, no data were collected

on whether they continued to do so in informal conversations outside of class. For the EG, this also applies to conversations outside of the VEs.

3.2. Elicitation Tasks

To measure the participants' sociolinguistic competence in the use of the three-tiered system (*usted, tú,* and *vos*), all participants completed two distinct tasks. What we will refer to as the written task consisted of a written contextualized task and what we will refer to as the oral task consisted of an oral discourse completion task. In an effort to minimize the possible effect of language exposure on the participants' responses and to avoid affecting the participants' verb use, each task was administered on different days starting first with the written task and ending with the oral task. Both tasks were completed at the beginning of the semester (week 3) and at the end of the semester (week 15).

The written task designed for the current study is based on similar ones used in Geeslin (2003), Gudmestad (2006), Geeslin and Gudmestad (2008), Geeslin et al. (2010), Geeslin et al. (2012), Gudmestad and Geeslin (2013), and Neumann and Kanwit (2020) to study the acquisition of Spanish copula choice, subjunctive, mood contrasts, direct object pronouns, perfective past time reference, future time expression, and commands, respectively. It was designed to ensure a balanced distribution of the combination of all categories of each of the independent variables included in the study: the speaker's Spanish dialectal variety; the interlocutor's Spanish dialectal variety; the degree of intimacy between speakers; and the informality of conversation. These independent extralinguistic variables were taken from previous research on native speaker use of *vos* (Benavides, 2003; Michnowicz & Place, 2010; Michnowicz et al., 2016; Schmidt-Rinehart & LeLoup, 2022; Uber, 2011). The written task shown in Figure 1 required participants to read a total of five prompts and then choose their preferred option from three related items for each prompt.

Figure 1. Sample of a written contextualized task. (Note: Image generated using the prompt "While cutting Edwin's hair, Luis, the barber, asks him a series of questions," by Imagined-with AI (2023), https://imagined-with.ai/).

Luis, a Salvadorian barber, asks Edwin, who is also from El Salvador, the following question:

A. Luis: ¿Y tenés planes para estas vacaciones, Edwin? ___ Prefiero la frase A
B. Luis: ¿Y tiene planes para estas vacaciones, Edwin? ___ Prefiero la frase B
C. Luis: ¿Y tienes planes para estas vacaciones, Edwin? ___ Prefiero la frase C

Items contained three possible answers, differing only in the form of address (i.e., formal vs. informal). Based on the context, each piece of dialog was supposed to be completed by selecting either the *usted, tú* or *vos* verb form, while the remaining tokens were expected to be completed with other persons (*yo*, *ella*, *ustedes*, etc.) used as fillers. The written task was completed by each participant on a computer in the language lab. Participants were allotted a maximum of nine minutes to complete each of the five short conversations. Deliberately, the system prevented participants from revisiting previous conversations for editing. It took participants between 35 and 45 minutes to complete this task.

The oral task designed for the current investigation is based on similar ones employed in studies by Salgado-Robles and George (2019), George and Salgado-Robles (2021), Salgado-Robles and George (2023), and Salgado-Robles et al. (in press) to study the acquisition of *vosotros* versus *ustedes* distinction by heritage Spanish learners abroad, the long-term impact of a sojourn abroad on heritage Spanish learners' *vosotros* versus *ustedes* use, the relationship between external factors and the development of regional variation (*vosotros* versus *ustedes*) by L2 learners of Spanish in Spain, and the learning of the *usted*, *tú*, and *vos* forms of address by L2 and HL learners in mixed Spanish classes, respectively. The oral task required participants to respond to five written scenarios, each containing nine situations, and record their answers with a digital recorder. Each scenario consisted of three valid and six invalid (distractor) situations. All participants read the prompts in their first language (L1) (English) and responded in their L2 (Spanish) at two different points in time (week 3 and week 15) during the semester. Each participant completed the oral task on a computer in the language lab. Participants were given a maximum of one minute to read the prompt and respond to the situation to the best of their ability. Intentionally, the system prevented participants from revisiting previous questions for editing. It took participants between 35 and 45 minutes to complete this task.

An example of a scenario, along with its corresponding situations used in the oral task, is provided below and shown in Figure 2:

> "Samuel, a native of Cuba, and Victoria, a native of Guatemala, are international students at a university in the US. Lupita, in the center, is from Mexico and serves as Samuel and Victoria's host mother. The three of them are spending time together during breakfast."

Figure 2. Sample of an oral discourse completion task. (Note: Image generated using the prompt "Samuel and Victoria, international students at a university in the US, are having breakfast with their host mother, Lupita," by Imagined-with AI (2023), https://imagined-with.ai/).

A. Lupita asks Samuel and Victoria if they know about the history of their host university.

B. Samuel tells Lupita that his favorite baseball team is The Yankees.

C. Samuel asks Lupita how long she has been hosting international students.

D. Victoria tells Lupita that she and Samuel love her house.

E. Samuel asks Victoria and Lupita how much they know about Cuba.

F. Lupita asks Victoria what she likes to have for breakfast.

G. Lupita asks Samuel and Victoria if they have previously visited the United States.

H. Victoria tells Samuel that she and Lupita love going shopping.

I. Victoria receives a WhatsApp video call from her cousin Lourdes, who is also from Guatemala. During the call, she asks Lourdes if she would like to visit her for winter break.

In this scenario, the expected use of *usted* was in situation C (Samuel, an international student from Cuba, asking his host mother a question); the expected use of *tú* was in the question asked by Lupita to Victoria (situation F); and the expected use of *vos* was in situation I (when Victoria, when talking with her cousin Lourdes on a WhatsApp video call, follows the norms of the majority of speakers in Guatemala to use *vos* between two people of equal status, such as family members or close friends). The distractors are A-B, D-E, and G-H, situations where none of the three second-person singular forms (*usted*, *tú*, or *vos*) were anticipated.

4. Results and Discussion

4.1. Analysis

Scores for each task were calculated, assigning a score of 1 when the expected pronoun was used and 0 for the unexpected pronoun. The tasks were divided into oral and written categories, each containing five instances where a second-person singular pronoun could be used. The Shapiro–Wilk test was performed to assess the normality of the data statistically. With $p > 0.05$, the data were determined to be non-normally distributed. Consequently, non-parametric tests were conducted: the Wilcoxon signed-rank test was used to compare differences in pronoun use over time within the same group, and the Kruskal–Wallis H (Mann–Whitney U) test was used to compare differences in pronoun usage between the CG and EG.

4.2. Results

Table 3 displays the mean and standard deviation of the usage of the three pronouns at both points in time and on both tasks for the EG and CG.

Table 3. Forms of address used by each group at each time by task type.

		Experimental Group		**Control Group**	
Pronoun	**Task Type**	**Time 1**	**Time 2**	**Time 1**	**Time 2**
		Mean (SD)	**Mean (SD)**	**Mean (SD)**	**Mean (SD)**
usted	Written	0.3793 (0.49)	0.7655 (0.43)	0.3407 (0.48)	0.6741 (0.47)
	Oral	0.4138 (0.49)	0.7586 (0.43)	0.3037 (0.46)	0.5111 (0.50)
tú	Written	0.6069 (0.49)	0.7379 (0.44)	0.4963 (0.50)	0.7407 (0.44)
	Oral	0.4483 (0.50)	0.7586 (0.43)	0.3556 (0.48)	0.6741 (0.47)
vos	Written	0.0897 (0.29)	0.6000 (0.49)	0.0815 (0.27)	0.2889 (0.45)
	Oral	0.0000 (0.00)	0.3448 (0.48)	0.0000 (0.00)	0.1556 (0.36)

In Table 4, *p*-values below 0.05 mean that the use of the pronoun on that task was significantly different between the CG and EG.

Table 4. Mann–Whitney U test results for between-group comparisons (EG vs. CG).

Form of Address	Task Type	Time	U Statistic	*p*-Value
Usted	Written	T1	10,165	0.503
		T2	10,682.5	0.089
	Oral	T1	10,865	0.056
		T2	12,210	<0.001
Tú	Written	T1	10,870	0.063
		T2	9760	0.958
	Oral	T1	10,695	0.115
		T2	10,615	0.117
Vos	Written	T1	9867.5	0.809
		T2	12,832.5	<0.001
	Oral	T1	9787.5	1
		T2	11,640	<0.001

Significant differences were found between the EG and CG for the use of *usted* during the oral task at Time 2, with the EG using *usted* more frequently. Additionally, at Time 2, the EG produced *vos* more often than the control group in both written and oral tasks.

Table 5 shows the W statistic and the *p*-value for pronoun usage in both tasks by each group. A *p*-value less than 0.05 means that the change in pronoun usage over time was significant.

Table 5. Wilcoxon signed-rank test results for within-group comparisons (T1 vs. T2).

Group	Task Type	Form of Address	W Statistic	*p*-Value
Experimental Group	Written	*Usted*	207	<0.001
		Tú	336	<0.01
		Vos	212.5	<0.001
	Oral	*Usted*	607.5	<0.001
		Tú	248	<0.001
		Vos	0	<0.001
Control Group	Written	*Usted*	140	<0.001
		Tú	270	<0.001
		Vos	180	<0.001
	Oral	*Usted*	245	<0.001
		Tú	455	<0.001
		Vos	0	<0.001

When examining changes over time, significant differences in the usage of *usted*, *tú*, and *vos* were observed in both written and oral tasks for both the EG and CG. In both groups, the use of *usted* decreased in written tasks but increased in oral tasks. Additionally, both groups showed an increase in the use of *tú* and *vos* across both types of tasks.

4.3. Discussion

The first research question deals with differences in the task type (oral vs. written) by the two groups on the production of the singular forms of address (*usted*, *tú*, and *vos*) at T1 and T2. When significant differences were found—such as with *usted* at Time 2 during the oral task and *vos* at Time 2 on both tasks—the EG produced the expected outcomes significantly more often than the CG. Although the higher use of *usted* remains unexplained, the likely reason for the increased use of *vos* in the EG is their exposure to VE coaches who used *vos*, whereas the CG only had a teacher who employed *vos*. The additional practice with native *voseante* speakers likely contributed to the EG's significantly higher increase in the use of *vos* over time in both tasks. It should be noted that the CG also increased their use of *vos* in both tasks over time.

The second research question examines the usage of the singular forms of address (*usted*, *tú*, and *vos*) over time to see if there are differences between the two groups (EG and CG). The usage of all but one pronoun during one task (*usted* on the written task) significantly increased over time on both tasks for both groups. The significant increase in the expected uses of *tú* and *vos* on both tasks by both groups was likely due to classroom instruction. It is difficult to explain why the expected use of *usted* decreased over time for both groups on the written task and yet increased on the oral task.

This study, which examined the effect of VEs on learners' use of the second-person singular pronouns *usted*, *tú*, and *vos*, revealed significant improvements in the EG that engaged in VEs compared to the CG that did not. The results of this study underscore the importance of incorporating VEs in language learning curricula to enhance the use of *vos* according to the level of formality required by the communitive context. Furthermore, these findings highlight the potential of VEs as an accessible alternative to SA programs, which are often cost-prohibitive or impractical for many students. By providing meaningful interaction with native speakers in an authentic context, VEs help bridge the gap between classroom instruction and real-world language use. This aligns with recent scholarship on digital approaches to linguistic and cultural immersion, which advocates for home-based immersion through technology to foster global connections and advance diversity, equity, and inclusion in language education (Granda, 2023).

The results of the current study align with previous research emphasizing the multifaceted nature of sociolinguistic competence, as defined by Geeslin and Hanson (2023), and the importance of contextually appropriate language use (Labov, 1966; Geeslin & Garrett, 2018). By demonstrating that VEs enhance learners' ability to employ *vos* according to the communicative context, this research contributes to the growing body of evidence supporting the integration of sociolinguistic elements into language instruction. This supports the assertion that sociolinguistic competence is not merely about linguistic proficiency but is also about understanding and adapting to social and cultural norms (Regan, 2010).

This study's findings regarding the increased use of *vos* in the EG resonate with previous findings on the importance of sociolinguistic variation and the need for explicit instruction in regional dialects. As noted by Morgan et al. (2017) and Benavides (2003), *voseo* is a widespread and culturally significant feature in many Latin American countries. The significant improvement in the use of *vos* among EG participants highlights the effectiveness of VEs in exposing learners to authentic language use and enhancing their sociolinguistic competence. This is consistent with research suggesting that direct interaction with native speakers can significantly impact learners' acquisition of regional language features (George, 2022).

The findings also align with empirical studies on the acquisition of morphosyntactic variation by L2 Spanish learners (Geeslin et al., 2010; Salgado-Robles, 2011, 2014, 2018). The significant increase in the use of *vos* by the EG, as observed in both written and oral

tasks, underscores the role of interaction and exposure in developing morphosyntactic competence. This parallels the findings of Hoffman-González (2015) and Pozzi (2017), who reported the increased use of *vos* among learners studying abroad in Argentina. While previous studies have demonstrated the benefits of study abroad for acquiring sociolinguistic variation, the findings of this study suggest that VEs can provide similar advantages for learners who do not have the opportunity to immerse themselves in a target language community. By engaging in structured interactions with native speakers, students can develop sociolinguistic competence without the financial and logistical barriers associated with study abroad. Granda (2023) highlights the role of VEs in fostering authentic language use and sociolinguistic awareness, emphasizing that as global events continue to disrupt traditional SA programs, technology-based linguistic immersion offers a more accessible and equitable alternative for language learning.

This study's results strongly support the integration of sociolinguistic elements, such as *voseo*, into Spanish curricula, as advocated by scholars like Leeman (2014, 2018) and Shenk (2014). The significant improvements in the use of *vos* among EG participants suggest that incorporating VEs can effectively bridge the gap between classroom instruction and real-world language use. This aligns with recommendations for a sociolinguistically informed pedagogy that enhances students' critical language awareness (Loza & Beaudrie, 2022; Martínez, 2003).

5. Conclusions

5.1. Summary of Key Findings

This study investigated the impact of VEs on the development of sociolinguistic competence, specifically focusing on the use of the second-person singular pronouns *usted*, *tú*, and *vos* among American English-speaking Spanish learners. The results demonstrated that participants in the EG, who engaged in VEs with native speakers from Guatemala, Honduras, and El Salvador, showed significant improvements in the use of *vos* compared to the CG. Both groups increased their use of *tú* and *vos* over time, with notable differences between written and oral tasks. The findings suggest that VEs are an effective pedagogical tool for enhancing learners' sociolinguistic competence in using regional dialectal features.

5.2. Study Contributions

This study provides empirical evidence supporting the integration of VEs into language learning curricula, highlighting their effectiveness in teaching regional dialectal features like *voseo*. Second, the study describes the importance of incorporating authentic language use and interaction with L1 speakers in the classroom. Finally, by focusing on the often-overlooked regionally variable pronoun of *vos*, this study enriches the existing literature on Spanish language instruction and opens avenues for future research on dialectal variation and sociolinguistically informed pedagogy.

5.3. Limitations and Future Directions

This study highlights several avenues for future research to further explore the development of variable features by L2 learners. Future research could determine the long-term impact of VEs with *voseante* speakers on the accurate use and awareness of the second-person singular pronouns, examining how this affects overall sociolinguistic competence. Expanding the sample size to include participants from various proficiency levels and from other institutions, particularly in contexts with a large presence of *voseante* speakers, could provide even more insight into the development of sociolinguistic competence.

Future studies could incorporate different or additional tasks, especially those that simulate more naturalistic settings, to address the observed differences in task type. Explor-

ing various types of interactions, such as classroom activities that necessitate the use of the three pronouns under study, and analyzing instructional strategies for teaching these forms, could reveal their impact on learners' sociolinguistic competence. Additionally, examining teachers' use of *vos* and its relationship to student use could provide valuable insights.

Incorporating qualitative data through interviews with students and teachers could enrich future research by providing perspectives on the use of *vos*, including perceptions and attitudes toward its use. While the VEs in this study included speakers from three countries where *vos* is used, future research could broaden this to include speakers from other *voseante* regions.

5.4. Concluding Insights

The use of VEs with *voseante* speakers enhances the appropriate use of *vos* in L2 learners along with classroom instruction. These findings support the integration of VEs into the curriculum even from an early level, such as first-year instruction of the language. By exposing learners to authentic linguistic input in meaningful interactions, VEs provide a crucial bridge between formal instruction and real-world language use, reinforcing sociolinguistic competence. Additionally, incorporating VEs into language curricula ensures that students who may not have access to immersive SA experiences can still develop regional linguistic variation, making language learning more equitable and inclusive.

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Notes

[1] Hernández Torres (2013) provides an analysis of Honduran Spanish morphosyntax, revealing a distinct trend within the three-tiered system of second-person singular pronouns. In this system, *tuteo* is seldom used in familiar contexts and conveys additional social connotations linked to regional origin and sexuality.

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Article

The Second Language Acquisition of Second-Person Singular Forms of Address: Navigating Usage and Perception in a Tripartite System in Medellin, Colombia

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Abstract: Previous studies have found that second language learners can acquire sociolinguistic variation. However, there is a lack of studies that examine the L2 acquisition of second-person singular forms of address (2PS) in Spanish, especially in the immersion context of study abroad. The current study examines the acquisition of Spanish 2PS by seven adults learning Spanish in Medellin, Colombia. Participants completed an oral discourse completion task and a matched guise task to measure language perceptions toward each 2PS. Learners' results are compared to findings from 38 native Spanish speakers from Medellin. Learners produced very few instances of the local variant *vos* and overproduced *tú*, differing greatly from native speakers. Two factors were found to significantly condition 2PS usage for learners: speaker gender and interlocutor relationship. Findings show that although learners perceive *vos* to a somewhat native-like extent and the role that it plays in the local variety, learners do not actually use it.

Keywords: second language acquisition; second-person singular forms of address; Colombian Spanish; language perceptions; matched guise; *voseo*

1. Introduction

The acquisition of Spanish second-person singular forms of address (2PS) is a complex process, especially for learners whose first language only has one 2PS, such as English. This is true for many reasons. First, the obvious reason is the fact that English only has one 2PS "you". Spanish, in contrast, has either two or three depending on the dialect. Most Spanish 2PS systems include the informal "*tú*" and the formal "*usted*", while some dialects also have "*vos*". There are of course some dialects that use *vos* categorically, such as the case in the Rioplatense area of Argentina. Thus, learners of Spanish have to learn when and with whom to use each 2PS. Not taking *vos* into account and only looking at *tú* and *usted*, one might think that this would be rather easy to acquire. It is true that when age and power line up, it is rather simple. For example, an older teacher would be addressed with "*usted*", or a classmate of the same age would be addressed with "*tú*". In addition, the distinction between *tú* and *usted* varies regionally, which can be confusing for learners. However, as Dufon (2010) points out, it is a much more complex process to acquire native-like usage of 2PS in ambiguous situations, such as when power and age do not line up. This could be, for example, if your boss is younger than you or if an employee of yours is older. Does one use *tú* or *usted*? If *vos* is also an option, it becomes very complicated for a learner of

Spanish whose first language is English. This is the case in the Spanish of Medellin, as the 2PS system is tripartite consisting of *tú*, *vos*, and *usted*. It should be noted that 2PS usage in Medellin is variable—these three forms exist, and how they are used is variable. There is a lack of research examining the L2 acquisition of a tripartite Spanish 2PS system, especially in the immersion context. In particular, tripartite 2PS systems provide a unique opportunity to examine the acquisition of the cultural nuances, the degree of understanding of the social dynamics between speakers, and the sociopragmatic competence required for the proper use of each form of address, while L2 learners are immersed in the target dialect. Therefore, a main goal of the current study is to investigate the L2 acquisition of Spanish 2PS with learners taking Spanish classes in Medellin.

In the field of sociolinguistics, until recently, many studies have tended to focus on production but not as much on perception. Examining perception in addition to usage provides a wider window into a speaker's linguistic variety. Being able to examine a learner's perception of a linguistic phenomenon can help inform us about their acquisition. For example, it may be that learners have not yet arrived at an advanced enough level to produce a linguistic phenomenon, but they might perceive it and understand its social value. Since most sociolinguistic and second language acquisition (SLA) studies do not investigate perception of specific variables, a second goal of the present study is to examine learners' perceptions of Spanish 2PS and compare them to those of native Spanish speakers from Medellin in order to gain a more complete picture of these learners' acquisition of Spanish 2PS. Based on the findings of the current study, we find that although learners perceive *vos* to a somewhat native-like extent and the role that it plays in the local variety, learners do not actually use it.

2. Review of the Literature

2.1. 2PS in Spanish

Unlike English, which only has one 2PS, "you", Spanish and other Romance languages have multiple 2PS which are split by what Brown and Gilman (1960) refer to as the conflicting axes of power and solidarity. In their framework, T pronouns (e.g., *tú* in Spanish and *tu* in French) show familiarity or solidarity while V pronouns (e.g., *usted* in Spanish and *vous* in French) indicate politeness. In Spanish, *tú* and *usted* are present in virtually all Spanish dialects. *Tú* is the informal pronoun, whereas *usted* is considered the formal pronoun. In some dialects, *vos* is also an option. *Vos* is generally thought to be like *tú* in that it is very informal and generally shows great familiarity with the speaker. *Voseo*, the usage of the pronoun *vos,* and/or its verbal morphology, is found in several Spanish-speaking countries to varying degrees. In the same vein, the terms *tuteo* and *ustedeo* denote the usage of *tu*/*usted* and their verbal morphology. Regional *voseo* occurs in Peru to a limited extent among indigenous speakers, internal western Cuba, the Chiapas province of Mexico, Andean Venezuela, parts of southwestern and central Colombia, Ecuador, and Bolivia (Kapović, 2007; Lipski, 1994; Penny, 2000; Placencia, 1997). In contrast, a more generalized *voseo* is present in Argentina, Uruguay, Paraguay, and many parts of Central America (Penny, 2000).

2.2. 2PS in the Spanish of Medellin

The 2PS system in the Spanish of Medellin, Colombia has several distinct characteristics. One such characteristic is the usage of *voseo*, which results in a tripartite system of 2PS that consists of *tú*, *usted*, and *vos*. Examples of each 2PS and their corresponding verbal inflection, prepositional pronoun, and object pronoun are depicted in Table 1.

Table 1. 2PS in Medellin, Colombia (from Newall, 2016).

Variant	Verbal Inflection	Prepositional Pronoun	Object Pronoun
tú	*cantas* 'sing'	*para ti* 'for you'	*te veo* 'I see you'
vos	*cantás* 'sing'	*para vos* 'for you'	*te veo* 'I see you'
usted	*canta* 'sing'	*para usted* 'for you'	*lo/le/la veo* 'I see you'

As can be seen in Table 1, each 2PS has its own verbal inflection. However, it is important to note that in various instances, the verbal inflection for *tú* and *vos* is the same. This is the case for the past tenses and one-syllable present tense verbs, such as "*vas*" ('you go') or "*estás*" ('you are'). In addition, it is important to mention that Spanish is a pro-drop language, and thus the subject pronouns (*tú*, *vos*, *usted*) are not obligatory. Therefore, it is possible and common for the verbal inflection to occur by itself without each subject pronoun being expressed explicitly.

Jang (2013) affirms that *voseo* is a strong symbol of identity for *Paisas* (people from the province of Antioquia, Colombia, of which Medellin is the capital). Jang (2013) posits that he does not expect *voseo* to disappear due to the strong sense of belonging that *Paisas* have and the negative attitudes that they have toward other Colombian dialects that do not employ *voseo*, such as the case in the capital city, Bogota. *Voseo* is a way that *Paisas* use to distinguish themselves from Colombians of other dialects (Jang, 2013).

Another interesting characteristic of the 2PS system in Medellin is that *usted* is used in both formal and informal situations, resulting in a dual *usted*. As mentioned above, generally in Spanish, *usted* is the formal 2PS. However, in the Spanish of Medellin, the use of *usted/ustedeo* has extended to be used not only with unknown or nonintimate interlocutors but also with intimate interlocutors, such as with spouses, one's children, and even pets (Uber, 1985). In addition to the dual *usted*, polymorphism of 2PS, the usage of more than one 2PS directed toward the same person in the same interaction, is also common in Paisa Spanish (Denbaum-Restrepo, 2023a).

2.3. The Second Language Acquisition of 2PS

Dufon (2010) points out that acquiring the 2PS system is a complex process for learners. They first must acquire the 2PS system for unambiguous situations and then for ambiguous situations. For example, when age and power do not line up (e.g., a professor around the student's age or a classmate that is much older than a learner), this creates an ambiguous situation. Dufon (2010) posits that acquiring 2PS in unambiguous situations is possible just from reading textbooks, but for the ambiguous situations, learners must engage in social interaction with native speakers. In addition, Dufon (2010) explains that acquisition of the 2PS system depends on the quantity and quality of learners' relationships with these native speakers.

One of the first studies conducted that examined the L2 acquisition of forms of address was Warnick's (1991) study, which examined L2 Japanese students. He found that students with higher proficiency used more appropriate first- and second-person forms of address. However, overall, the learners were considered non-native-like because they used more 2PS than native Japanese speakers and they often selected 2PS that were inappropriate for the context. Other studies have investigated 2PS in L2 French and L2 Spanish.

Lyster and Rebuffot (2002) and Dewaele (2004) both investigated the acquisition of French 2PS for second language (L2) learners. The context for Lyster and Rebuffot's (2002) study was a French immersion class. They found very little use of *vous* by the learners and observed that the teacher used the *tu* form when referring to the entire class. Thus, the

researchers concluded that the almost exclusive use of *tu* was due to the little input of *vous* that students received. Dewaele (2004) compared 2PS usage with native French speakers and learners. Results showed that 13 out of 52 learners used *vous* categorically, while 8/9 of the native speakers used *tu* exclusively. In addition, he found that learners sometimes switched between *tu* and *vous* in the same conversation, which native speakers did not do at all.

Other studies have examined the L2 Spanish acquisition of 2PS (Fernández, 2016; González-Lloret, 2008; Villarreal, 2014). Villarreal (2014) examined L2 Spanish production of 2PS in role plays and found an overgeneralization of *tú*. Similar to what Dewaele (2004) found with L2 French, Villarreal's (2014) results showed an alternation of forms that could not be explained as strategic. Fernández (2016) examined L2 acquisition in the study abroad context. The participants were conversation partners, consisting of a Spanish L2 speaker and a native Argentinian, over four months. Data were collected from face-to-face interactions as well as text chat conversations. Before arriving in Argentina, the learner was aware of the use of *vos*, which is widely used in Argentina. However, her conversation partner used *tú* with her, and thus, the learner also used *tú*. Upon realizing that her conversation partner used *tú* with her because she was a Spanish teacher used to accommodating to students who are not aware of *vos*, both participants began to use *vos* in their interactions. González-Lloret (2008) also examined the development of 2PS with conversation partners of Spanish learners and native Spanish-speaking students from Spain, though in a different context: synchronous computer-mediated communication (SCMC). González-Lloret (2008) reports on the development of a case study consisting of two learners of Spanish communicating with a native Spanish-speaking student via Yahoo Messenger. The group of students worked together on a project over a period of 10 weeks. Results showed that the Spanish learners alternated between the formal *usted* and the informal *tú*, even though the native speaker explicitly told them not to call him "*usted*". However, toward the end of the project, the main Spanish learners eventually started to adapt to the sociopragmatic norm established by the native speaker, using more *tuteo* and less *ustedeo*.

Overall, studies on L2 acquisition of 2PS show that learners in the immersion context generally lack native-like patterns of sociopragmatic competence. As stated previously, this is mainly seen by overgeneralizations of specific forms and alternations of various forms without justification. However, some research has shown more promising results. For instance, Pozzi (2021) found a strong association with the learners' social network in the host country and the higher use of *vos* forms, particularly with high-proficiency students. Similarly, Fernández's (2016) research in the study abroad context and González-Lloret's (2008) research in the SCMC context also show a similar pattern, although it is important to recognize that the learner in Fernández's (2016) study arrived in the host country already having a knowledge of the local form of address, *vos*. The acquisition of 2PS is important because it is both a sociolinguistic and sociopragmatic phenomenon. First, there are social dynamics between speakers that need to be understood on the part of the L2 learner so that proper address is used for a successful communicative act. In addition to the social dynamics, the acquisition of sociolinguistic conditionings in 2PS production is also important. We know that the L1 use of each form of address is constrained by social and linguistic factors, including speaker age, socioeconomic class, gender, subject pronoun expression, speech act, interlocutor relationship, and interlocutor age, to name a few (Newall, 2016; Denbaum-Restrepo & Restrepo-Ramos, 2022). In addition, the alternation of 2PS forms in the same discourse to address the same interlocutor has been found to be prevalent in tripartite dialects, such as Paisa Spanish (Denbaum-Restrepo, 2023a). All these factors involved in the production of tripartite 2PS systems present a compelling

case to understand the level of sociopragmatic competence required by L2 learners in the acquisition of these forms.

2.4. Language Attitudes in Second Language Acquisition

The present study compares language attitudes and perceptions of native speakers from Medellin to those of learners taking Spanish classes in Medellin. Previous studies on language attitudes have been carried out with L1 and L2 speakers. For example, L1 studies have examined attitudes toward specific phonemes (Casillas, 2013; Díaz-Campos & Killam, 2012) or perceptions toward different dialects (Büdenbender, 2013). Casillas investigated the variation of the allophones /tʃ/ and /ʃ/, such as the pronunciation of "muchacho" as /mu.ˈʃa.ʃo/, in the Spanish in Tucson, Arizona. The researcher employed a matched guise that included audio clips of two male speakers and two female speakers reading from a script. There were two versions of audio clips for each speaker that were identical except for the use of the two allophones: one had /tʃ/, and the other had /ʃ/. Results showed that speakers who realized the fricative had lower ratings in terms of credibility, competence, and solidarity. Additionally, the listeners, undergraduate students in the Spanish program for heritage speakers, were able to distinguish which speakers were PhD students and which had only a high school education based on their respective usage of /tʃ/ and /ʃ/.

Díaz-Campos and Killam (2012) also examined language perceptions using a matched guise. They examined two specific phenomena: intervocalic /d/ deletion and syllable-final /ɾ/ deletion with participants from Caracas, Venezuela. The researchers found that the same speaker was evaluated differently based on whether they retained or elided syllable-final /ɾ/. Retention was evaluated significantly higher in terms of intelligence and professionalism, showing the prestige associated with the retention of syllable-final /ɾ/. In contrast, for intervocalic /d/, the same trends were observed regarding deletion and retention, but there were no significant differences. These results show the difference in social evaluations between the two variables. Findings from Díaz-Campos and Killam (2012) and Casillas (2013) demonstrate that native speakers have language attitudes associated with different phonetic variables.

In addition to native Spanish speakers having language attitudes toward specific linguistic variants, other studies have found that native speakers have varied perceptions toward specific dialects in general. For example, Büdenbender (2013) examined whether Puerto Ricans could identify Dominicans based purely on linguistic factors and how Dominicans were perceived in terms of education, social class, and pleasantness of speech. Büdenbender (2013) utilized a verbal guise in which seven Dominicans and one Puerto Rican were recorded responding to a question about how to prepare for a hurricane. Results showed that linguistic features played an important role in the identification of national origin. In addition, results suggested possible socioeconomic profiling in which Dominicans are attributed to having a lower socioeconomic class than Puerto Ricans.

Studies on L2 attitudes and perceptions have also been carried out, especially in the study abroad context. Both Knouse (2012) and Ringer-Hilfinger (2012) investigated the L2 acquisition of the interdental fricative /θ/ in study abroad contexts in Spain. In north-central Spain, the phonological phenomenon of *distinción* occurs, where the interdental fricative /θ/ is produced in words that include the graphemes <z>, <ce, ci> while the alveolar fricative /s/ is used for <s>. This is in contrast to Latin American dialects where /s/ is used for all four of these graphemes. Knouse (2012) measured language attitudes using a Pronunciation Attitude Inventory (PAI) in which students rated 12 statements about general pronunciation in an L2 based on a 5-point Likert scale. The more emphasis a student put on acquiring and employing native-like pronunciation, the higher the score was. It was

expected that the higher the score on the PAI, the more likely it was that students would acquire /θ/. However, a higher PAI score did not correlate to increased production of /θ/. In addition, contact with native speakers failed to result in more /θ/ production. In contrast to Knouse's (2012) study, for which language attitudes did not have a significant correlation to acquisition, Ringer-Hilfinger (2012) did find that language attitudes played a role in L2 acquisition of /θ/. Similar to Casillas (2013), Ringer-Hilfinger (2012) used a matched guise to measure language attitudes. The speakers for her matched guise consisted of six Spanish-English bilinguals: a female Colombian, a male Puerto Rican, a male Spaniard, a female Spaniard, a female learner, and a male learner. All speakers read the same text twice, once with *distinción* and once with *seseo*. As opposed to *distinción*, *seseo* refers to the use of /s/ in all contexts regardless of any grapheme distinction (e.g., <z>, <ce, ci>, <-d>. The idea was that participants thought they were listening to 12 different people. Participants listened to all 12 audio clips and rated them using a Likert scale from 1 to 6 on the following qualities: competence, integrity, and attractiveness. Overall results from the matched guise did not show a preference for *distinción* or *seseo*, and study abroad did not seem to influence learners' attitudes toward use of /θ/. However, out of the two students who produced /θ/ on the production tasks, both had a positive attitude toward its use by NSs. Furthermore, there were learners who did not want to use /θ/ because they had more contact in the U.S. with Latinos and thought the /θ/ would be perceived negatively by them. It is possible that the differences in findings between Knouse (2012) and Ringer-Hilfinger (2012) could be due to the fact that the PAI was measuring L2 pronunciation in general and not specific to the host dialect, whereas the matched guise used by Ringer-Hilfinger (2012) did indeed measure perceptions toward a variant of the Castilian dialect—specifically, the same variant that she was examining in the production task.

In addition to examining L2 perceptions toward a specific variant, K. L. Geeslin and Schmidt (2018) investigated language attitudes toward various dialects in general. The researchers used a variation of the matched guise—a verbal guise. In this task, 110 Spanish learners listened to 24 sentence stimuli and rated the speakers on either kindness ("nice" and "kind") or prestige ("intelligent" and "rich") adjectives using a 6-point Likert scale. The stimuli for the verbal guise were recordings of eight male speakers, consisting of two speakers from each of the following dialects: Castilian Spanish, Rioplatense Spanish, Caribbean Spanish, and Mexican Spanish. Each speaker read the same three sentences, which were chosen carefully so that each sentence would exhibit the same number of dialectal cues for each dialect. Results showed that, overall, learners differentiated between dialects, as they rated them differently. Specifically, they rated Argentine Spanish as the most kind and Castilian Spanish as the least kind. In terms of prestige, Puerto Rican Spanish was rated as significantly lower than the other three dialects. The researchers then examined learners' language attitudes broken down by study abroad location. Learners who studied in Spain showed similar ratings of kindness to the overall L2 group but higher prestige ratings for Castilian Spanish. Learners who studied abroad in Argentina had lower prestige levels for Argentinian Spanish but higher kindness levels, which the authors posit shows solidarity with Argentine speakers. One learner who studied abroad in Puerto Rico rated Puerto Rican Spanish as less kind, which was an unexpected result. The other learner who studied abroad in Puerto Rico rated the Puerto Rican dialect as more prestigious than the overall learner group. The authors explain that this is likely due to increased exposure to the Puerto Rican dialect, specifically exposure to its use in prestigious contexts. Another explanation is that it is likely that this learner developed greater comprehensibility of this dialect, which in turn could lead to higher prestige ratings.

Since previous studies have shown that both L1 and L2 speakers of Spanish distinguish various dialects based on linguistic phenomena and have language perceptions toward

these dialects and specific linguistic variants, it seems worthwhile to further investigate the role of language perceptions in the L2 acquisition of Spanish 2PS. Additionally, K. L. Geeslin and Schmidt (2018) stress the ". . .importance of language attitudes in understanding learner orientation toward particular language-learning contexts and the value of investigating this dynamic more thoroughly as a key element of understanding the complex process of Second Language Acquisition". The same authors expanded on these results in an article on L2 language attitudes, specifically on Peninsular Spanish varieties (Schmidt & Geeslin, 2022). Grammon (2021) also examines the complex nature of language attitudes and learner agency in acquiring dialect-specific/regional features. He found that the adoption of Peninsular Spanish [θ] was avoided by learners and the instructor to appeal against an idealized monolingual speaker. The author argues that language ideologies, along with sociolinguistic competence and national identity, affect L2 acquisition and production of dialectal variants.

The present study examines the L2 acquisition of 2PS among adults learning Spanish in an immersion context in Medellin, Colombia. It compares their usage to that of native *Paisas*, local speakers from Medellin, Colombia. In addition, it examines learners' perceptions of Spanish 2PS and compares them to those of native speakers. Here, we compare our findings with results by Denbaum-Restrepo and Restrepo-Ramos (2022), who examined 2PS perceptions of native speakers from Medellin using the same tasks and methodology as the current study. Analyzing the 2PS perception of L2 learners gives us further insights into their developing grammar compared to monolingual speakers.

The present study is guided by the following research questions:

1. What are the production frequencies of each 2PS (*tú*, *vos*, *usted*) for learners? How do learners' rates compare to those of natives from Medellin?
2. What linguistic and extralinguistic constraints condition the use of 2PS for learners? How do these linguistic constraints compare to native speakers?
3. How do learners' perceptions of each 2PS compare to native speakers' perceptions?

3. Methodology

3.1. Participants

Participants consisted of a group of seven adult learners of Spanish who were taking Spanish classes in the Spanish as a Foreign Language Program at a university in Medellin, Colombia, and 38 native speakers of *Paisa* Spanish from Medellin. Learners were a heterogeneous group as their ages, Spanish levels, countries of origin, and time spent in Colombia varied. Table 2 summarizes these characteristics of participants.

Table 2. Summary of participants' characteristics.

Participant	Age	Sex	Country of Origin	Spanish Level (CEFR)	Time Living in Medellin at Time of Data Collection	Total Time They Will Spend in Medellin
1	31	M	US	3 (A2)	2 months	1 year
2	25	M	US	9 (B2)	6 months	11 months
3	27	F	Germany	11 (B2)	10 months	1 year
4	24	F	US	9 (B2)	6 months	not sure
5	34	F	Canada	6 (B1)	1 year, 11 months	2.5 years
6	33	M	Bosnia	unknown	3 months	several years
7	39	M	Netherlands	11 (B2)	4 months	at least 2 years

As can be seen in Table 2, participants were from the following countries: Bosnia (N = 1), Canada (N = 1), Germany (N = 1), Netherlands (N = 1), and the US (N = 3). The variety of Spanish levels are based on the levels according to the Common European Framework of Reference (CEFR). Courses 1 and 2 correlate to level A1, and courses 3, 4, and 5 correspond to level A2. Courses 6, 7, and 8 correspond to level B1, while courses 9, 10, and 11 match up with level B2. Moreover, participants had spent a varied amount of time in Medellin at the time of data collection and planned on spending differing amounts of total time in Medellin. A trend that can be noted is that all participants were planning on spending a relatively long amount of time in Medellin altogether, as most participants were planning on staying in Medellin for at least 1 year. Furthermore, two learners planned on remaining in Medellin for 2 or 2 and a half years. Participants' living situations were also heterogeneous. Some participants were living in an apartment with Colombian roommates (N = 3), while others lived in their own apartment by themselves (N = 2). No participants stayed with a Colombian host family, in a hotel or hostel, or in an apartment with other foreigners (non-Colombians). Some participants responded that they had a different living situation other than the ones listed above (N = 2).

The 38 native speakers were either born in Medellin and its surrounding municipalities or had moved as a child and, therefore, had lived in Medellin for the majority of their lives. Participants consisted of a stratified sample of education levels, genders, and ages. Native speakers' ages ranged from 18–71 (average = 40.6), and 24 were female, while 18 were male. They came from a range of education levels including elementary (N = 5), high school (N = 16), and university or postgraduate education (N = 17). These speakers were part of a subset of participants from a 2022 study focusing on L1 sociolinguistic production and perception. They were selected for the present study based on the completion of the matched guise task.

3.2. Materials and Procedure

Oral Discourse Completion Task (DCT). For the DCT, participants were asked to read a context (accompanied by a photograph) and then respond (not narrate) with what they would say to the interlocutor in each situation (see Figure 1 for an example). The contexts manipulated the following four factors: speech act (complaint, command, question), relationship (intimate vs. distant), age of interlocutor (same age vs. older), and gender of interlocutor (female vs. male). This gave 24 possible combinations, and thus, the DCT consisted of 24 items.

I lent my friend $400 dollars last month so that he could pay his rent. He told me that he was going to pay me back a week later. Yesterday, I asked him if he could pay me back already because I don't have much money left. He told me that he couldn't pay me back yet but that he would as soon as he could. However, I just saw a Facebook post of him eating sushi and dancing at an expensive club.

Figure 1. Example from DCT.

Matched Guise. The matched guise was designed in order to measure (1) participants' perceptions toward the three 2PS (*vos*, *tú*, and *usted*) by rating each speaker on how nice,

honest, and professional he appeared and (2) participants' perceptions of how close the relationship between the speaker and the interlocutor seemed.[1] In a Qualtrics survey, participants heard a short sentence and were asked to rate the speaker using a response scale with five different options (see Figure 2).

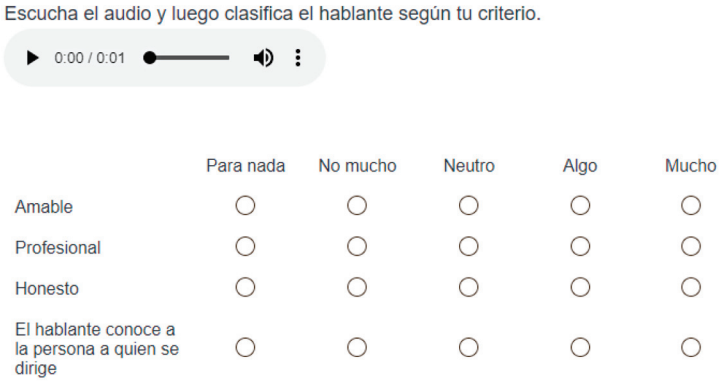

Figure 2. Example of matched guise.

Stimuli for the audios for the matched guise consisted of recordings from four speakers, each of whom were males from Medellin between the ages of 20 and 30. Each speaker read three sentences (each consisting of a different speech act: complaint, command, or question) three times each, varying the 2PS (and verbal form when applicable) as seen in Table 3. These sentences were presented in isolation with no contextualization included. Audio clips were randomized, and 10 fillers were randomly inserted throughout. Fillers consisted of recordings of four female speakers between the ages of 18 and 22 from Spain and the Dominican Republic who read completely different sentences.[2]

Table 3. Conditions and stimuli for the matched guise.

Speech Act	2PS	Stimulus
Reprimand	*tú,*	*¿Por qué tú siempre haces eso?* 'Why do you (T) always do that?'
Reprimand	*vos*	*¿Por qué vos siempre hacés eso?* 'Why do you (V) always do that?'
Reprimand	*usted*	*¿Por qué usted siempre hace eso?* 'Why do you (U) always do that?'
Command	*tú*	*Ven a la fiesta pues.* 'Come (T) to the party.'
Command	*vos*	*Vení a la fiesta pues.* 'Come (V) to the party.'
Command	*usted*	*Venga a la fiesta pues.* 'Come (U) to the party.'
Question	*tú*	*¿Tú vives cerca de acá?* 'Do you (T) live close to here?'
Question	*vos*	*¿Vos vivís cerca de acá?* 'Do you (V) live close to here?'
Question	*usted*	*¿Usted vive cerca de acá?* 'Do you (U) live close to here?'

Background Questionnaire. Participants also completed a background questionnaire in Qualtrics. This questionnaire asked participants general information including age, gender, place of birth, highest level of education, language background, Spanish level, other languages spoken, other countries lived in, living situation while in Medellin, time spent in Medellin, and total time anticipated to remain in Medellin.

3.3. Coding

3.3.1. Dependent Variable

The dependent variable of this study is the production of a 2PS (*tú* vs. *usted* vs. *vos*) or its verbal inflection (when unambiguous):

- Tú: "Hola papá, tengo que hacer un árbol genealógico, pero no sé todos nuestros antepasados. ¿Por eso **puedes** ayudarme por favor? Porque **tú sabes** toda la información y me gustaría hacerlo contigo". 'Hi Dad, I have to make a family tree, but I don't know all of our relatives. For this reason, **can you** (T) help me please? Because **you know** (T) all the information and I would like to do it with you' (Participant 3: German female, Spanish level 11)
- Usted: "Hola señor porfa ponga el botón por el piso tercero, gracias. O tercer piso". 'Hi sir, please **put** (U) the button for floor third, please. Or the third floor.' (Participant 4: American female, Spanish level 9)
- Vos: ¿Por qué no **venís** a nuestra reunión?" 'Why don't **you come** (V) to our meeting?' (Participant 7: Dutch male, Spanish level 11)

When the verbal morphology was ambiguous, these tokens were excluded. For example, (1) and (2) were excluded since it is ambiguous whether they are *tuteo* or *voseo*.

(1) "*¿**Podrías** decirme tu nombre otra vez por favor?*" '**Could you** (T/V) tell me your name again please?'

(2) "*¿**Estás** aquí por la novia o el novio?*" '**Are you** (T/V) here for the bride or the groom?'

3.3.2. Independent Variables

This study examines five independent variables. Descriptions of each variable follow.

The following variables were chosen when creating the DCT and were manipulated in a balanced way throughout. They were selected since previous research on native Spanish speakers has shown that they significantly constrain 2PS variation (e.g., Newall, 2016; Denbaum-Restrepo & Restrepo-Ramos, 2022).

- Speech act:
  - Command: "*Hey chica, chica **cuídate**. ¿Estás borracha o qué?*" 'Hey girl, girl **take care of yourself** (T). Are you drunk or what? (Participant 2: American male, Spanish level 9)
  - Indirect command: "*Hey, chica yo sé que tú estás nueva acá, pero somos un equipo y la próximo vez por favor **me pasas** la pelota para que podamos jugar todos juntos*". 'Hey, girl I know that you are new here, but we are a team and next time please **pass (T) me** the ball so that we can all play together.' (Participant 3: German female, Spanish level 11).
  - Question: "*¿Tú conoces la novia o el novio*?" 'Do you know (T) the bride or the groom?' (Participant 4: American female, Spanish level 9)
  - Declarative: "*Mi amigo, necesitas repagarme y yo sé que tienes el dinero porque estás bailando en un discoteca muy cara y comiendo sushi **entonces es muy obvio que tienes dinero para repagarme***". 'My friend, you need (T) to pay me again and I know you have (T) the money because you are dancing in a very expensive club and eating sushi. **So, it is very obvious that you have (T) money to pay me again.**' (Participant 4: American female, Spanish level 9)
- Relationship with interlocutor:
  - Intimate: *Le presté $400 dólares a **mi amigo** el mes pasado para que pudiera pagar la renta…Le digo a **mi amigo**…* 'I lent **my friend** $400 dollars last month so that he could pay the rent…I say to **my friend**…'
  - Distant: *Estoy en una fiesta con todos mis amigos. Nos encanta bailar, pero **el dj**, quien es de mi misma edad más o menos, está poniendo música muy mala…Cuando alcanzo **el dj**, le digo…* 'I am in a party with all my friends. We love to dance, but **the DJ**, who is around my same age, is playing really bad music…When I reach **the DJ**, I say to him…'

- *Age of interlocutor*:
  - Same age: *Estoy en clase de biología. Todo el mundo está hablando de sus cumpleaños y qué piensan hacer para sus fiestas. Yo estoy con* ***mi mejor amigo*** *y le cuento de lo que a mí me gustaría hacer para mi cumpleaños. . .Le pregunto a* ***mi amigo****. . .* 'I am in biology class. Everyone is talking about their birthdays and what they are planning on doing for their parties. I am with **my best friend** and I tell him what I would like to do for my birthday. . .I ask **my best friend**. . .'
  - Older: *Hay una* ***señora mayor*** *que está ayudando a entrenarme y enseñarme todo lo que tengo que saber. . .Le pregunto a* ***la señora****. . .* 'There is an **older lady** who is helping to train me and teach me everything that I have to know. . .I ask **the lady**. . .'
- *Gender of interlocutor:*
  - Male: *Tengo un* ***compañero de cuarto*** *que es un poco antisociable. . .Le digo a* ***mi compañero de cuarto****. . .* 'I have a **(male) roommate** that is a little antisocial. . .I told my **(male) roommate**. . .'
  - Female: *Hay un perro muy lindo y empiezo a hablar con su* ***dueña****, una chica de mi misma edad. . .Le pregunto a* ***la chica****. . .* 'There is a very cute dog and I start to talk to its **(female) owner**, a girl around my same age. . .I ask **the girl**. . .'

Additionally, data were coded for the following extralinguistic variable in Table 4.

Table 4. Extralinguistic variables coded.

Variable	Variants
Speaker gender	Male
	Female

4. Results

4.1. Production Results

4.1.1. Overall Distribution

First, the overall distribution of 2PS from DCT responses by learners is presented below in Table 5.

Table 5. Rates for 2PS production from the DCT by L2 learners.

2PS	Number	Percentage
Tuteo	106	75.2%
Ustedeo	32	22.7%
Voseo	3	2.1%
Total	141	100%

From Table 5, it can be observed that *tuteo* was produced the most and to a great extent. *Ustedeo* was produced the second most, while *voseo* was rarely used. For the sake of comparison, Table 6 shows $2P^3S$ rates for native speakers from Medellin from Denbaum-Restrepo and Restrepo-Ramos' (2022) data.

Comparing the results for learners to those of native speakers, it can be observed that the learners share the same hierarchy for rates of 2PS. However, there are great differences. Mainly, native speakers have much more balanced usage between all three 2PS, whereas learners rely heavily on *tuteo* with some *ustedeo* and barely any *voseo*.

Table 6. Rates of 2PS for native speakers (from Denbaum-Restrepo and Restrepo-Ramos (2022)).

2PS	Number	Percentage
Tuteo	148	40.5%
Ustedeo	158	37.4%
Voseo	149	22.0%
Total	452	100%

For the learners, there were only three *voseo* tokens altogether, which were produced by two participants. The three *voseo* tokens are presented below:

(3) "Amiga, ¿por qué le **contás** al profesor que yo engañé? **Tú sabías** que no tenía tiempo para estudiar. Entonces eso es muy mal para mí y mis estudios". 'Friend, why do **you tell** (V) the professor that I cheated? **You knew** (T) that I didn't have time to study. So that is very bad for me and my studies.' (Participant 4: American female, Spanish level 9)

(4) "*Hola chica, estos son mis amigos y no quiero que perderlos entonces porfa. Entonces, porfa* ***mudá*** *a otra parte de la gente*". 'Hi girl, these are my friends and I don't want to lose them, so please. So, please **move** (V) to another part of the crowd.' (Participant 4: American female, Spanish level 9)

(5) "*¿Por qué no* ***venís*** *a nuestra reunión?*" 'Why don't **you come** (V) to our meeting?' (Participant 7: Dutch male, Spanish level 11)

As can be seen in examples (3)–(5), all *voseo* tokens were only verbal morphology; no tokens of the explicit pronoun "*vos*" were produced by these learners.

4.1.2. Linguistic and Extralinguistic Constraints for Production of 2PS

To examine which linguistic and extralinguistic variables constrain production of 2PS in learners of Spanish in Medellin, a multivariate mixed-effects regression was carried out in Rbrul (Johnson, 2009). We used Rbrul because the program allows us to examine the effect of independent variables and include random effects, while displaying the results in terms of factor weights, a popular and easy-to-read output in studies of language variation. Since there were only three tokens of *voseo*, *vos* was excluded from the analysis and the dependent variable of 2PS produced only had two levels, consisting of either *tuteo* or *ustedeo*. Speech act, interlocutor gender, interlocutor relationship, interlocutor age, and speaker gender were run as fixed effects, while participant and DCT item were included as random effects. The application value was *ustedeo*. Table 7 shows the results of this analysis, along with the AIC (Akaike information criterion) score—an indicator of quality of a given model.

From Table 7, it can be observed that speaker gender and interlocutor relationship were significant predictors of 2PS usage. Interlocutor age approached significance. Interlocutor gender and speech act were not selected as significant by the statistical model. The most predictive variable was speaker gender, with female speakers favoring *ustedeo* while males favored *tuteo*. For interlocutor relationship, distant interlocutors favored *ustedeo* and intimate interlocutors favored *tuteo*. Although only approaching significance, older interlocutors favored *ustedeo* while same age interlocutors favored *tuteo*. A summary of native speaker data from Denbaum-Restrepo and Restrepo-Ramos (2022) is presented in Table 8. In Denbaum-Restrepo and Restrepo-Ramos (2022), three different analyses were carried out (*vos* vs. *tú*; *vos* vs. *usted*; *usted* vs. *tú*). See Denbaum-Restrepo and Restrepo-Ramos (2022) for details of the analyses for the native speaker data.

Table 7. Multivariate mixed effects regression: *ustedeo* vs. *tuteo*.

Input		0.226	
AIC		141.143	
Total Tokens		137	
	Factor Weight	**Percentage**	**Number**
Speaker Gender		***p* < 0.001**	
Female	0.67	32.9%	60
Male	0.34	11.9%	67
Interlocutor Relationship		***p* = 0.027**	
Distant	0.65	31.4%	70
Intimate	0.35	13.4%	67
Interlocutor Age		*p* = 0.080 *	
Older	[0.62]	27.8%	79
Same Age	[0.38]	15.5%	58
Interlocutor Gender		*p* = 0.296 *	
Male	[0.57]	27.3%	5582
Female	[0.43]	19.5%	
Speech Act		*p* = 0.315 *	
Command	[0.69]	42.3%	26
Declarative	[0.48]	20.6%	34
Question	[0.48]	18.3%	60
Indirect Command	[0.35]	11.8%	17

* These *p*-values were not selected as significant by the statistical model.

Table 8. Summary of variables that significantly favor the usage of each 2PS for native speakers.

Variable	2PS Favored
Interlocutor Age	
Same Age	*tuteo*
Older	*ustedeo*
Speaker Gender	
Male	*voseo, ustedeo*
Female	*tuteo*
Speech Act	
Discourse Marker	*voseo, tuteo*
Question	*voseo, tuteo*
Commands	*voseo*
Indirect commands	*tuteo, ustedeo*
Statement	*tuteo*

Table 8. *Cont.*

Variable	2PS Favored
Speaker Age	
Young	*voseo*
Intermediate	*voseo, tuteo*
Old	*tuteo, ustedeo*
Interlocutor Relationship	
Intimate	*voseo*
Distant	*tuteo* (compared to vos), *ustedeo*
Subject Pronoun Expression	
Pronoun and verbal inflection	*voseo*
Verbal inflection only	*tuteo*

As can be seen in Table 8, several variables significantly condition the usage of 2PS for native speakers in Medellin including interlocutor age, speaker gender, speech act, speaker age, interlocutor relationship, and subject pronoun expression. For both learners and native speakers, speaker gender and interlocutor relationship significantly constrain 2PS variation. Specifically, for both groups, distant interlocutors favored *ustedeo* and intimate interlocutors favored *tuteo*. In terms of speaker gender, learners show the opposite tendency of that of native speakers. For learners, female speakers favored *ustedeo*, but for native speakers, male speakers favored *ustedeo*.

4.2. Perception Results

In this section, the perception results from the matched guise task will be presented by adjective (kind, honest, professional, close to interlocutor). An ANOVA was run utilizing a post hoc Tukey test in order to compute pairwise comparisons between learners and native speakers. The mean values for each 2PS for learners will be compared to those of native speakers from Medellin from the Denbaum-Restrepo and Restrepo-Ramos (2022) study. First, results are presented for the personal characteristic of 'kind' in Figure 3.

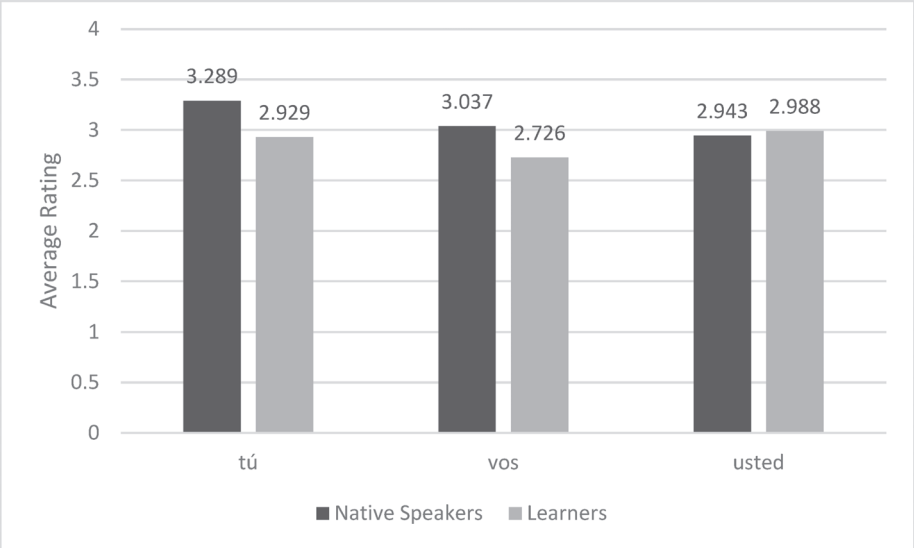

Figure 3. Ratings for 'kind' from the matched guise task.

Learners rated *ustedeo* the highest, slightly higher than *tuteo*, and they rated *voseo* the lowest. Native speakers also rated *tuteo* the highest but *ustedeo* the lowest, with *voseo* in the middle. There were no significant differences between learners and native speakers for any of the 2PS ($p = 0.530$ for *tuteo*; $p = 0.807$ for *voseo*; $p = 1.000$ for *ustedeo*).

As can be observed in Figure 4, for the characteristic of 'honest', learners rated *voseo* the highest, followed by *tuteo* and finally *ustedeo*. Native speakers rated *tuteo* the highest, followed by *voseo* and finally *ustedeo*. Once again, there were no significant differences between learners and native speakers for any of 2PS ($p = 1.000$ for tuteo; $p = 0.9666$ for voseo; $p = 1.000$ for ustedeo).

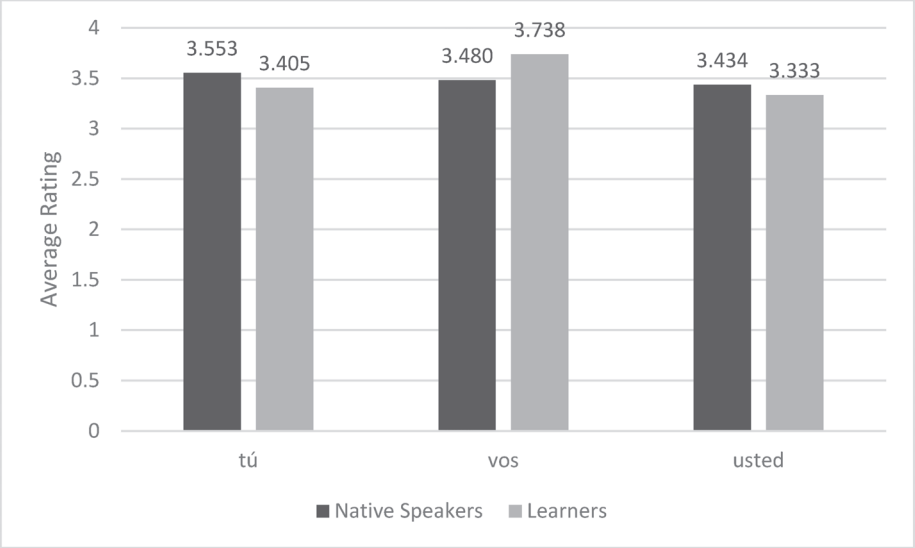

Figure 4. Ratings for 'honest' from the matched guise task.

As observed in Figure 5, similar to their ratings for 'kind', learners rated *voseo* as the most professional, followed by *tuteo* and lastly *ustedeo*. In contrast, native speakers rated *ustedeo* as the most professional, followed by *tuteo*, while *voseo* was rated the least professional. There were no significant differences between learners and native speakers for *ustedeo* ($p = 0.956$). However, learners rated *tuteo* ($p = 0.038$) and *voseo* ($p < 0.001$) as significantly more professional than native speakers. Finally, results for closeness to the interlocutor are presented in Figure 6.

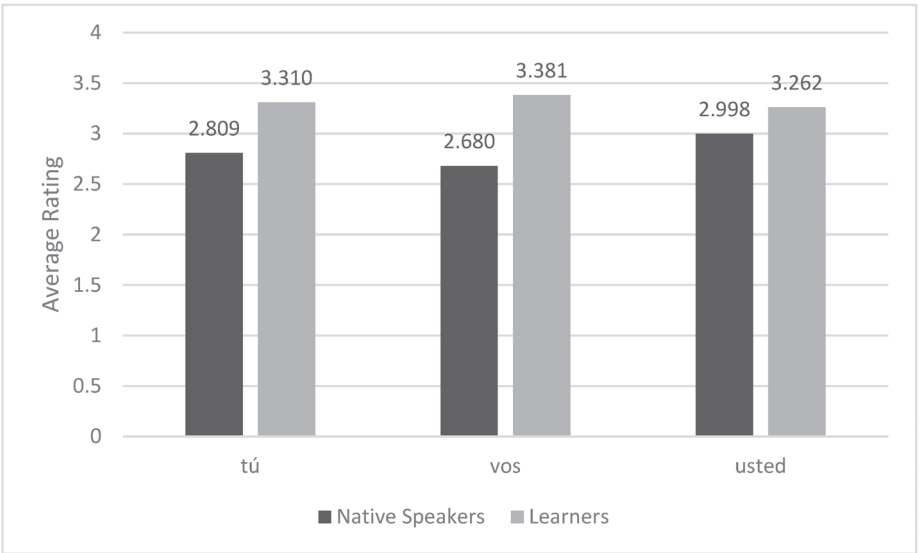

Figure 5. Ratings for 'professional' from the matched guise task.

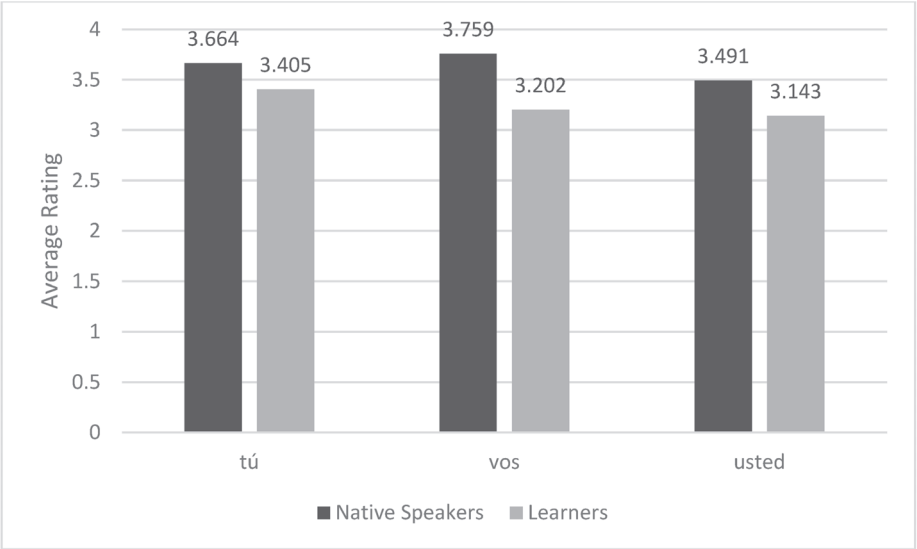

Figure 6. Ratings for 'close to the interlocutor' from the matched guise task.

As can be observed in Figure 6, learners rated *tuteo* as representing the closest relationship with the interlocutor, followed by *voseo*, which was rated slightly higher than *ustedeo*. In contrast, native speakers rated *voseo* as the closest to the interlocutor, followed by *tuteo* and lastly *ustedeo*. There were no significant differences between learners and native speakers for *tuteo* ($p = 0.963$) or *ustedeo* ($p = 0.605$). Native speakers rated *voseo* significantly higher than learners ($p = 0.008$).

5. Discussion

The first research question inquired about learners' frequencies of each 2PS compared to native speakers of Medellin. It was observed that learners' rates of 2PS production had the same hierarchy as natives from Medellin: *tuteo* > *ustedeo* > *voseo*. However, learners' percentages differed greatly from native speakers due to a tremendous overgeneralization of *tuteo* and almost non-existent usage of *voseo*. These findings corroborate results from previous studies, as Villarreal (2014) and Lyster and Rebuffot (2002) also found an overgeneralization of *tú* in Spanish and *tu* in French, respectively. The fact that *voseo* was practically non-existent shows that it is very slow to be acquired, which can be especially noted given that these learners have been exposed to *voseo* in Medellin for an average of 7.7 months. Thus, even with this great amount of exposure and input, learners are still barely producing *voseo*. Ringer-Hilfinger (2012) observed similar results for the acquisition of a phonological variable: the interdental fricative /θ/. She observed only six tokens of /θ/ out of 209 potential contexts—only 2.8%. These six instances of /θ/ were produced by the same two learners. These results are very similar to *voseo* rates in the present study, as there were only three *voseo* tokens or 2.1% of all 2PS production by learners. Like in Ringer-Hilfinger (2012), *voseo* was only produced by two speakers. While this was the case for these two studies, in general, dialectal variants have been reported to be acquired after study abroad programs, especially in longer ones. For example, in George's (2018) study, learners who studied abroad in central Spain increased their production of *vosotros* overall over one semester. Lindley (2021) found that many learners who studied abroad in Spain for one year increased their usage of [θ] and [χ]. Likewise, in short-term study abroad programs (7 weeks), Kanwit et al. (2015) and K. L. Geeslin et al. (2010) observed that learners moved toward native speakers in terms of rates and linguistic constraints for the present perfect (Valencia, Spain) and *leísmo* (León, Spain) respectively. In contrast to these findings, other variables have been found to not be acquired to the same extent.

Denbaum-Restrepo (2023b) found that only two out of the six participants increased their rates of wh-question non-inversion after studying abroad in the Dominican Republic for 6 weeks. In addition, Linford et al. (2021) observed that learners studying abroad in the Dominican Republic for one semester did not adopt s-weakening.

The second research question sought to examine what linguistic and extralinguistic constraints condition the use of 2PS for learners compared to native speakers. For learners, the two variables that were found to condition 2PS usage were speaker gender and interlocutor relationship, while interlocutor age approached significance. These three variables were also significant predictors constraining 2PS usage for native speakers. However, in addition to these three variables, speech act, speaker age, and subject pronoun expression were also significant for native speakers. Furthermore, out of the two constraints that were significant for learners, speaker gender showed the opposite trend to native speakers, in that female learners favored usage of *usted*, whereas male native speakers favored *usted*. Thus, it appears that these learners' systems are still developing, as learners have still not acquired all the linguistic and extralinguistic constraints that condition native speaker usage.

It should be noted that they have not yet acquired speech act as a conditioning factor, which is a very important variable for native speaker usage of 2PS. As their proficiency and exposure increases, learners should start to acquire more constraints to pattern more like the native speakers. Previous research on other variables has found that as time spent studying Spanish increases, the linguistic constraints that condition the use of variable structures start to pattern more like those of native speakers. For example, K. Geeslin et al. (2015) found that learners' linguistic constraints conditioning subject expression did not match those of native Spanish speakers until the graduate student level, with fourth-year students starting to approach native-like patterns. In addition, Kanwit (2017) observed the same pattern of linguistic constraints lining up with respect to those of native speakers for the L2 acquisition of future-time reference. Kanwit (2018) describes an underlying rule system that is dynamic and changing over time. Previous research has found that pragmatic constraints are acquired later than linguistic ones (K. Geeslin, 2003; Woolsey, 2008). For example, Woolsey (2008) found that pragmatic factors, such as frame of reference (comparing someone to themself) and experience with the referent, were acquired late. In fact, frame of reference was acquired so late that even learners of the highest proficiency level had not acquired it (i.e., use *estar* in these situations). Given these findings from previous research, it makes sense that learners take longer to acquire speech act, since it is a pragmatic constraint. Learners' systems are dynamic and changing, including non-native-like generalizations of certain structures. In the earlier stages of development, a learner's system reflects variation that shows different patterns than those of native speakers. We see this both with rates of 2PS with the learners in this study as well as with their developing systems, demonstrated by the linguistic and extralinguistic constraints. Learners do, however, pattern like native speakers for interlocutor relationship and interlocutor age, in that distant and older interlocutors favored *ustedeo*. In terms of the variable speaker gender, for learners, it was found that females favored *ustedeo*, whereas for natives, it was observed that males favored *ustedeo*. This could be due to that fact that for the learner group, the average proficiency level of their current Spanish course was slightly higher for females than for males (females = 8.67; males = 7.67). Previous research has not necessarily observed this before, but it is an expected association.

The third research question sought to examine learners' perceptions of each 2PS compared to that of native speakers. Findings showed that learners' perceptions toward each 2PS differ from native speakers, but only to a significant extent for two attributes. For the characteristic of 'kind', learners rated *ustedeo* the highest, and for 'honest', they rated

voseo the highest. In contrast, native speakers rated *tuteo* the highest for both adjectives. However, it should be noted that there were no significant differences found between learners and native speakers for 'kind' and 'honest'. For 'professional', learners rated *voseo* highest, whereas native speakers classified *ustedeo* as the most 'professional.' Last, for 'closeness', learners had the following hierarchy: *tuteo* > *voseo* > *ustedeo*. Meanwhile native speakers' evaluations were as follows: *voseo* > *tuteo* > *ustedeo*. Although learners show some differences from native speakers, in the majority of cases, there were no significant differences. For closeness to the interlocutor, learners are still not aware that *voseo* is perceived as the closest 2PS by native speakers. This finding has a similar connection to many sociolinguistic variables previously studied in L2 French and Spanish, as learners are required to establish close relationships with locals, as measured by the social networks created, in order to develop native speakers' rates of production (Kennedy Terry, 2017, 2022; Trentman, 2017). Moreover, the role of proficiency goes in line with close relationships and social networks, as found by Pozzi (2021). However, learners do perceive *voseo* as more intimate than *ustedeo*. Thus, although learners have not fully acquired local nuances of 2PS—they have partially acquired them. These findings resonate with previous research (Grammon, 2024) that has dealt with L2 evaluation of the appropriateness of dialectal variants linked to a specific speech community.

Putting these results together with findings from usage data from the DCT, we can conclude that although learners perceive *vos* to a somewhat native-like extent and the role that it plays in the local variety, learners do not actually employ *voseo*. This lack of usage of *voseo* could be due to various reasons. First, *vos* is a very local variant—a strong identity marker for Paisas (Jang, 2013). Even though learners are immersed in the culture and the language for extended amounts of time, they may need even more time to acquire it. Specifically, they may need more time to feel a part of the Paisa culture and to acquire a sort of Paisa identity. Second, another possible explanation is that it is possible that even though learners are aware of *voseo*, they might not want to acquire it. Even though they are living in Medellin, they might choose to not identify with Paisa Spanish for various reasons. Pozzi (2021) affirms that the amount of time a learner spends with their local social network corresponds to a strong predictor of *voseo* use at the end of a study abroad program. Along with other factors such as the type of task and mood, the effect is higher in high-proficiency learners. Moreover, it has been shown that learners do acquire sociolinguistic variation during their studies abroad, including in countries where languages other than Spanish are spoken officially. Kennedy Terry (2017, 2022) also found that some French phonological variation patterns are significantly predicted by a higher score in their social network scale, which shows the predictive power of social networks in the acquisition of sociolinguistic variables in French. The effect of social networks was also suggested in English-speaking learners of Arabic during a study abroad program (Trentman, 2017). In her examination of the interdental fricative with Spanish learners studying in Spain, Ringer-Hilfinger (2012, p. 442) affirms that "learners make a conscious choice to use the variety that best suits their needs". Similar to the present study, learners may not feel that they need to use *vos* in order to survive in Medellin, and they might consciously decide not to use it. Lastly, *vos* is a new form for learners and has its own verbal conjugations. It might seem too complex for learners at this point in their acquisition process. Furthermore, *voseo* might not be included in their explicit language instruction, as Spanish language classes often do not cover instruction of *voseo*, at least in US classrooms (Shenk, 2014).

6. Conclusions and Pedagogical Implications

The present study lays a foundation for examining the L2 acquisition of a tripartite 2PS system in the study abroad context. It further elucidates previous research on the

L2 acquisition of 2PS, since tripartite systems are more complex and have many more nuances to acquire, as is especially the case of 2PS in Medellin due to the dual *usted* (Denbaum-Restrepo & Restrepo-Ramos, 2024). The current study incorporates language perceptions into the study of the L2 acquisition of 2PS, which allows for further insight into the usage of 2PS. Results showed that learners produce 2PS in the same hierarchy as native speakers but in a much different way, since they overgeneralize *tuteo* and barely produce *voseo*. In addition, learners' 2PS usage is constrained by two variables: speaker gender and interlocutor relationship. Finally, learners' perceptions of 2PS are similar to native speakers for the attributes of 'honest' and 'kind' but show some significant differences for 'closeness to the interlocutor' and 'professional'. Altogether, we can conclude that although learners perceive *vos* and the role that it plays in the local variety to a somewhat native-like extent, learners do not actually use it.

Findings from the present study have pedagogical implications. As language instructors, we should expose learners to sociolinguistic diversity starting in beginning language classes. For example, as part of our language courses, we can expose learners to various Spanish dialects and various contexts of use for each one, including informal and formal contexts. There are several ways this can be achieved, including inviting guest speakers to come talk with students in the class, watching videos or television series, or organizing virtual conversation partners with students from different countries. In addition, sociolinguistic data can be presented to students. This would include both teaching basic dialectology to students, which would aid in comprehension, and explaining to students the idea of linguistic stereotypes and the fact that the way one group of people speaks is not actually indicative of their intelligence level. Finally, practicing listening comprehension of various dialects could result in an increase in positive attitudes toward those dialects (see e.g., K. L. Geeslin & Schmidt, 2018).

While the present study examined the L2 acquisition of 2PS in Medellin at one point in time, it would be illuminating for future studies to collect data longitudinally in order to observe the development of learners' 2PS usage and perception over time and how it changes from before they have exposure to monodialectal input throughout their stay. While the present study lays the foundation for the study of the L2 acquisition of 2PS in the study abroad context, our participants consisted of a very heterogeneous group, including countries of origin, L1s and L2s, Spanish level, and time living in Medellin. It should be acknowledged that the current study is quite limited due to the number of participants and the fact that factors such as proficiency and time/exposure are only indirectly accounted for. Therefore, future studies should attempt to investigate the L2 acquisition of 2PS with a more homogenous group of learners and with a larger number of participants. The present study examined learners' perceptions of 2PS, but it would also be productive for further studies to examine other individual differences, such as social interaction with native speakers and learners' identities and attitudes toward Paisa culture. It could also be interesting for future studies to examine learners' understanding of *voseo* and the extent to which it is included in language instruction, whether that be in learners' countries of origin or in Medellin. It is our hope that the present study serves as a reference for future work on the acquisition of *vos* as a sociolinguistic variable, while fostering additional studies on this phenomenon in Paisa Spanish and elsewhere.

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Notes

1 "Honest", "Kind", and "Professional" were chosen following the matched guise literature of using attributes of likeability and intelligence/employability (K. L. Geeslin & Schmidt, 2018) ("honest" and "kind" for likeability and "professional" for intelligence/employability).

2 Matched guise stimuli were not necessarily separated maximally from their audio clip pairs in order to fully randomize the audio clips and avoid a pattern for their presentation. Due to the several instances of repetition, it was common that participants recognized the fact that the same stimuli were repeating. Participants completed the matched guise in a language center in Medellin on the researchers' computers and their own personal headphones.

3 The transcriptions were completed by both authors. If there were ever any doubts about the productions, the other author was consulted.

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Article

Exploring the Relationship Between Preference and Production as Indicators of L2 Sociophonetic Competence

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Abstract: Sociophonetic competence—a component of sociolinguistic and, thus, communicative competence—has been explored in both learner production and perception. Still, little is known about the relationship between learners' ability to account for sociophonetic variability in the input and their likelihood to produce such variation in output. The present study explores 21 learners' preference for a specific sociophonetic variant on an aural preference task and the same learners' patterns of production of the variant in semi-spontaneous speech. The sociolinguistic variable considered is Spanish intervocalic /d/, variably realized as approximant [ð] or deleted based on numerous (extra)linguistic factors, including the speaker's gender, the vowel that precedes /d/, and the grammatical category and lexical frequency of the word containing /d/. Results reveal that preference for and production of a deleted variant increased with learner proficiency. Moreover, regardless of proficiency, learners generally selected deleted /d/ more than they produced it, suggesting that sociophonetic awareness precedes reliable production. Learners' production of a deleted variant was influenced by the preceding vowel, the grammatical category of the word containing /d/, and the word's lexical frequency, and sensitivity to these predictors was especially observed as proficiency increased. Learners produced the deleted variant more after /o/, in adjectives and nouns, and in frequent words.

Keywords: sociolinguistic variation; second language acquisition; sociophonetic competence; /d/ deletion; task effects

1. Introduction

Sociolinguistic competence encompasses, among other things, knowledge about linguistic forms whose use varies systematically according to linguistic, geographic, social, and contextual factors. Such knowledge contributes to language users' ability to interpret social cues embedded in linguistic messages and to deploy their own linguistic resources to manage social relationships (e.g., Geeslin & Long, 2014). The present study focuses on sociophonetic variation—that is, sociolinguistic variation at the level of the sound. A growing body of research has documented second language (L2) learners' ability to produce sociophonetic variation as well as their ability to perceive it (as detailed in next section); nevertheless, few studies have explored the relationship between such perception and production. Understanding how perception or interpretation of such variation is related to learners' productive patterns is important for understanding the process of developing sociophonetic competence more broadly. This project explores the relationship between learners' ability to account for sociophonetic variation in the input and their likelihood of producing such variation in their own speech.

2. Research Background

2.1. L2 Sociophonetic Competence

Sociolinguistic competence—a key component of communicative competence (Canale & Swain, 1980; see Kanwit & Solon, 2023)—comprises knowledge about language use and discourse rules that enables language users to employ and interpret language for social meaning. Agile communication in a L2 thus often requires (deploying) knowledge about variable, context-dependent features of that language in both comprehension and expression. Research on L2 variation often distinguishes between Type I or vertical variation—that is, developmental variation between "targetlike" and "nontargetlike" forms (e.g., variation between "went" and regularized *"goed", respectively)—and Type II or horizontal variation—that is, variation in response to linguistic, social, and geographic factors that is also found in native (i.e., first-language (L1)) speech (Adamson & Regan, 1991; Rehner, 2002). It is acquisition of Type II variation that is of interest in the present study. Although much early work on Type II variation focused on L2 morphosyntactic variation, a sizable and growing body of research has analyzed L2 sociophonetic variation, exploring aspects related both to the production and perception of variation and of specific variable features of the target language.

2.1.1. Production

Research on L2 sociophonetic competence has often explored learners' production of particular target language variants, typically reporting rates of and constraints on use of regional variants or of sociolinguistically variable phonetic features (e.g., L2 Spanish: Peninsular /θ/: Geeslin & Gudmestad, 2008; George, 2014; Knouse, 2012; Pope, 2023; Ringer-Hilfinger, 2012; Peninsular [χ]: George, 2014; Pope, 2023; /s/ weakening: Escalante, 2018b, 2021; Geeslin & Gudmestad, 2008; /d/ deletion: Solon et al., 2018; Argentine sheísmo/zheísmo: Pozzi, 2022; Pozzi & Bayley, 2021; L2 French: /l/ elision: Howard et al., 2006; Kennedy Terry, 2017; Regan et al., 2009; schwa realization: Kennedy Terry, 2022; Uritescu et al., 2002; phrase-final vowel devoicing: Dalola & Bullock, 2017; L2 Arabic: Cairene [g]: Raish, 2015). Many studies have found low rates of production of region-specific or socially constrained variants by L2 learners. For example, after a semester abroad in Madrid, Ringer-Hilfinger (2012) reported that her 15 learners produced Peninsular Spanish /θ/ in only 2.8% of possible contexts, and all of these cases were produced by just two learners (with the other 13 learners exhibiting no use of /θ/). Geeslin and Gudmestad (2008) found that only five of their 130 L2 Spanish learners exhibited any /s/ weakening, a common regionally and socially constrained variable phonetic feature of Spanish. Nevertheless, other studies uncover substantial learner adoption of region-specific variation. For example, Pozzi and Bayley's (2021) learners exhibited high rates of use of Argentine *sheísmo/zheísmo* (i.e., [ʃ] or [ʒ] for the graphemes <ll> and <y>) by the end of their semester in Buenos Aires (i.e., in 89% of possible contexts as compared to 4.7% of contexts at the beginning of their sojourn). Similarly, the learners investigated in Raish (2015) used the Cairene [g] in 62% of possible contexts by the end of their time in Cairo (either one semester or a full academic year). Thus, rates of adoption of phonetic variants that encode regional and/or social information vary widely across languages, learners, and segments.

2.1.2. Perception

Research has also explored L2 sociophonetic competence with regard to learners' perceptual abilities and patterns. Research in this vein has explored such topics as the categorical perception of a regional variant (e.g., whether L2 learners categorize a regional variant as the intended phoneme or as a variant of another phoneme; Del Saz, 2019; Escalante, 2018b; Schmidt, 2018), the influence of regional/dialectal input on L2 phonemic

discrimination (e.g., Baker & Smith, 2010; Smith & Baker, 2011); L2 comprehension as related to dialectal phonetic/phonological features present in speech (e.g., Schmidt, 2009; Schoonmaker-Gates, 2017; Trimble, 2014); L2 learners' dialect identification abilities (e.g., Schmidt, 2022; Schoonmaker-Gates, 2017); and learner attitudes toward and attachment of meanings to specific varieties (Geeslin & Schmidt, 2018; Grammon, 2024; Schmidt & Geeslin, 2022) and variants (Chappell & Kanwit, 2022). In general, this body of research points to learners' development of perceptual and interpretive acumen related to a wide range of sociophonetic variants and information as learner proficiency and experience with the language increase. The question remains, however, of how learners' abilities to perceive and interpret sociophonetic variation are related to their production patterns.

2.1.3. Perception–Production Link

To our knowledge, only one study to date has explored both perception and production of a sociolinguistically variable phonetic feature in the same sample. Escalante (2018a) examined the perception and production of Spanish /s/ weakening by 14 humanitarian volunteers during a year abroad in coastal Ecuador. Spanish /s/ weakening refers to the production of a, typically coda, Spanish /s/ as [h] or [Ø] as in *casas* "houses" produced as [kasah] or [kasa] rather than [kasas]. Escalante found that nearly all learners exhibited gains in perceiving aspirated /s/ (i.e., [h]) as /s/ during time abroad. Nevertheless, in terms of production, only 4.6% of all /s/ tokens collected over the entire year abroad exhibited weakening, and 74.1% of all weakened tokens were produced by just one speaker. Of this finding, Escalante wrote, "This suggests that gains in perception are not necessarily reflective of gains in production and that learners can still show evidence of gains in sociolinguistic competence even if they do not produce the local [variants]" (p. v).

Understanding the link between production and perception is a central goal of the larger field of L2 speech research (Nagle & Baese-Berk, 2022). For example, L2 speech researchers, broadly speaking, are interested in understanding such questions as whether there is a certain "threshold" of perception accuracy needed before the production of a certain phone improves, whether changes in perception are reflected in production, and whether the link between perception and production (as well as the strength of such a link) changes over time. When applied to questions related to the acquisition of *variation* in sounds, similar as well as different questions are of interest. For example, we want to know whether perception of a particular variant is necessary before a learner might produce such a variant. We also ask whether there is a perception threshold that is necessary prior to the appearance of the variant in speech and, if so, what type of perceptual knowledge or ability is necessary. Finally, we are interested in whether learners who show perceptual knowledge of a variant also produce it and why or why not. Research investigating this perception-production link has the potential to shed light on how the acquisition of sociophonetic variation proceeds. This study thus aims to explore these questions using the perception and production of variable Spanish intervocalic /d/ deletion as the sociophonetic variant of interest.

2.2. Spanish Intervocalic /d/ Deletion

2.2.1. L1 Spanish

The target feature explored in this study is the variable realization of Spanish intervocalic /d/ as an approximant (e.g., *cantado* "sung" as [kan̪táðo]) or deleted (e.g., [kan̪táo]). Deletion of Spanish intervocalic /d/ in L1 Spanish has been widely investigated in the sociolinguistic literature since at least the mid-1980s and is well documented in numerous regional varieties of Spanish. Table 1 summarizes several major findings regarding the presence and rate of intervocalic /d/ deletion in Spanish.

Table 1. Rates of intervocalic /d/ deletion across studies and varieties of Spanish.

Regional Variety of Spanish	Source	Rate of /d/ Deletion
Caracas, Venezuela	Díaz-Campos and Gradoville (2011)	10%
Málaga, Spain	Bedinghaus and Sedó (2014)	15%
Panama City, Panama	Cedergren (1973)	20%
San Juan, Puerto Rico	López Morales (1983)	21%
Lima, Peru	Caravedo (1990)	23%
Santiago, Dominican Republic	Alba (1999)	23%
Córdoba, Spain	Uruburu Bidaurrázaga (1994)	33%
Las Palmas de Gran Canaria, Spain	Samper Padilla (1990)	38%

This literature has shown that L1 Spanish patterns of intervocalic /d/ deletion versus realization are affected by various linguistic factors (e.g., grammatical category, phonetic context, lexical frequency) as well as social factors (e.g., speaker gender, socioeconomic status). For example, deletion has been shown to be favored in past participles (e.g., Blas Arroyo, 2006; Díaz-Campos & Gradoville, 2011; Samper & Padilla, 1996), in more frequent lexical items and types (e.g., Alba, 1999; Bedinghaus & Sedó, 2014; Blas Arroyo, 2006; Díaz-Campos & Gradoville, 2011; Moya Corral & García Wiedemann, 2009), and when the /d/ is preceded by /a/ and followed by /o/ (though the confounding role of past participles has not always been fully considered; Moya Corral & García Wiedemann, 2009). In terms of social factors, deletion has been found to be more prevalent among men (e.g., Samper & Padilla, 1996; Uruburu Bidaurrázaga, 1994) and among speakers of lower socioeconomic status (e.g., Alba, 1999; D'Introno & Sosa, 1986; Uruburu Bidaurrázaga, 1994; although see an exception in Hernández-Campoy & Jiménez-Cano, 2003).

2.2.2. L2 Spanish

Research that has explored the acquisition of /d/ among L2 learners of Spanish has mainly focused on the targetlike production of /d/ as an approximant as compared to as a stop (often in conjunction with /b/ and /g/; e.g., Alvord & Christiansen, 2012; Face & Menke, 2009; Lord, 2010; Zampini, 1994). A few studies have explored the acquisition of intervocalic /d/ variation. With regard to production, Solon et al. (2018) compared /d/ production in the speech of 13 advanced L2 learners of Spanish to that of 13 L1 Spanish speakers. They found that the advanced L2 learners did exhibit /d/ deletion in their speech but at much lower rates than the L1 Spanish speakers (i.e., 18.0% vs. 44.5%, respectively). They also observed a wide range of rates of deletion among individual learners (i.e., from 1.2% to 68.4%). With regard to the factors observed to influence /d/ realization versus deletion, Solon et al. found that L1 Spanish speakers' patterns were affected by several independent variables including preceding and following vowels, grammatical category of the word containing /d/, and stress. The L2 learners, in contrast, were mostly influenced by the frequency of the lexical items containing /d/.

To better understand learners' sociophonetic competence, Solon and Kanwit (2022) used an aural contextualized preference task to explore whether L2 learners exhibit sensitivity to the sociolinguistic constraints on /d/ realization versus deletion in Spanish (regardless of learners' production of the phone). The 50 learners participating in Solon and Kanwit (2022) read a "movie script" representing a dialogue between two characters (siblings). When prompted, they would listen to two different "takes" of an isolated word within one particular scene of the movie. The two takes were identical except for the realization of the intervocalic /d/ (one included an approximant realization of /d/, the other a deleted /d/). Participants were instructed to imagine that they were film directors and had to select which of the two takes (or stimuli) best fit within the scene (or context). Contexts

were systematically manipulated to control for/explore speaker gender (man, woman), grammatical category of the word containing /d/ (noun, adjective, verb, participle), vowel preceding /d/ (high /i/, low /a/), and lexical frequency of the word containing /d/ (high versus low as determined following Erker & Guy, 2012; lexical items constituting 1% or more of the tokens with relevant characteristics in the Davies' Corpus del español: Web/Dialects (Davies, 2016) were categorized as high-frequency; those constituting less than 1% were categorized as low frequency). More specific information about the task can be found in Solon and Kanwit (2022). Results revealed that five learners categorically selected realized /d/, and one learner categorically selected the token with a deleted /d/. All other learners exhibited variation in their selection. Table 2 summarizes the rates of selection of realized versus deleted /d/ across the three learner proficiency groups.

Table 2. Selection of responses in the contextualized preference task in Solon and Kanwit (2022); adapted from Solon and Kanwit (2022, p. 814).

Group (by Proficiency Level)	*n*	Realized /d/		Deleted /d/		Total	
All participants		*k*	%	*k*	%	*k*	%
Low	13	314	75.5	102	24.5	416	100
Mid	13	283	68.5	130	31.5	413	100
High	24	513	67.0	253	33.0	766	100
Categorical participants removed							
Low	12	282	73.4	102	26.6	384	100
Mid	11	220	62.9	130	37.1	350	100
High	21	449	67.0	221	33.0	670	100

As shown in Table 2, as learner proficiency increased (as determined by a Spanish elicited imitation task (EIT); Solon et al., 2019), so too did rates of selecting the deleted /d/. Table 3 summarizes the results of Solon and Kanwit's mixed-effects binomial regression to explore the factors constraining learner selection of deletion.

Table 3. Summary of Solon and Kanwit's (2022) regression results.

Learner Group	Speaker Gender	Preceding Vowel	Grammatical Category	Lexical Frequency
Low	(man)	** (/i/)	* (verbs, adjectives)	(frequent)
Mid	* (man)	(/a/)	(adjectives, participles)	(frequent)
High	*** (man)	*** (/a/)	* (adjectives, participles)	(not frequent)

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; categories listed are those with higher rates of deletion of /d/.

As shown in Table 3, the factors constraining learners' selection of a deleted /d/ differed by learner proficiency group, with the most advanced learners in the sample selecting a deleted /d/ more often when the speaker was a man, when the vowel preceding /d/ was the low vowel /a/, and when the word containing /d/ was an adjective or a participle.

3. Present Study

The present study extends Solon and Kanwit (2022) and broadly seeks to understand how patterns of preference relate to what the same learners produce in oral speech. For example, to what extent do learners who prefer deleted /d/ in certain contexts also produce it (and in what contexts), and do learners who produce deleted /d/ in speech also show preference for the variant in an offline task? Specifically, this study is guided by four research questions:

1. With what frequency do (a subset of) the L2 learners of Spanish from Solon and Kanwit (2022) produce a deleted intervocalic /d/?
2. What factors constrain production of the deleted variant for these learners?
3. To what extent are differences observed (in frequency and constraining factors) as proficiency increases?
4. What is the relationship between preference for and production of deleted intervocalic /d/ across individual learners and as proficiency increases?

3.1. Materials and Method

3.1.1. Participants

The participants of the present study are 21 learners of Spanish; they represent the subset of the 50 learners examined in Solon and Kanwit (2022) who completed both the preference task and a production task (described in the next subsection). Learners from each of the three proficiency groups described in Solon and Kanwit (2022) are represented in this subset, although the present study will operationalize proficiency via EIT scores as a continuous measure rather than grouping learners categorically to more fully and faithfully capture and account for learner proficiency (Pfenninger & Festman, 2021). Table 4 summarizes the language background characteristics of the present subset of learners, also making reference to their proficiency group in Solon and Kanwit (2022). All names provided are pseudonyms and reflect the gender identity of the participant.

Table 4. Summary of participant characteristics.

Participant	Group from Solon and Kanwit (2022)	EIT Score	Age	Institutional Level	Years Studying Spanish	Months Abroad
Jen	Low	37	18	2	8	0.25
Anna	Low	46	21	3	10	0
Emma	Low	52	23	3	2	0
Kara	Low	59	20	2	11	0.5
Ashley	Low	62	77	2	8	14
Jeff	Mid	81	21	4	9	1
Lauren	Mid	87	19	3	5	0.75
Ty	Mid	93	32	4	5	22.5
Stacy	Mid	99	24	5	6	0
Joe	High	104	22	5	7	1
Maura	High	109	28	5	15	24
Tiff	High	110	28	5	14	20
Maddie	High	112	30	5	19	10
Lainey	High	112	28	5	11	14
Tim	High	112	28	5	15	15
Alexa	High	114	28	5	12	4
Kenzie	High	114	33	5	19	21
Mark	High	114	31	5	18	26
Steph	High	116	27	5	15	4.5
Jade	High	119	27	5	14	18
Zadie	High	120	32	5	11	9
Group *M* (*SD*)		93.91 (26.78)	28.43 (12.02)	4.19 (1.17)	11.14 (4.80)	9.79 (9.35)

Note. Institutional level is represented numerically with 200-level university courses as 2, 300-level as 3, 400-level as 4, and graduate-level as 5.

If participants reported time abroad, they were asked to provide information about where abroad they had spent time and for how long (e.g., "Spain for one month, Dominican Republic for 3 months"). Nevertheless, because learners varied in the level of

regional detail they provided and because /d/ deletion is a widespread phenomenon across Spanish varieties and its prevalence varies both across and within Spanish-speaking regions, we consider time abroad holistically rather than according to time in specific (e.g., /d/-deleting) regions.

3.1.2. Tasks

Participants completed a language background questionnaire; a monologic narrative "role-play" task; the 32-item contextualized preference task with an aural component, described previously and in detail in Solon and Kanwit (2022); and the Spanish EIT (Bowden, 2016; Ortega et al., 2002; Solon et al., 2019). In the narrative (production) task, participants were presented with five scenarios one at a time and were asked to speak as much as they could about each scenario. They were given 1 min to read each prompt and 3 min and 45 s to speak. The task was programmed into Powerpoint, and the slides automatically advanced at the end of the allotted time; this was instituted to encourage participants to speak until the slide advanced (rather than having participants advance themselves when finished). An example prompt is included in Appendix A.

3.1.3. Coding

All tokens of intervocalic /d/ in the narrative data were identified and coded by the first author as deleted versus realized; in the present study, we did not distinguish between different types of /d/ realization (e.g., stop versus approximant). Additionally, the contexts in which the /d/s occurred were coded for preceding vowel (/a/, /e/, /i/, /o/, /u/), grammatical category (adjective, noun, participle, verb, pronoun, adverb), and lexical frequency (frequent, not frequent; determined in the same manner as Solon & Kanwit, 2022, described previously). Note that, because this was production, the possible categories for the extralinguistic factors investigated were broader than those included in the preference task and were determined by what appeared in the production data.

3.1.4. Analysis

Frequency analyses were used to account for rates of production of realized versus deleted /d/ across learner groups. A mixed-effects regression was run to determine significant predictors constraining production of one variant over another (i.e., deletion over realization). Finally, to answer the overarching question of the present study, we compared learners according to EIT score, time abroad, rate of production of deletion, and rate of selection of deletion. We performed Pearson correlations to see if any pairs of the four aforementioned characteristics correlated, and we supplement this analysis with qualitative consideration of how individual learners fit these overarching patterns.

4. Results

We begin by reporting the overall rates of realization and deletion for our three participant groups. We then turn to the role of independent predictors in the conditioning of deletion in a mixed-effects regression. Finally, we make comparisons between the production data and the previously reported preference data.

4.1. Production

Overall, our learners produced 1665 tokens of intervocalic /d/ (*M* number of /d/ tokens per participant = 79.33; range 9–150): 88.7% of these (1477/1665) were realized and 11.3% (188) were deleted. Individual rates of deletion across the 21 participants ranged from 0% (with four learners categorically producing a realized /d/) to 29.49%.

To determine the possible role of contextual factors on /d/ deletion, we then performed a mixed-effects binomial regression. The four categorical participants were ex-

cluded from the regression analysis, which thus includes the 17 learners who demonstrated variation. Of the predictors considered, four were significant and included in the best-fit model: preceding vowel, grammatical category, lexical frequency, and the learner's EIT score. Other predictors that were considered but were not significant included the learner's rate of selection of /d/ (continuous value) in the prior study's preference task, the number of months the learner had spent abroad (continuous value),[1] and the learner's gender. The individual participant and the lexical item in which the word appeared were entered as random effects. We also tested for interactions among the predictors, none of which were significant.

The output of the best-fit model is summarized in Table 5. Deletion is the variant being predicted, so positive estimates and *z*-values indicate greater deletion, whereas negative values indicate more realization. Values further from 0 indicate stronger effects. Standard errors refer to the level of variability within a particular category. *P*-values below 0.05 indicate that a particular comparison is statistically significant and correspond with 95% confidence intervals that do not cross 0 (i.e., that have two positive or two negative values). For each categorical predictor, one category serves as the reference level and is the point of comparison for the other value(s). For instance, in the second bolded results row, we see that lexical items classified as "not frequent" have a negative estimate and *z*-value, meaning that relative to frequent lexical items, non-frequent were significantly less likely to result in deleted /d/.

Table 5. Mixed-effects binomial regression of learner /d/ deletion (reference level: realization).

Variable	Estimate	95% CI	*SE*	*z*	*p*
(Intercept)	−3.43	[−4.13, −2.73]	0.36	−9.59	<0.001
EIT Score (continuous)	**0.05**	**[0.02, 0.08]**	**0.01**	**3.49**	**<0.001**
Lexical Frequency					
Frequent	*reference*				
Not frequent	**−1.16**	**[−1.86, −0.46]**	**0.36**	**−3.25**	**0.001**
Preceding Vowel					
/a/	*reference*				
/o/	0.95	[−0.06, 1.96]	0.52	1.85	0.065
/e/	−0.24	[−1.21, 0.73]	0.50	−0.49	0.624
/u/	**−1.67**	**[−2.81, −0.53]**	**0.58**	**−2.87**	**0.004**
/i/	**−2.17**	**[−3.05, −1.28]**	**0.45**	**−4.80**	**<0.001**
Grammatical Category					
Adjective	*reference*				
Noun	0.16	[−0.67, 0.99]	0.42	0.38	0.705
Participle	−0.33	[−1.49, 0.82]	0.59	−0.57	0.572
Verb	−0.38	[−1.47, 0.71]	0.56	−0.69	0.493
Pronoun	**−1.10**	**[−1.81, −0.38]**	**0.37**	**−3.00**	**0.003**
Adverb	−1.70	[−3.55, 0.16]	0.94	−1.80	0.073
Random Effects	Variance	*SD*	*N*		
Participant	0.54	0.74	17		
Word	1.04	1.08	323		

N = 1541; Log. Likelihood: −418.76; AIC = 865.52, BIC = 940.28, $R^2_{marginal}$ = 0.31, $R^2_{conditional}$ = 0.53. Note: Bolding highlights statistically significant comparisons.

Learners' Spanish proficiency, as measured by their EIT score (a continuous value), significantly predicted /d/ deletion. The positive value of the estimate (0.05) and *z* (3.49) indicate that as EIT score increased the likelihood of deleting /d/ also increased. Figure 1 illustrates this pattern, plotting the relationship between EIT score (with 95% confidence

interval shaded) and deletion of /d/ from our model. The upward slope of the line follows the fact that as EIT score increased, so too did the rate of deletion. Nevertheless, the negative values on the *y*-axis for deletion of /d/ serve as a reminder that even learners who were more likely to delete (i.e., had higher EIT scores), still produced /d/ more often than they deleted it. For instance, a value of −4 on the *y*-axis indicates that learners were four times less likely to delete /d/ than to produce it (i.e., 20% deletion and 80% realization). EIT score did not significantly interact with any of the other predictors. Nevertheless, as we explain the results of the regression, we also present figures for the other predictors that show further information divided according to EIT score ($p < 0.001$), given our interest in visualizing the extent to which learners showed sensitivity to contextual linguistic factors as EIT scores increased. As will be seen in the subsequent figures, the greater rate of deletion exhibited by learners with higher EIT scores was usually the result of a more extreme effect for categories that favored deletion for our learners overall.

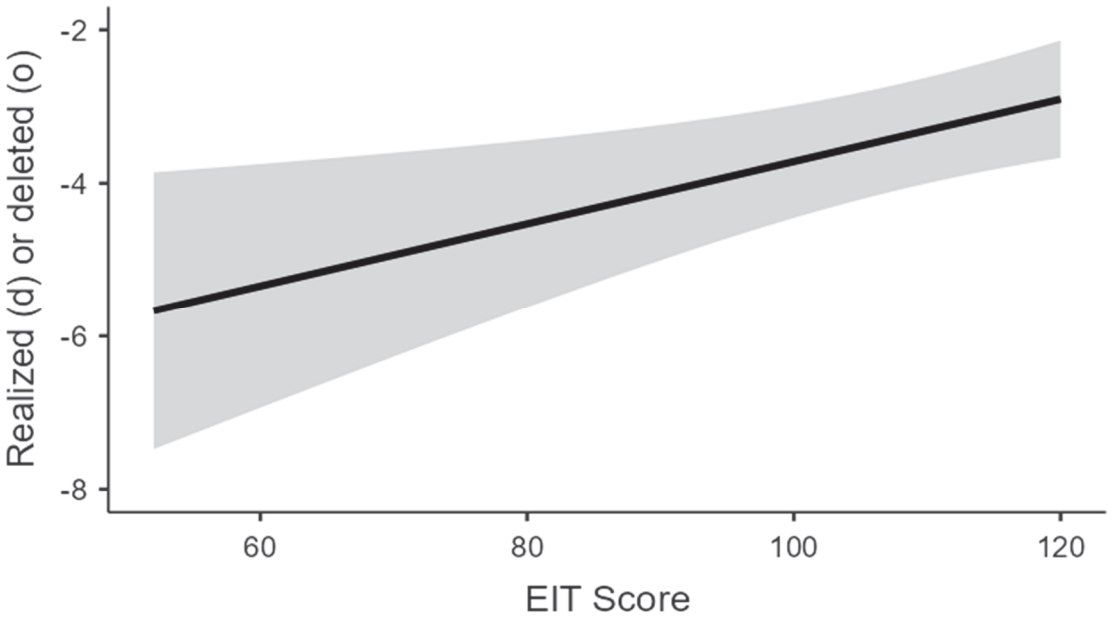

Figure 1. Production of /d/ by EIT score (95% confidence interval shaded).

Lexical frequency was also a significant predictor of /d/ deletion; learners were significantly less likely to delete /d/ when words were infrequent as compared to frequent (Table 5). Figure 2 illustrates this pattern, while showing additional detail according to EIT score. Namely, although learners overall deleted /d/ significantly more with frequent lexical items, we can see that this was especially driven by learners with higher EIT scores. When learners' EIT scores were more than one standard deviation above the mean, we note that they showed the highest likelihood of deleting /d/ with frequent lexical items, followed by learners whose EIT scores were within one standard deviation of the EIT mean, and lastly by learners whose EIT scores were more than one standard deviation below the mean.

With respect to the preceding vowel (Table 5), compared to the reference level of a preceding /a/, learners deleted /d/ significantly less when the preceding vowel was /i/ or /u/. Comparisons with /e/ and /o/ were not significant. A closer look using EIT score (Figure 3) revealed that the higher rates of deletion for preceding /o/ and low rates for /u/ and /i/ were again driven by learners with EIT scores more than one SD above the mean and those within one SD of the mean, although once again, differentiation was greater for the former group, who showed especially high deletion with preceding /o/.

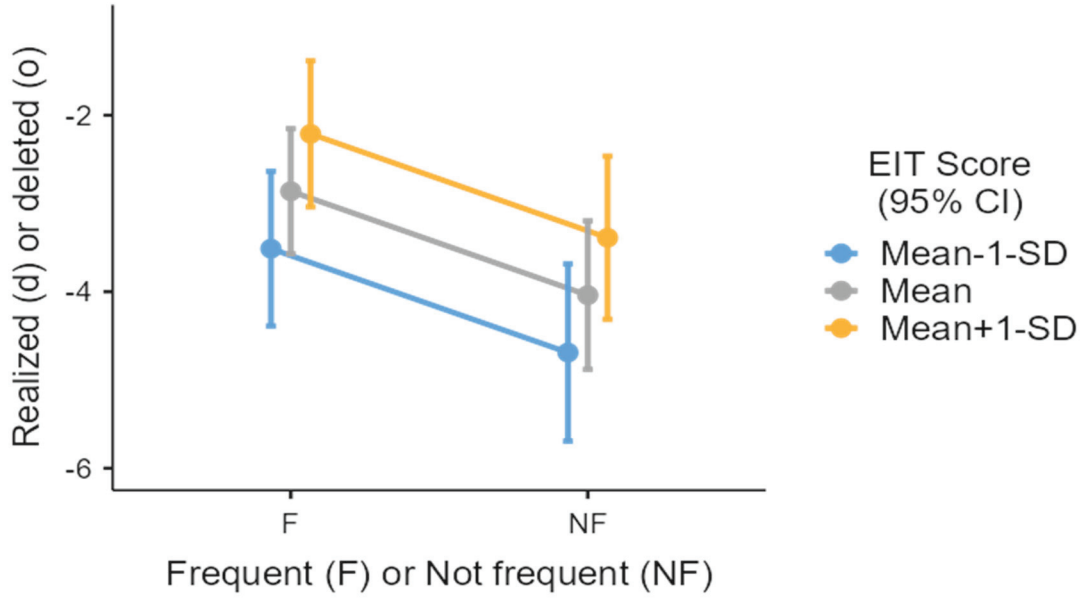

Figure 2. Production of /d/ by lexical frequency across EIT scores.

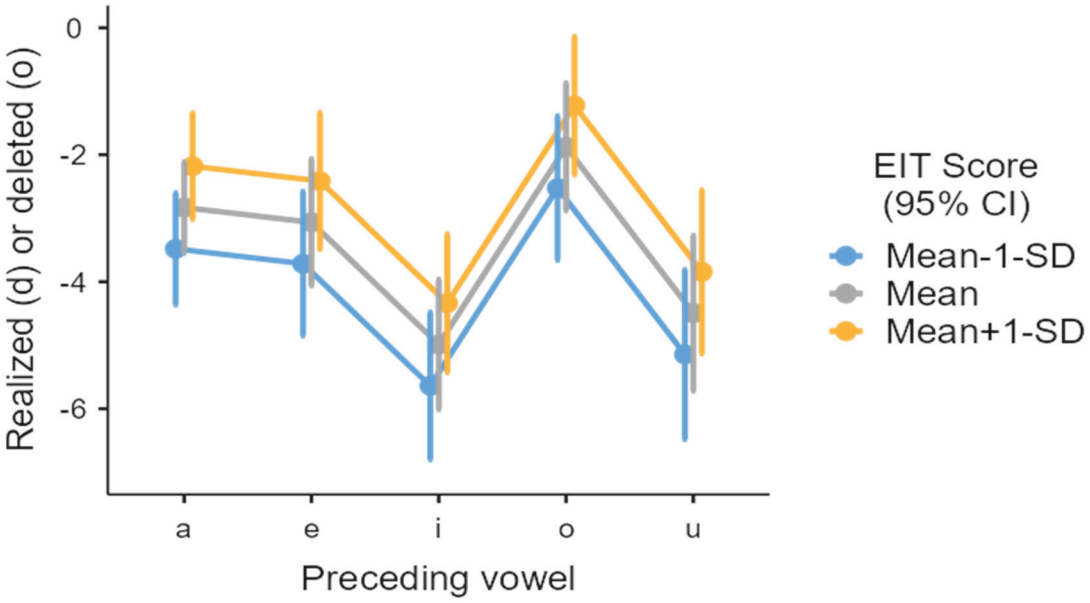

Figure 3. Production of /d/ by preceding vowel across EIT scores.

For the final predictor, the grammatical category of the word that contained /d/, learners deleted /d/ significantly less when the word was a pronoun, compared to when it was an adjective (Table 5). They also deleted less when the word was an adverb (although this comparison was not statistically significant: $p = 0.073$). Figure 4 illustrates that deletion occurred at the highest rates with adjectives and nouns and at the lowest rates with adverbs, pronouns, and verbs, and that learners with EIT scores more than one standard deviation above the mean again showed greater differentiation across categories, especially driving the overall higher rates of deletion in adjectives and nouns.

We now turn to consideration of individual participants across our production and preference data.

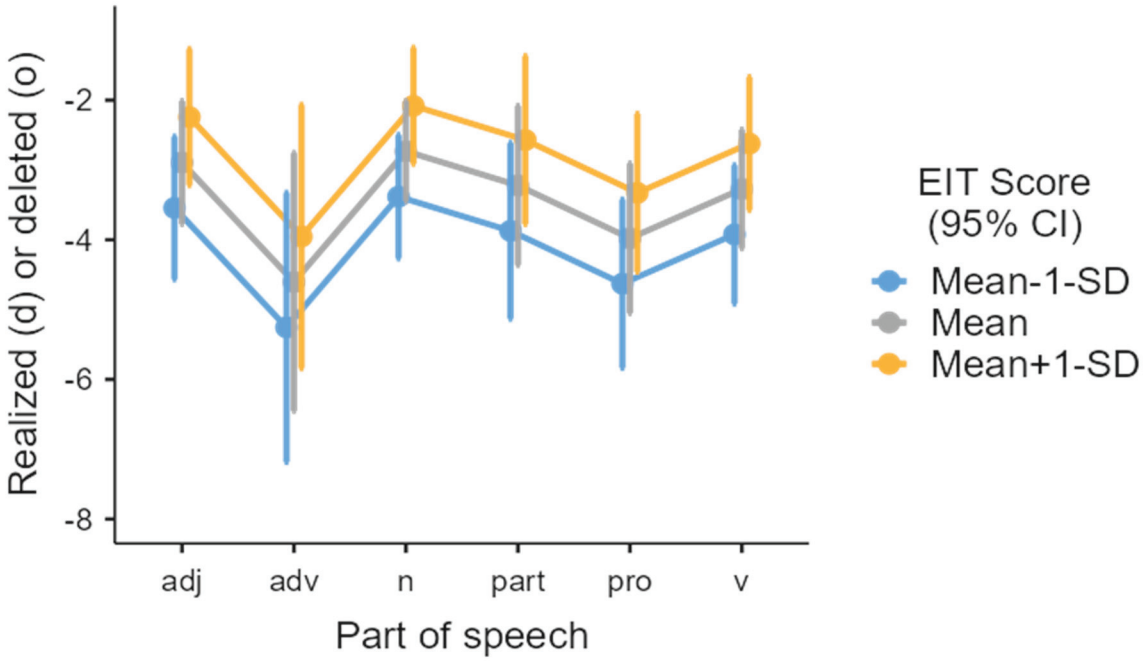

Figure 4. Production of /d/ by grammatical category across EIT scores.

4.2. Preference–Production

In Table 6, we present individual data arranged in ascending order of EIT score. For the 21 participants, we tested for the Pearson correlation between the following variables in pairs: EIT score, production of deletion, selection of deletion, and months abroad. We note the result of each test and provide visualizations in the subsequent scatterplot figures.

Table 6. Individual rates of production, selection, and other attributes.

Group	EIT Score	Participant	Deletion Rate, Production	Deletion Rate, Selection	Months Abroad
Low	37	Jen	0.00%	31.25%	0.25
Low	46	Anna	0.00%	15.63%	0
Low	52	Emma	2.82%	0.00%	0
Low	59	Kara	0.00%	37.50%	0.5
Low	62	Ashley	0.00%	12.50%	14
Mid	81	Jeff	1.23%	0.00%	1
Mid	87	Lauren	8.33%	46.88%	0.75
Mid	93	Ty	6.25%	0.00%	22.5
Mid	99	Stacy	4.26%	34.38%	0
High	104	Joe	3.28%	21.88%	1
High	109	Maura	18.02%	25.00%	24
High	110	Tiff	29.49%	31.25%	20
High	112	Maddie	2.44%	40.63%	10
High	112	Lainey	22.68%	34.38%	14
High	112	Tim	13.91%	28.13%	15
High	114	Alexa	11.76%	18.75%	4
High	114	Kenzie	8.75%	0.00%	21
High	114	Mark	12.24%	50.00%	26
High	116	Steph	24.11%	50.00%	4.5
High	119	Jade	13.40%	31.25%	18
High	120	Zadie	12.75%	37.50%	9

For one, Table 6 serves as a reminder that participants who did not produce deleted /d/ were those with the lowest EIT scores. We can also note that, in general, participants

with the highest EIT scores tended to produce deleted /d/ at least 10% of the time, although Maddie was an exception to this pattern, with a rather high EIT score (112) and a rate of deletion of just 2.44%. Figure 5 shows a scatterplot of the learners by EIT score and rate of production of deletion. A Pearson correlation revealed a significant, positive correlation between EIT score and production of deletion, $r(19) = 0.68$ [95% CI: 0.35, 0.86], $p < 0.001$. Consequently, in Figure 5, we can note how the learners who produced higher rates of deletion tended to have EIT scores above 100, with those scoring above 109 the only to show rates of deletion at or above 8.75% (see Table 6). This positive correlation is exemplified by learners who had high (although not necessarily the very highest) EIT scores and produced deletion at relatively high rates. For instance, the three highest individual rates of production of a deleted /d/ belonged to Tiff (29.49%), Steph (24.11%), and Lainey (22.68%). Their respective EIT scores of 110, 116, and 112 were high albeit still not at the extreme end of the EIT scale in the high group.

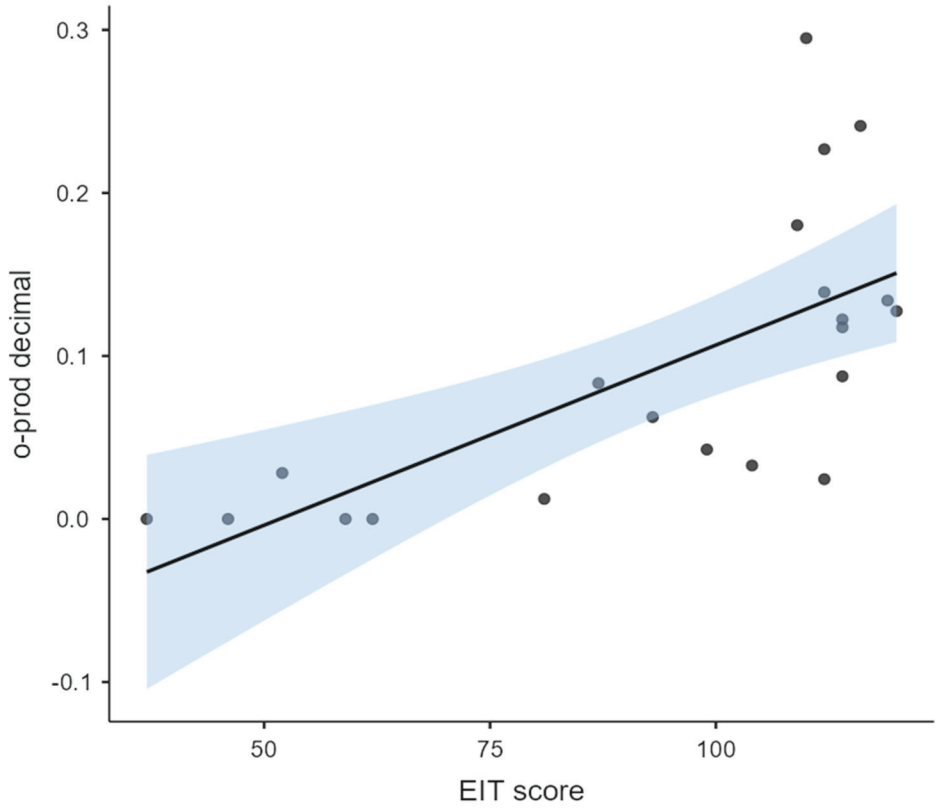

Figure 5. Scatterplot of individual participants by EIT score and rate of deletion (production task).

Although greater rates of selection of deletion in the preference task tended to occur with higher EIT scores (i.e., a positive relationship), there was no significant correlation between EIT score and selection of deletion, $r(19) = 0.32$ [95% CI: −0.12, 0.66], $p = 0.153$. In Figure 6, we can observe generally higher selection of deletion for the higher EIT scores; however, note that some learners with high scores selected little deletion and some learners with lower scores yielded rather high rates of deletion, contributing to the overall lack of correlation.

Learners with higher rates of production of deletion tended to also have higher rates of selection, although there was no significant correlation between production and selection of deletion, $r(19) = 0.38$ [95% CI: −0.06, 0.70], $p = 0.088$ (see Figure 7). For instance, the aforementioned Tiff, Steph, and Lainey, who most produced deleted /d/, selected deletion in 31.25%, 50.00%, and 34.38% of contexts, respectively, which were among the higher rates of selection but only one of these was at the highest rates, with another learner (Mark)

also selecting the deleted variant at a rate of 50% and a pair of other learners with rates above 40%. Mark exhibited deletion in production at a rate of 12.24%, and the two other learners with selection rates above 40% also had lower production rates (Maddie, at only 2.44% deleted /d/ in production, and Lauren at 8.33%; see again Figure 5 for production), helping to further exemplify why production and selection did not significantly correlate. It is worth noting that these two learners with disparate production and preference rates were not among those with the most study abroad experience (Lauren, at only 0.75 months, and Maddie, a bit more in the middle of the group at 10 months).

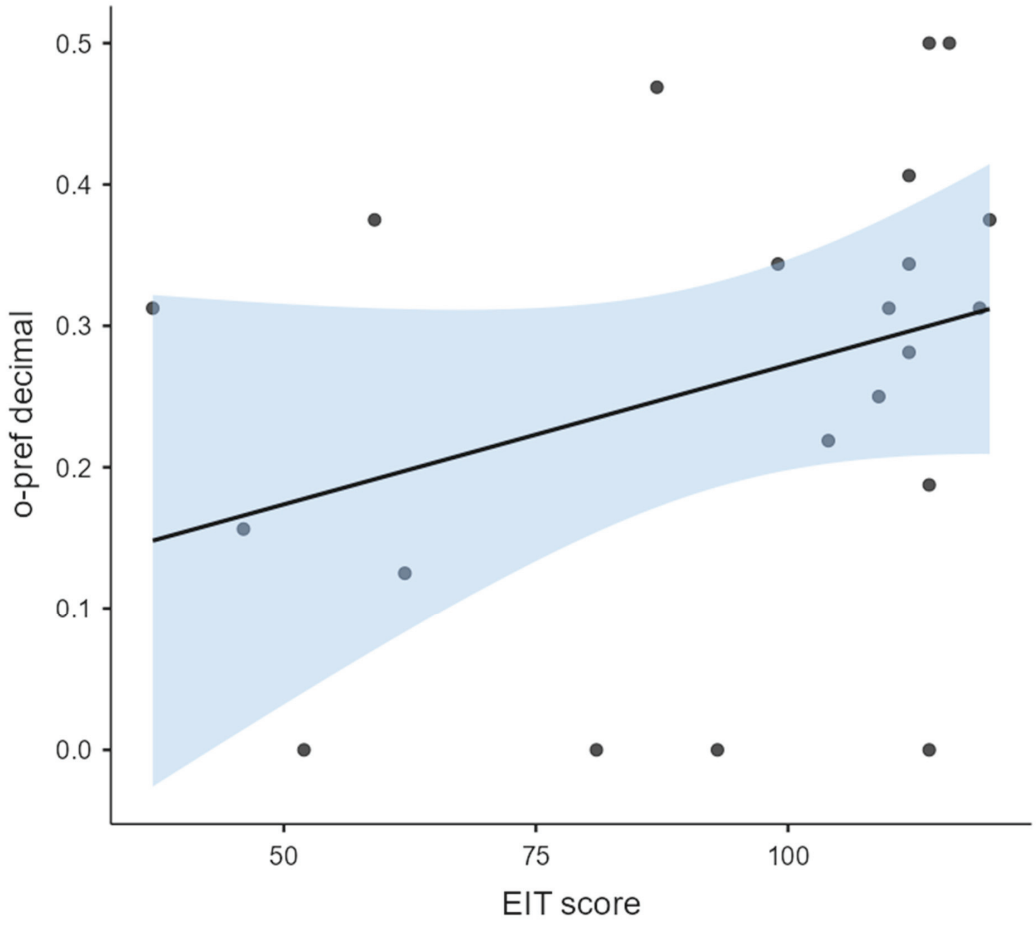

Figure 6. Scatterplot of individual participants by EIT score and rate of selection of deletion (preference task).

With respect to experience abroad, there was a significant, positive correlation between production of deleted /d/ and months spent abroad, $r(19) = 0.51$ [95% CI: 0.09, 0.77], $p = 0.020$. This is supported, for instance, by the learners with little to no abroad experience who did not produce deletion or who did so at very low rates (see Table 6 and lower left corner of Figure 8). In fact, learners with less experience abroad tended to be those with the lower EIT scores and with very low rates of deleted /d/: Jen, Anna, Emma, Kara, and Jeff (though Jeff's EIT score was rather higher than the others). Of course, despite the correlation between time abroad and production of deleted /d/, some of the learners with the longer stays abroad (Ty (22.5 months) and Kenzie (21 months)) showed low rates of production of deleted /d/.[2]

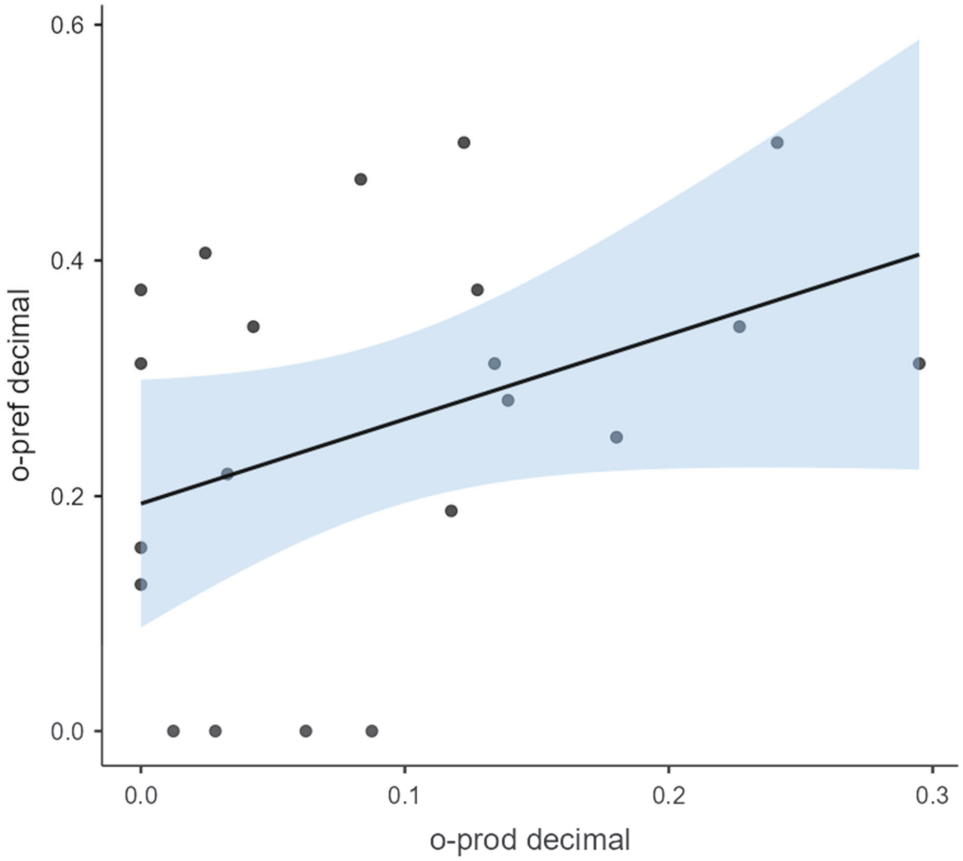

Figure 7. Scatterplot of individual participants by rate of production and rate of selection of deletion.

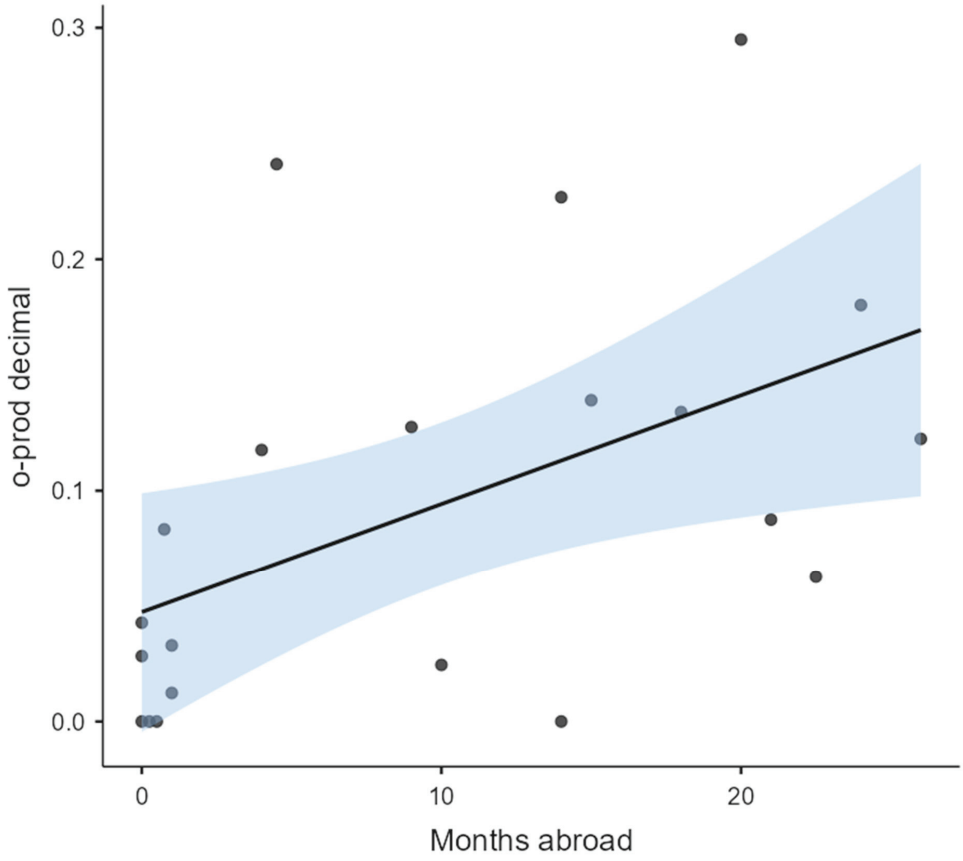

Figure 8. Scatterplot of individual participants by months abroad and rate of production of deletion.

Unlike production and time abroad, selection and time abroad did not correlate (and actually showed a negative, albeit nonsignificant, relationship), $r(19) = -0.19$ [95% CI: −0.45, 0.42], $p = 0.934$ (see Figure 9). The lack of relationship between months abroad and rate of selection of deletion is exemplified in a few individual cases. For instance, Mark, who was among the highest choosers of deletion, at 50%, was the learner who had spent the greatest amount of time abroad (26 months), whereas Steph, the other learner who selected deletion at 50%, had relatively limited experience abroad (4.5 months). On the other end of the spectrum, some learners with little to no experience abroad selected deletion upwards of 30% of the time (e.g., Jen, Kara, Stacy), and the aforementioned longer sojourners—Ty and Kenzie (both above 20 months)—showed zero preference for deleted /d/.[3]

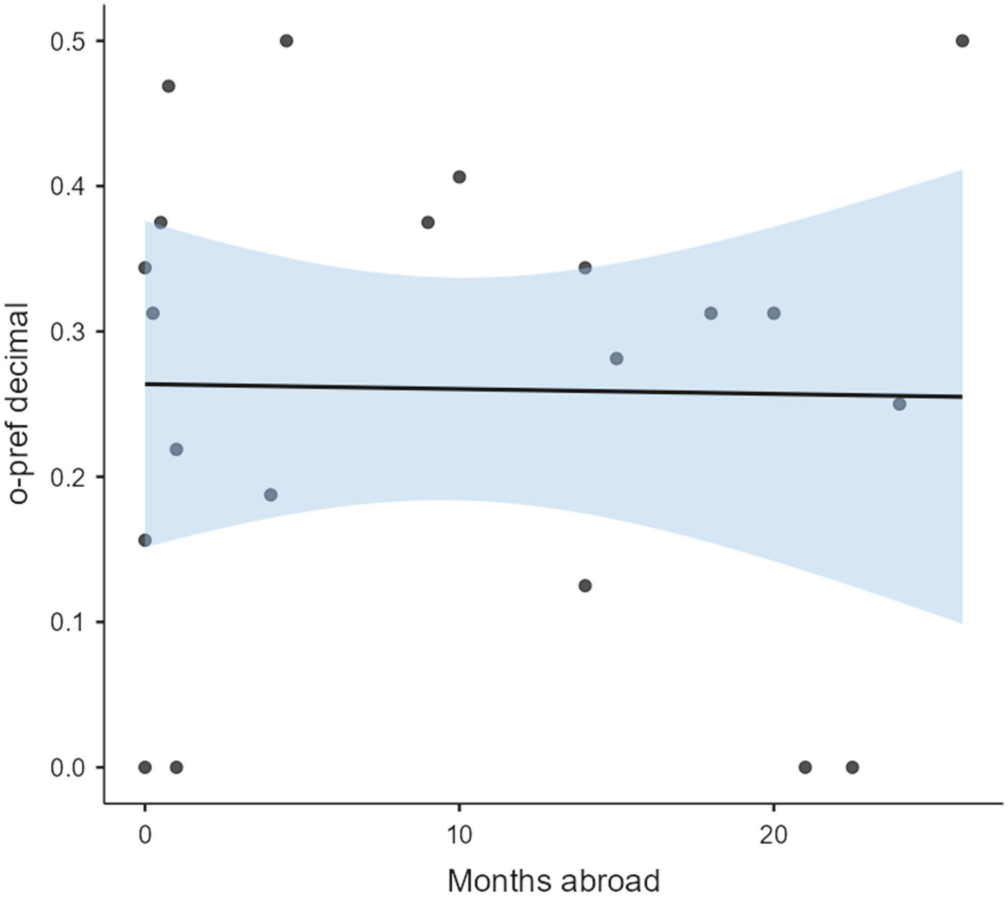

Figure 9. Scatterplot of individual participants by months abroad and rate of selection of deletion.

5. Discussion

The overarching goal for the present study was to explore and elucidate the potential link between L2 perception of a sociolinguistic variant and the production of that variant by the same L2 learners. The results of the study suggest some indication of awareness of intervocalic /d/ variation in Spanish by L2 learners prior to the appearance of a deleted /d/ in production. In the present study, four of the five least proficient learners selected a deleted /d/ at least occasionally in the preference task even though they did not produce it at all. Likewise, most learners exhibited higher rates of selection of /d/ deletion than production of a deleted variant. These results echo Escalante's (2018a) findings of perceptual knowledge of Spanish /s/ weakening among her learners without concomitant production of this phenomenon. Nevertheless, rate of selection of /d/ deletion was not a significant predictor of production of a deleted /d/ (and was thus not included in the best-fit regression model reported in Table 5). There were also four different learners who exhibited some

deletion in their production task despite never selecting a deleted variant in the preference task. As such, the present results cannot point to a concrete perception/selection threshold that precedes production. Still, learner awareness of /d/ deletion appears to generally precede deletion of /d/, which is also predicted by learner language proficiency and correlated with time spent abroad. Scatterplots and individual analyses helped reveal that, among our learners, only those with EIT scores at or above 109 produced deletion at or above 8.75% of the time.

Similar to the preference task data in Solon and Kanwit (2022), the linguistic factors of preceding vowel, grammatical category, and lexical frequency influenced learner production patterns of /d/ in largely expected directions. Interestingly, frequency was a significant predictor of the production of a deleted variant in the present study (similar to Solon et al., 2018, where frequency was the most influential factor for learners' /d/ deletion patterns), even though frequency did not significantly constrain learners' selection of a deleted versus a realized /d/ in the preference task (Solon & Kanwit, 2022). These findings not only point to potential important differences in the development of perceptual and productive knowledge and abilities as related to sociophonetic variation but also to the importance of eliciting different types of data. Understanding the development of a L2 sociolinguistic repertoire requires data that examine numerous aspects of learners' understanding, abilities, patterns, and environment. By recognizing the value of broad and numerous research tools and the limitations of each, we can better paint a picture of L2 learners' sociolinguistic systems and how they develop.

It is important, thus, to recognize some of the limitations of the present study to better contextualize what can be taken away from the present results and what provides motivation for future investigation. Most notably, although the present study's comparison of preference and production data provides unique insight into the potential relationship between these two components of sociophonetic knowledge, we want to acknowledge that the two types of data do not represent ideal comparison partners. First, selecting a deleted variant uttered by another speaker is a different process than producing a deleted /d/ in one's own speech, especially if /d/ deletion indexes social information related to prestige or social class (e.g., Alba, 1999; Díaz-Campos et al., 2011; D'Introno & Sosa, 1986; Uruburu Bidaurrázaga, 1994). Future research that explores what /d/ deletion means to L2 speakers will offer additional insight into the relationship between perception and production. Subsequent work could thus make connections between social meanings that learners associate with /d/ deletion and the ways in which learners act as agents in choosing or using deleted /d/ to express affiliation with particular groups or to assert relevant aspects of their identities (for instance, see Grammon, 2024 for connections among social meaning, language attitudes and ideologies, and L2 usage of morphosyntactic features of Cuzco Spanish). Second, given the extensive control of the preference task and the relative open-endedness of the production task, we would not necessarily expect rates of selection to mirror rates of production, and differences observed therein can be due not just to differences in the development of these types of knowledge/abilities but also to differences between the tasks. Thus, we encourage caution in the interpretation of the higher rates of selection than production as conclusive evidence that perceptual abilities precede productive ones; higher rates are likely also influenced by the fact that in the preference task, learners must select one of only two choices on any particular task item.

We stand by the novelty and contribution of the preference task for the different perspective it can offer regarding learners' sociophonetic knowledge. Nevertheless, it is important to acknowledge that, given the preference task's design, we have no information about how learners are categorizing a deleted /d/ (even when they do select it). Likewise, we did not collect information regarding learners' knowledge of the lexical items into which

the /d/ tokens were embedded. Given that participants in Solon and Kanwit (2022) were making decisions on a small number of lexical items (32), the specific properties of just one of those words (or participants' (lack of) knowledge or understanding of a particular lexical item) may impact the results in an outsized way.

Still, we argue that these differences between tasks are important and may, in fact, help clue us into mechanisms for learning as long as we recognize, acknowledge, and account for how such differences affect the data collected. For example, if we return to the different findings related to the role of frequency between the preference and the production data, considering the differences between the two tasks can reveal important paths of influence for the factors explored. The preference task carefully controlled the lexical items used, ensuring that half were "high frequency" and the other half "low frequency". The production data included no such control, and categorization of words by frequency was post hoc. Thus, if we explore which specific lexical items exhibited deletion most often (in both the selection and production tasks, see Figure 10), we can see that whereas for the preference data, deletion is spread across numerous tokens included in the task, in the production data, the lexical items *todo* and *todos* "all" constitute 34% of all deleted tokens.

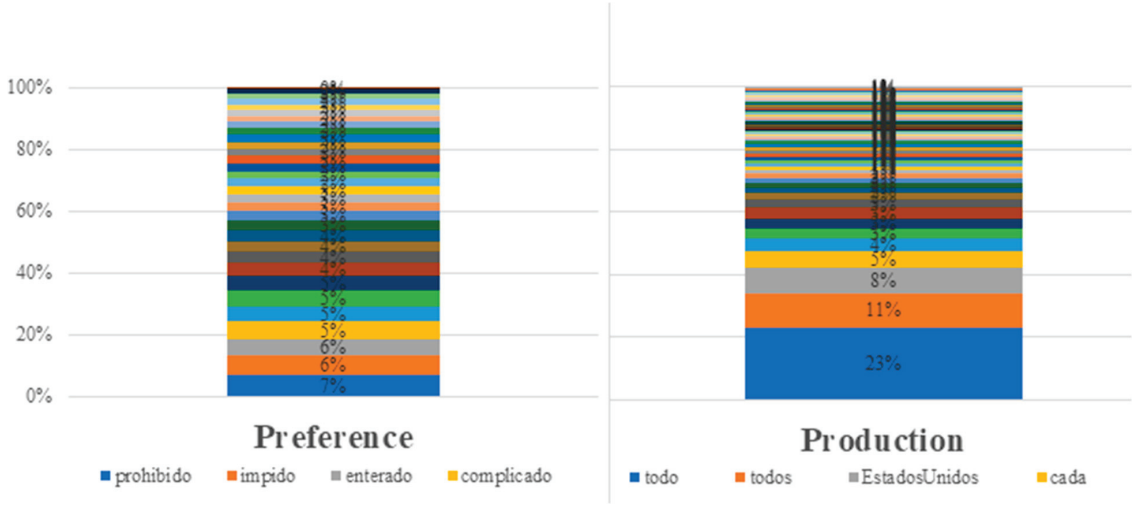

Figure 10. Percentage of deleted tokens constituted by certain lexical items by task; each color/bar represents a distinct lexical item. Only the four most deleted lexical items for each task are included in the legend to illustrate the differences in distribution across the tasks.

Given that *todo* and *todos* are frequent lexical items, it may be that the effect of frequency is led by a small number of certain very frequent items rather than the property of frequency as an abstract whole.[4] This pattern, which warrants future investigation, is thus revealed by carefully considering, comparing, and exploring the differences between data types and the findings that are drawn from them.

6. Conclusions

The present study explored sociophonetic competence, a component of sociolinguistic and, thus, communicative competence (Canale & Swain, 1980; Geeslin et al., 2018; Kanwit & Solon, 2023). Whereas our predecessors have explored sociophonetic competence in learner production (Geeslin & Gudmestad, 2008; Kennedy Terry, 2017; Raish, 2015) or perception (Chappell & Kanwit, 2022; Schmidt, 2018), these abilities have typically been explored separately. This study aimed to explore production and perception of sociophonetic variation by the same learners so as to illuminate the relationship between learners' ability to account for sociophonetic variability in the input and their likelihood to produce such

variation in output. Despite limitations in the tasks employed and their comparison, the present findings reveal important trends regarding sociophonetic development. Overall, this study's findings suggest that learner perceptual knowledge of a sociophonetic variant (as tracked via preference in the present study) tends to precede productive use of that variant in speech. As the learners' L2 proficiency increases, so too do general rates of selection and production of the variant in question. Nevertheless, in addition to these overall group patterns observed, the present data revealed substantial individual variation, with some highly proficient learners exhibiting sociophonetic knowledge on the preference task but never producing such variation in their own speech. Despite limitations, these findings offer one of few side-by-side comparisons of learners' sociolinguistic perception and production data and, thus, contribute to our understanding of sociophonetic competence and its development in a L2.

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Data Availability Statement: The original data presented in the study are openly available in OSF at https://osf.io/guesb/, accessed on 10 December 2024.

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Appendix A

Sample prompt from the production task.

(1) Estás en un aeropuerto esperando un avión. Una persona se sienta a tu lado y empieza a hablar contigo. Es de la República Dominicana y no sabe mucho sobre la vida universitaria en los Estados Unidos. Le cuentas tu vida diaria y tus impresiones de la vida universitaria según tu experiencia actual (*current*).

- Describe tu vida diaria o lo que haces por rutina.
- ¿Qué haces los fines de semana?
- ¿Qué opinas de la universidad? ¿Qué te gusta? ¿Qué no te gusta?
- ¿Qué esperan los profesores de sus estudiantes?
- ¿Qué esperan los estudiantes de sus profesores?
- En general, ¿Qué preocupaciones tienen los estudiantes universitarios?
- ¿Qué dudas tienen ellos con respecto a la vida universitaria?
- ¿Cómo te sientes al comienzo de un semestre?
- ¿Cómo te sientes al final de un semestre?

Translation of sample prompt:

(1) You are in an airport waiting for a plane. A person sits beside you and begins to speak with you. (S)he is from the Dominican Republic and doesn't know much about university life in the United States. You tell him/her about your daily life and your impressions of university life according to your current experience.

- Describe your daily life or what you do routinely.
- What do you do on weekends?
- What do you think of the university? What do you like? What don't you like?
- What do professors expect from students?
- What do students expect from professors?
- In general, what worries do university students have?
- What doubts do they have with respect to university life?
- How do you feel at the beginning of a semester?
- How do you feel at the end of a semester?

Notes

1 Although months abroad was not a significant predictor of deletion for our 17 non-categorical learners in the mixed-effects regression ($p = 0.065$ when considered with the other predictors of the otherwise best-fit model), we will see that it did reveal a significant correlation with deletion in our Pearson test of all 21 learners in Section 4.2. (The correlation was also significant if the sample was limited to the subset of 17 learners.) That time abroad approached but did not achieve significance in the regression likely relates to a combination of causes, including the relatively small number of participants, the high level of individual variability and the role of the individual as a random effect, and the greater predictiveness of EIT score, which, as we will see in Section 4.2, correlated with time abroad. Recall, nevertheless, that time abroad and EIT score did not significantly interact in the regression, as no interactions were significant.

2 As previously mentioned, although we collected data on learners' study abroad destinations, we considered time abroad holistically in the present study. Future examination of the role of time abroad in specific contexts (e.g., to regions where the variable phenomenon is known to be prevalent versus those where it is not) will provide further insight into the role of this experiential predictor.

3 Although we foreground correlations that included rates of production and/or selection of deleted /d/ in the current section, we performed one other Spearman test for the characteristics mentioned in the section. The test for EIT score and months abroad revealed a significant, positive correlation, $r(19) = 0.54$ [95% CI: 0.14, 0.79], $p = 0.012$. This supports patterns that can be gleaned from Tables 3 and 5: learners with higher EIT scores had generally spent longer periods abroad.

4 Nevertheless, recall that the individual lexical item was entered as a random effect in the current and prior study's regression models, which helps to not overly attribute the role of certain categories of predictors (e.g., high frequency, preceding *-o* as vowel) to (a) particular lexical item(s) (see Chapter 5 of Tagliamonte, 2012).

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Sociolinguistic Competence by L2 Chinese Learners Through the Lens of Null Object Use

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Abstract: Using the analytical tool Rbrul, this study explores the object expression variations in the speech of twenty CSL (Chinese as a Second Language) learners whose first languages (L1) were English, Russian, Korean, and Japanese, and compares them to native speaker (NS) patterns. Multivariate analysis revealed that the learner patterns closely resembled NSs' in most dimensions explored, except the learners tended to overuse overt pronouns and underuse null forms. For both CSL learners and NSs, the general patterns in object use were as follows: (1) animate objects tended to favor overt objects, while inanimate objects favored null forms, (2) switch in referents favored overt forms, while no referent change favored null, (3) specific referents favored null forms, whereas nonspecific referents favored overt expressions, and (4) conversational contexts favored null forms, but elicited narratives favored explicit forms. As for the patterns specific to learners, the findings were as follows: (1) among the four L1s included in the analysis, Japanese and Russian speakers tended to use null objects more than Korean and English speakers, (2) a stay in China of one, two, or four years tended to favor null forms, but a three-year stay favored explicit forms, and (3) high-intermediate learners tended to use null forms more frequently than advanced learners. These results indicated that learners successfully acquired null object use patterns in spoken Chinese, but they still required further development in understanding the nuances between overt object forms and null object use to enhance their sociolinguistic competence.

Keywords: Object Variation; L2 Chinese; Interlanguage Variation

1. Introduction

In recent decades, the variationist approach within the field of second language acquisition has witnessed rapid growth, manifesting itself in the burgeoning exploration of a multitude of language varieties and an expanded examination of diverse linguistic features. Originally, this approach primarily centered around the English language (e.g., Adamson, 1988; Dickerson, 1975), but it has since broadened its scope to encompass a range of other languages, including French (e.g., Dewaele, 2004; Gudmestad et al., 2020; Howard, 2006; Kennedy Terry, 2022; Mougeon et al., 2004; Regan, 2022; Rehner et al., 2022), Spanish (e.g., Escalante & Wright, 2022; Geeslin, 2003, 2013; Geeslin & Fafulas, 2022; Gudmestad, 2006, 2008; Pozzi, 2022), Chinese (e.g., Li, 2010, 2014; Li et al., 2022; Starr, 2022), Korean (Park, 2022), Italian (Di Salvo & Nagy, 2022), and Catalan (Davidson, 2022). The variationist paradigm has extended its inquiry to encompass nearly all levels of linguistic analysis, including phonological, semantic, syntactic, morphological, and pragmatic aspects.

The variationist approach acknowledges the interlanguage of language learners as a legitimate and independent linguistic system, characterized by its own distinct patterns.

Furthermore, it places considerable emphasis on the examination of language use within authentic social contexts, often drawing upon natural speech data obtained from sociolinguistic interviews. Second language (L2) variation studies have yielded valuable insights into how L2 learners utilize their acquired language, the influencing factors at play, and, in turn, have enriched our understanding of the underlying principles and grammar in second language acquisition in general.

Within the realm of L2 variation studies, two prominent trends have emerged: Type 1 and Type 2 variation. The former primarily investigates the acquisition of obligatory linguistic forms, whereas the latter delves into instances where NSs exhibit variability and employ diverse linguistic styles. Optional use of language variables is one widely acknowledged testing ground for the acquisition of Type 2 variation, such as schwa deletion in French (Kennedy Terry, 2022) and LE use in Chinese (Li et al., 2022). This has been acknowledged to be a great indicator of how learners develop sociolinguistic competence, because the ability to style shift appropriately is an important aspect of sociolinguistic competence (Li, 2010; Pozzi, 2022). The null argument, such as null subject and null object, is another great feature for exploring the acquisition of stylistic variation by L2 learners. Learners need to learn when to use a noun phrase, a pronoun, or a null form to express subjects and/or objects. Subject pronominal use has been a widely explored sociolinguistic variable under the variationist paradigm in different second languages, including Spanish and Chinese (e.g., Abreu, 2009; Cameron & Flores-Ferrán, 2004; Flores-Ferrán, 2004, 2007; Li, 2014). Object expression, however, has not received as much investigation.

Mandarin Chinese allows both null subjects and null objects (example 1):

(1)

我	喜欢	看	电视，	但是	Ø	不	经常
wǒ	xǐhuān	kàn	diànshì,	dànshì	Ø	bù	jīngcháng
I	like	watch	TV	but	Ø	not	often

看	Ø
kàn	Ø
watch	Ø

I like watching TV, but (I) don't watch (it) very often.

The initial occurrence of the word "I" is represented by a pronoun, and in the subsequent mention, it is left out. Similarly, the word "TV" is introduced as a noun phrase initially but is omitted at the second mention. This study focuses on null object use in L2 Chinese.

Previous research has examined the concept of null objects in Chinese from various angles, such as formal and functional linguistics (Huang, 1984; Li & Thompson, 1981; Sato, 2019; Wang et al., 1992; Wu, 1999; Xu, 2006; Zhao, 2012; Zhou, 2014; Zhu & Gavarró, 2019). Nevertheless, to my knowledge, there have been no variation studies addressing how null objects are used by CSL learners in oral discourse, nor have there been investigations into how Chinese NSs employ null objects orally from variationist perspective. This study intends to fill the gaps and serve a two-fold purpose: firstly, to explore the variations in the use of null objects in the oral discourse of CSL learners and, secondly, to compare these patterns with those found in the oral discourse of Chinese NSs. Therefore, the research questions explored are the following:

(1) What is the variation in null object use by CSL learners? What are the factors that influence their object use?
(2) Are the learner patterns of null object use different from NS patterns? If so, how?

In the next sections, relevant literature will be reviewed, followed by the methodology of the current study. After that, the results will be reported, followed by the discussion and conclusion.

2. Literature Review

The acquisition and use of null objects has been a subject of investigation across various languages, shedding light on the intricate dynamics of first and second language acquisition. This section first synthesizes findings from some studies on null objects in different languages, including both L1 and L2 acquisition. Subsequently, example studies of null subject and object use in Chinese are reviewed.

In the field of L1 acquisition, the exploration of object omission has revealed a consistent developmental pattern. Studies of L1 Spanish, for instance, have reported varying rates of null object use. Fujino and Sano (2002) observed high initial rates of object omission that decreased over time, while Lizsckowski (1999) reported significantly lower rates. Experimental studies by Wexler et al. (2004) found no null object use among 2–4-year-olds, contrasting with Castilla and Pérez-Leroux's (2010) discovery of early null object use in 3-year-olds that disappeared by age 4–5. Kim (2000) and Pérez-Leroux et al. (2008) identified similar patterns in children aged 1–2 and 2–3, with high rates of object omission decreasing significantly as they approached ages 2–3 and 3–4. This pattern was also reflected in L1 bilingual acquisition, as seen in the study by Larrañaga and Guijarro-Fuentes (2012), where children initially exhibited high rates of clitic omission before converging with adult patterns over time. Despite differing results among studies, the literature on L1 Spanish acquisition of null objects appears to converge on a general trend of increased null object use in children at the outset, followed by a decline as they mature linguistically.

Another pattern that was found of null objects in different languages is that animacy and specificity are the two main factors that govern null object use. Schwenter (2006) reviewed studies of null direct object use in Brazilian Portuguese (e.g., Schwenter & Silva, 2002, 2003) and two Spanish dialects in South America—colloquial spoken Quiteño Spanish and Paraguayan Spanish (Choi, 1998, 2000; Morgan, 2004). A main pattern occurs when the referent of an anaphoric direct object is animate and specific; in such cases, an overt pronoun tends to be used, while the null form tends to be used when the referent is inanimate, mainly in the case of third-person anaphoric direct objects.

Null object use has also been explored in L2 learning. For example, Zyzik (2008) examined null object usage by 50 second-language (L2) Spanish learners of varying proficiency levels. In oral tasks, null objects were mainly found in conjoined clauses and interview responses where context had already established referents. Beginners were more accepting of null objects with specific referents in grammaticality judgments, while higher-level learners tended to reject them. Zyzik argued for a performance-based explanation, as null object use lacked a clear developmental pattern, often involved self-corrections to full noun phrases, and was context-specific. Factors such as verb type, lexical retrieval, and verb morphology influenced null object usage.

Exploring the impact of bilingualism on null object acquisition, Pirvulescu et al. (2014) observed that bilingual children exhibited extended periods of object omission in both French and English compared to their monolingual peers, with more omissions occurring in French. The frequency of omissions also depended on language dominance, with fewer omissions in the dominant language.

Furthermore, Zhou et al. (2021) studied Cantonese–English bilingual children's object expression in different verb contexts. These bilingual children demonstrated similarities to their Cantonese monolingual peers in object omission, suggesting bidirectional cross-linguistic influence. Input quantity, structural frequencies, verb types, and cross-linguistic interactions were identified as factors influencing object realization in bilingual acquisition.

In summary, the investigation of object omission in L1 and L2 acquisition has revealed intriguing developmental patterns, with L1 acquisition showing more null object use, fol-

lowed by a decrease over time, and L2 acquisition showing a lack of developmental patterns and a strong relationship between null object use and referent animacy and specificity. While there may be variations across languages and individual learners, the interplay between animacy, specificity, proficiency levels, and cross-linguistic interactions was shown to shape the acquisition and use of null objects.

As far as Chinese is concerned, a plethora of studies have explored null subject features in both L1 and L2 Chinese (e.g., Block, 1993; Casentini et al., 2023; Fang & Yin, 2013; Xu & Yuan, 2024) and have found that various factors affect the use and acquisition of null subjects in Chinese, such as proficiency level, native language, and pragmatic factors. Some other scholars have investigated subject pronoun use in L1 and L2 Chinese from a sociolinguistic variation perspective (e.g., Guy et al., forthcoming; Jia & Bayley, 2002; Li, 2014; Li et al., 2012; Li & Bayley, 2018; Zhang, 2021) and have found that a variety of linguistic and social constraints govern the use of subject pronouns, such as subject person and number, subject coreference, sentence type, referent specificity, native language, gender, and learner proficiency level. This work has piqued interest in investigating null object use in Chinese.

Much of the earlier literature on null object use in Chinese operated within the generative framework (e.g., Huang, 1984; Sato, 2019; Wang et al., 1992; Xu, 2006; Zhao, 2012; Zhou, 2014; Zhu & Gavarró, 2019). However, within the field of generative grammar, there has been a disagreement regarding the analysis of null objects. Some argue for their existence due to empty topics, while others posit a pro-drop parameter explanation. When analyzing null subjects and objects in generative grammar, Huang (1995) proposed a neo-Gricean pragmatic approach, suggesting that many instances of null objects may be better explained by pragmatic or discourse factors rather than purely syntactic parameters, and the factors licensing and identifying them were not fully understood.

Regarding the acquisition of null objects in L1 Chinese, studies indicated that this occurs at a very early age, typically around 1.8 or 2 years old (Wang et al., 1992; Wexler, 1994; Yuan, 1993; Zhu & Gavarró, 2019). Li and Thompson (1981) suggested that objects in Chinese are often omitted if they have been previously mentioned or are nonspecific referents. Relatively few studies have explored how CSL learners acquire this aspect of the language (e.g., Yuan, 1993; Zhao, 2009, 2012), with most focusing on the perception and interpretation of null object use. Chang and Zheng (2018) examined CSL learners' compositions in HSK tests (an official examination to assess the Chinese language proficiency of non-NSs) and found that null objects were mainly used in inanimate situations. They also found that L1 did not play a significant role in learners' acquisition of null arguments. In addition, both L1 English and L1 Japanese speakers used few null objects, even though Japanese is a null-object language. They contended that infrequent use of null objects is a universal phenomenon for L2 learners, and it is neither a developmental feature nor transferrable from L1 to L2.

As mentioned earlier, no studies have investigated how CSL learners use null objects in natural speech from a sociolinguistic variation perspective and how various factors influence their usage. Therefore, this study aims to address this gap in the literature.

3. Method

3.1. Data

The current study is a component of a larger research project that explores the diverse use of Chinese language forms among both Chinese NSs and CSL learners. Specifically, this study centers on the variability in the use of object expressions, especially null objects, by CSL learners, using Chinese NS data as a baseline.

To gather data for this investigation, two distinct discourse settings were examined. First, sociolinguistic interviews were conducted involving a total of thirty-three participants. These conversations took place over fifty-three sessions, lasting approximately 30 to 40 min for NSs who were interviewed once, and 45 to 60 min for each of the two interviews with the learners. These interviews took place in a comfortable lounge within a northeastern Chinese University, a convenient location for the participants.

These interviews had two parts. The initial segment involved informal discussions on topics of interest to the participants, such as their hobbies, experiences during middle/high school, memorable travel moments, favorite movies or novels, and beloved teachers. While a set of primary questions to guide the interview was set up, most conversations naturally evolved, often veering away from the prescribed protocol as new, engaging topics emerged. In the second part of the interview, the participants watched and retold "*The Pear Stories*" by Chafe (1980).

3.2. Participants

The participants of the study included 20 CSL learners (8 high-intermediate and 12 advanced) and 13 Chinese NS peers as the baseline. When recruiting the CSL participants, best efforts were made to ensure a balance in terms of gender, native language, and the representation from different classes. The demographic characteristics of these 20 CSL participants are summarized in Table 1.

Table 1. CSL learner participants: demographic characteristics.

Pseudonyms	Age	Sex	Origin	Native Language	Prior Chinese Learning (Months)	Length of Stay (Months)	Chinese Proficiency
Ren	22	F	Korea	Korean	0	12	Advanced
Nan	24	F	Korea	Korean	6	18	Advanced
Zhu	24	M	Korea	Korean	0	48	Advanced
Xuan	25	M	Korea	Korean	0	11	Intermediate
Gui	31	M	Korea	Korean	18	8	Advanced
Suo	25	F	Russia	Russian	66	5	Advanced
Ye	25	F	Russia	Russian	0	48	Advanced
Ta	21	F	Russia	Russian	18	7	Advanced
Ya	22	F	Russia	Russian	24	6	Advanced
Ni	21	F	Russia	Russian	30	7	Advanced
Ann	30	F	Britain	English	0	25	Intermediate
Wen	40	M	Australia	English	30	30	Intermediate
Fen	29	M	Australia	English	18	30	Advanced
Long	29	M	USA	English	0	48	Advanced
Liang	25	M	Australia	English	36	6	Intermediate
Mei	22	F	Japan	Japanese	30	6	Advanced
Chi	23	F	Japan	Japanese	0	18	Intermediate
Zhuang	22	F	Japan	Japanese	36	3	Intermediate
Lu	33	M	Japan	Japanese	0	13	Intermediate
Cun	33	M	Japan	Japanese	0	21	Intermediate

All the NSs (seven males and six females) were college students, aged 18 to 20, from a northeastern university in China and were fluent in Mandarin Chinese.

3.3. Variables

Since this is the first study to investigate null object use in Chinese from a sociolinguistic perspective, insights were drawn from the previous literature on null object and

sociolinguistic studies on subject use regarding what factors to explore, because Chinese is both a null-subject and a null-object language. Subject use has been extensively explored under the variationist paradigm, and coreference and subject person/number have been shown by various studies to be the two main constraints for subject pronominal expressions (e.g., Cameron, 1992, 1993; Flores-Ferrán, 2002, 2010). Li et al. (2012) and Li (2014) also explored null subject use in L1 and L2 Chinese and found that coreference and subject person/number were the two main constraints. Sentence type, age, gender, occupation, proficiency, and L1 also reached significance.

Informed by the past studies, in this study, dependent variables included how objects were expressed, namely, full noun phrase (NP), pronoun, and null. Independent variables included linguistic, social, and developmental constraints. Linguistic factor groups were coreference, object person/number/animacy, referent specificity, sentence type, and native language. Social factor groups included gender and discourse/speech style. Developmental factor groups included length of stay in China and proficiency level.

3.3.1. Linguistic Constraints

Coreference

Based on previous variationist studies of subject use in Chinese (Jia & Bayley, 2002; Li, 2014; Li et al., 2012), coreference was defined by whether the subject in one clause referred to the same entity as the subject in the clause just before it. However, Jia and Bayley (2002), Li et al. (2012), as well as Li (2014), pointed out that this approach to operationalizing coreference in data coding encountered a few challenges. The first challenge was in instances where the subject in one clause did not exactly match the subject in the preceding clause but instead had some overlap. The second challenge was in cases where there was a change in the surface form but the underlying referents of the two subjects were the same. A final challenge occurred when the subject was mentioned at locations in the preceding clause other than the subject position. This is related to a prominent feature of Chinese, the topic chain, which refers to "a chain of clauses sharing a single topic" (Li, 2004, p. 26). As W. Li (2004) claimed, "much of the use of zero NPs in Chinese can be accounted for by topic chains". The position of a topic and/or a null NP is rather flexible. Therefore, a subject coreference may occur in the preceding clause as a fronted topic, an object, or in another position. This is also true for an object coreference. Therefore, these cases need to be separately coded. This study followed these categorizations of coreference in object use, and the factors were as follows (examples 2–8). Transcription abbreviations in the English glossary are shown in Appendix A.

Switch: when an object's referent is different from the one in the previous clause,

(2)

她	去年	在	香港	写	论文，	我	在那	等	她。
tā	qùnián	zài	xiānggǎng	xiě	lùnwén,	wǒ	zàinà	děng	tā
she	last:year	at	Hong Kong	write	thesis,	I	there	wait	her

She was doing her thesis in Hong Kong last year and I was there waiting for her.

No switch: when an object's referent is the same as the one in the previous clause,

(3)

我们	可以	帮助	他们。	我们	两	个	小时	一直	帮助	他们。
wǒmen	kěyǐ	bāngzhù	tāmen.	wǒmen	liǎng	gè	xiǎoshí	yìzhí	bāngzhù	tāmen
we	can	help	them.	we	two	CL	hour	always	help	them

We could help them. We had been helping them for two hours.

Same underlying: when an object's referent is the same as the one in the previous clause, but the object surface forms are different,

(4) A: 她 请 你?
tā qǐng nǐ?
she invite you
She invited you?
B: 对， 请 我。
duì, qǐng wǒ
yes, invite me
Yeah, (she) invited me.

Partial overlap: when an object's referent partially overlaps with the object in the previous clause,

(5) 他们 看见 我们， 然后 他们 帮 我。
tāmen kànjiàn wǒmen, ránhòu tāmen bāng wǒ
they see us, then they help me
They saw us, and then they helped me.

Subject–object: when an object is the same as the subject in the previous clause,

(6) 我 去 上海， 在那 有 人 接 我。
wǒ qù shànghǎi, zàinà yǒu rén jiē wǒ
I go Shanghai,there there:is someone receive me
I went to Shanghai, and somebody was there to meet me.

Fronted topic–object: when an object is the same as the fronted topic,

(7) 类似 这样 的 (电影)， 你 没 看 过 Ø 吗?
lèisì zhèyàng de (diànyǐng), nǐ méi kàn guò Ø ma
similar this: kind ATT movie, you not see EXP Ø Q
Have you not seen this kind of movie?

Other—object: when an object occurs at other locations in the previous clause,

(8) 他 和 我 一起 学习， 他 教 我。
tā hé wǒ yìqǐ xuéxí, tā jiāo wǒ
he with me together study, he teach me
He and I studied together. He taught me.

Object Person/Number/Animacy

Due to the characteristics of the data, the differentiation of object animacy in Chinese was restricted to third-person singular and plural subjects exclusively. In the case of first- and second-person singular and plural objects, all of them were considered as animate subjects. Regarding the concept of person, a Chinese object can be classified into first person (represented by "我, wǒ"), second person (indicated by "你, nǐ"), and third person (expressed through "她/他/它, tā"). In terms of number, each of these persons can be further classified as singular or plural, which is denoted by the addition of "们 (men)" to the singular forms. Additionally, third-person objects in both singular and plural forms were subcategorized as either animate or inanimate.

Specificity

The tokens were categorized based on whether the objects they referred to were specific or nonspecific. A specific object denoted a particular person or thing that both participants in the conversation were aware of. Conversely, a nonspecific object referred to something with a more general or broad meaning.

Sentence Type

The tokens were also coded according to the type of sentences they were in. The factors were statement, question, and imperative.

Native Language

Native language has been shown to influence learners' choice of stylistic variables (Li, 2010, 2014). In this study, learners' native languages were Russian, English, Japanese, and Korean.

3.3.2. Social Constraints

Gender

Gender has been a compelling area of investigation for scholars, especially in the context of language use (Eckert, 1989, 2000; Eckert & McConnell-Ginet, 1992, 2003; Labov, 1990; Major, 2004; Zhang, 2001, 2005). Major's research in 2004, for instance, offered compelling evidence suggesting that women tended to exhibit standard or formal language forms. In contrast, men were inclined to employ more informal and less prestigious language forms, often to assert their masculinity.

Furthermore, studies on subject pronominal expression have shed light on intriguing differences (Bayley & Pease-Alvarez, 1996, 1997; Cameron, 1992; Wulf et al., 2002), demonstrating that women were more likely than men to employ subject pronouns in their speech. Drawing on these insights, the hypothesis regarding the role of gender in this study is that female participants are expected to use overt object forms more frequently than their male counterparts.

Discourse/Speech Style

In previous research, it was observed that subject pronouns tended to be more prevalent in informal speech, as opposed to formal speech (Ávila-Jiménez, 1996; Hochberg, 1986). Furthermore, the usage of subject pronouns can vary depending on the context of the conversation, as demonstrated by studies such as those by Jia and Bayley (2002) and Travis (2007).

For the current study, data were gathered from informal conversations and the retelling of *The Pear Stories* (Chafe, 1980). Although the data from the retelling of *The Pear Stories* constituted only a small part of our dataset, they served as a valuable source for understanding how speakers used objects in their narratives.

3.3.3. Developmental Constraints

Length of Stay in China

Previous studies showed that the length of time in the target language environment significantly affected learners' development of sociolinguistic competence, manifested by their acquisition of target stylistic variation (e.g., Li, 2010, 2014; Howard et al., 2006). The findings generally demonstrated that the longer learners stayed in the target language environment, the better they acquired stylistic language features. In this study, learners were categorized into 1-, 2-, 3-, and 4-year stays in China, which respectively represent equal to or below 12, 24, 36, and 48 months.

Proficiency Level

These learners were categorized into high-intermediate and advanced levels based on their class placement and researcher observations, in addition to the discussions with their Chinese language instructors.

In sum, the dependent variable in this study was object forms (full noun phrase, pronoun, and null). The independent variables were object person/number/animacy (i.e., 1st sg and pl, 2nd sg and pl, 3rd sg and pl +animate, 3rd sg and pl -animate), coreference (i.e., switch, no switch, same underlying, partial overlap, fronted topic → object, subject → object, or other → object), specificity (i.e., specific or nonspecific), sentence type (i.e., declar-

ative, question, or imperative), native language (Russian, English, Korean, or Japanese), speaker gender (i.e., male or female), discourse context (i.e., conversation and elicited narrative), proficiency level (high-intermediate or advanced), and length of stay in China (1, 2, 3, or 4 years).

3.4. Coding Exclusions

The coding exclusions comprised the following criteria: (a) counting repeated object pronouns only once, (b) elimination of object pronouns in false starts, and (c) excluding cases of formulaic expressions (example 9) or pivotal pronouns in serial verbal constructions (example 10):

(9)

谢谢	(你)。
Xièxiè	nǐ
thank	(you)

"Thank you".

(10)

他们	让	我	选择	中文。
Tāmen	ràng	wǒ	xuǎnzé	zhōngwén
They	let	me	choose	Chinese

"They wanted me to choose Chinese".

3.5. Coding and Analytical Tool

All the objects and the dependent variables in the two datasets were coded into three groups: full noun phrase, pronoun, and null form. The coding was performed by a Chinese NS and checked by another NS, both of whom were experienced in coding Chinese interlanguage data. Disagreements were resolved through discussion, and the interrater reliability for both NS data and learner data was 0.95.

To determine the significance of the factors examined and their relative weights, a specialized application of logistic regression, Rbrul (Johnson, 2009), was used to analyze the data. Rbrul is a program specifically designed to handle natural speech data and is the most extensively used tool in the field of sociolinguistic variation. It has the ability to simultaneously examine and take into consideration the influence of several linguistic and social constraints on the use of the linguistic variation being studied. In addition to frequency data, the results include factor weights that indicate each factor's relative effect strength compared to other factors in the same factor group, as well as the likelihood that the variant will be used. The factor favors the use of the variant if the factor weight is greater than or equal to 0.5, while a weight below 0.5 is unfavorable.

4. Results

Rbrul analyses of 4059 learner tokens (site for a null or overt object) and 1848 NS tokens were conducted to investigate patterns of object use, comparing learner patterns with the NS baseline pattern. Both full noun phrases and pronouns were included for overt object expressions because, in many cases, the null form was used to indicate the omission of a full noun phrase. Therefore, excluding full noun phrases might not reflect the complete picture. In the analyses, the application value (i.e., the default dependent variable against which all the factors were measured) was set as the null object, a setting used in all further analyses, unless stated otherwise. A factor with a weight of 0.50 or above tended to favor null object, while a weight below 0.50 disfavored null objects (i.e., favored overt forms).

The results showed that the overall rates of null object use, as well as the likelihood of its use (input probability), were lower among CSL learners (10.5%, 0.06) compared to NSs (15%, 0.26; Table 2). The distribution (Table 3) indicated that while the overall rate of

full noun phrase use by NSs and learners was relatively similar, learners used pronouns at nearly twice the rate of NSs and used the null form less frequently than NSs. Thus, compared with their NS peers, learners tended to overuse pronominal object expressions and underuse null objects.

Table 2. Null object use by CSL learners vs. Chinese NSs.

	CSL Learners				NSs			
Factor Group	**Factors**	**Weight**	**% Null**	**N**	**Factors**	**Weight**	**% Null**	**N**
Coreference	Fronted topic	0.98	91.7	181	Fronted topic	0.93	85.6	111
	No switch	0.65	37	359	No switch	0.63	42.9	203
	Other ⟶ Object	0.49	25	72	Subject ⟶ Object	0.54	27.5	120
	Subject ⟶ Object	0.43	8.33	240	Other ⟶ Object	0.51	33.3	39
	Partial overlap	0.16	4.55	22	Same underlying	0.35	16.7	12
	Switch	0.08	2.63	3121	Switch	0.06	3.16	1331
	Same underlying	0	0	18	Partial overlap	0	0	29
Person/ number/ animacy	3rd pl (−animate)	0.85	19.1	225	3rd sg (−animate)	0.70	15.8	1265
	3rd sg (−animate)	0.74	13	2532	3rd pl (−animate)	0.66	18.8	85
	3rd pl (+animate)	0.47	4.49	468	1st pl	0.62	18.8	16
	2nd sg	0.38	2.9	69	1st sg	0.50	20.4	54
	3rd sg (+animate)	0.30	4.07	467	3rd pl (+animate)	0.42	9.82	112
	1st sg	0.21	2.99	234	3rd sg (+animate)	0.40	11.3	265
	1st pl	0	0	40	2nd sg	0.23	5.26	19
	2nd pl	0	0	4	2nd pl	0	0	2
Specificity	Specific	0.63	16.3	1523	Specific	0.56	23.2	587
	Nonspecific	0.37	6.92	2472	Nonspecific	0.44	11.1	1229
Discourse context	Conversation	0.68	11	3762	Not significant			
	Narrative	0.32	2.58	233				
Length of stay in China	4 years	0.61	9.86	690	Not applicable			
	1 year	0.55	9.89	2185				
	2 years	0.54	17	630				
	3 years	0.30	5.92	490				
Native language	Japanese	0.60	19.6	647	Not applicable			
	Russian	0.55	8.85	1039				
	English	0.42	9.73	1151				
	Korean	0.42	7.69	1158				
Proficiency level	High-intermediate	0.57	15.2	1193	Not applicable			
	Advanced	0.43	8.53	2802				
Total		0.06	10.5	4059		0.26	15	1848

Notes. Application value: Null form; $p < 0.05$. N = Number of tokens. All the factor groups were significant unless noted "not significant" or "not applicable".

Table 3. Distribution of object use (NS vs. CSL).

	NS		CSL	
	N	**% Null**	**N**	**% Null**
Full NP	1368	74.02%	2789	68.7%
Pronoun	208	11.26%	850	20.9%
Null	272	14.72%	420	10.3%

Object coreference and object person/number/animacy were the two main constraints on null object use by CSL learners. This finding corroborates previous research on subject pronoun use (Li, 2014). Specifically, for object use, the effect of animacy was stronger than that of object person/number. Referent specificity also significantly influenced object use,

followed by discourse context, length of stay in China, native language, and proficiency. Sentence type and gender did not prove significant (Table 2).

The general patterns were as follow: (1) In terms of coreference, a fronted topic favored the null form the most, and under other circumstances, if there was some kind of change in object referent, position, or object surface form, overt objects tended to be used. (2) Inanimate objects were more likely to be used with null forms than animate objects. (3) Objects with specific referents favored null, while those with nonspecific referents favored overt forms. (4) Null objects were more likely to be used in conversations than in narratives. (5) The effect of length of stay in China on null object use showed a U-shape pattern, with 1–2 years slightly favoring null, 3 years disfavoring null, and 4 years favoring null again. (6) Japanese speakers favored null objects, followed by Russian speakers, while English and Korean speakers favored overt forms. (7) High-intermediate learners tended to use null objects more than advanced learners.

5. Discussion

5.1. Coreference and Object Person/Number/Animacy

As mentioned earlier, this is the first variationist study examining null object use by L1 and L2 Chinese speakers. Therefore, insights were drawn from previous studies of subject pronoun use. Coreference and subject person/number have been found to be the two main constraints for subject pronoun use in both L1 and L2 (e.g., Jia & Bayley, 2002; Li, 2014, 2017; Li & Bayley, 2018; Li et al., 2012; Guy et al., forthcoming). This study showed that they are also the two main constraints for object use in L1 and L2 Chinese.

In terms of the coreference effect, a fronted topic favored a null object the most for both learners and their NS peers. Fronting constructions, especially object fronting, are a prominent feature of Chinese (e.g., Li, 2018; Li & Thompson, 1981). When an object is fronted to the topic position, there is usually a null form in the object position. Therefore, it is not surprising that the fronted topic favored the null form the most. Under other circumstances, if there was some kind of repetition of the object referent, a null object was more likely to be used. If there was a change in the referent, position, or surface expression, an overt form was more likely to be used. For example, when an object occurred in the subject or other positions in the preceding clause, a null form was less likely to be used for CSL learners. In cases of "same underlying", where the object surface expression was different from the one in the preceding clause, but the referents were the same, "partial overlap", where two object referents partially overlapped, and "switch", where two objects were completely different, the null form was least likely to be used. The learner pattern aligned with the NS pattern, indicating that the learners have grasped the overall grammar of null object use under various coreference conditions.

As for the other main constraint, object person/number/animacy, the results showed that animacy had a stronger effect on null object use than object person/number. Inanimate third-person objects, singular or plural, were more likely to be used with the null form by both learners and NSs. This finding echoes studies of subject use in L1 and L2 Chinese (Li, 2014; Li et al., 2012), where inanimate subjects were more likely to be associated with the null form. Therefore, what Li and Thompson (1981) stated about the tendency of third-person subject omission for nonhuman referents is also true for objects. Learners in this study also successfully grasped this pattern. On the other hand, the effect of person/number on null object use was mixed. Relatively speaking, learners tended to use the null form for third-person plural objects more than for third-person singular ones, but they used overt forms for both first- and second-person objects, singular and plural. NSs tended to use the null form for third-person inanimate objects and first-person objects, but they used overt forms for third-person animate objects and second-person objects. Comparing

learner and NS patterns, the biggest difference lay in the use of null object for first-person objects, which favored the null form for NSs but the overt form for learners. Rechecking the data showed that learners tended to produce more utterances with simple structures and more rephrased sentences, explicitly stating the first-person objects, whereas NSs tended to use more complicated sentence structures with more subordinate clauses and topic chains, providing more opportunities for object omission.

5.2. Specificity

As mentioned earlier, studies have shown that objects with nonspecific referents are more likely to be used with null forms (e.g., Chang & Zheng, 2018; Choi, 1998, 2000; Morgan, 2004; Schwenter & Silva, 2002, 2003). Contrary to what the literature suggests, the results of this study showed that specific referents were more likely to be used with null objects than nonspecific referents, especially for learners. Looking further into the data (Table 4), I found that learners and their NS peers had similar rates of using full NPs in both specific and nonspecific situations. However, learners used more pronouns and fewer null forms than NSs in both situations. In particular, NSs used more null objects in nonspecific referents than overt pronouns, but CSL learners showed the opposite pattern. Reexamining the data revealed the same patterns mentioned above: compared with NSs, learners tended to use more sentences with simple structures, rephrasing, and overt object pronouns.

Table 4. Distribution of object use in regard to referent specificity.

		NS		CSL	
Factor		**N**	**%**	**N**	**%**
Specific	Full NP	301	49.9%	745	47.5%
	Pronoun	166	27.5%	573	36.6%
	Null	136	22.6%	249	15.9%
Nonspecific	Full NP	1067	85.7%	2044	82%
	Pronoun	42	3.4%	277	11.1%
	Null	136	10.9%	171	6.9%

5.3. Discourse Context

There were two discourse contexts in the data, which were interview conversations and elicited narratives. The results (Table 2) showed that conversation tended to favor null objects, but narrative favored overt forms. Table 5 indicates that compared with NSs, learners' full NP use was roughly similar to NSs in conversations, but less so in narratives. In both discourses, learners used more pronouns, especially in narratives, but fewer null forms.

Table 5. Distribution of object use in regard to discourse context.

	Conversation						Narrative					
	N	**Full NP**	**N**	**Pronoun**	**N**	**Null**	**N**	**Full NP**	**N**	**Pronoun**	**N**	**Null**
NS	1071	72.6%	170	11.5%	235	15.9%	297	79.8%	38	10.2%	37	9.9%
CSL	2641	69%	771	20.2%	414	10.8%	148	63.5%	79	33.9%	6	2.6%

Rechecking the data showed that NSs tended to use more full noun phrases in narratives to clearly describe who they were talking about and more complicated sentence structures with more topic chains that provided more opportunities to omit the objects. In contrast, learners seemed to have a smaller repertoire of full noun phrases for description

in narratives, and they tended to use simpler sentence structures with more rephrasing and thus more explicit use of pronouns.

5.4. Effect of Length of Stay, L1, and Proficiency (CSL)

As to the effect of length of stay, the results (Table 2) showed that there was a curve: learners started out with more null object use, and if they stayed for about three years, they tended to use more overt forms, but if they stayed for four years, they went back to more null object use. In terms of the native language effect, Japanese and Russian speakers favored null object use, while English and Korean speakers favored overt forms. Proficiency was also shown to have a significant effect on learners' object use. High-intermediate learners favored null objects, while advanced learners favored overt forms.

As mentioned earlier, L2 acquisition studies reported no developmental patterns for null object acquisition (Zyzik, 2008), and infrequent use of null objects is not a developmental feature (Chang & Zheng, 2018). However, L1 acquisition literature reported that children start out using more null objects, which later decreases over time (Larrañaga & Guijarro-Fuentes, 2012; Pérez-Leroux et al., 2008). Learners in this study showed a U-shaped pattern in regard to null object use. Learners who stayed in China for one or two years used more null objects, followed by a decrease in null object use among those who stayed for three years, with usage increasing again for learners who stayed for four years. This finding somewhat echoes L1 acquisition reports. However, it is important to note that the distribution of participants was not very balanced. Third-year participants were all English learners, while Russian and Korean learners were mostly first-year students. Japanese and Korean are null-object languages, and Russian also allows null objects in certain circumstances. Therefore, to tease out the nuances of the effects of length of stay, native language, and proficiency, and to gain a clearer picture of how they affect null object use, future studies with a more balanced, larger body of participants are needed.

5.5. NS vs. Learners

Generally speaking, learners' patterns of object use, in terms of the relative likelihood of using explicit versus null forms in each factor group, aligned with NS patterns. This indicated that learners have acquired the underlying grammar of object use. For example, null objects tend to be associated with fronted topics, objects without a switch in referents, inanimate objects, objects with specific referents, and in conversations.

What is noticeable, though, is that the overall patterns of object use by NSs and CSL learners, as well as the results of each factor group, showed that learners, in general, used relatively fewer full NPs in object positions than NSs. In particular, compared with their NS peers, learners overused overt pronouns but underused null forms. This was true in almost all factor groups.

The primary reason for this, as mentioned earlier, is that, compared with NSs, learners' utterances tended to have simple sentence structures with more rephrasing. They were also more likely to use more overt forms of pronouns in objects, which indicated that they are more explicit in terms of what they talk about and to whom they refer. This can be demonstrated by cases where NSs exhibited more variation, while learners used explicit forms obligatorily. For example, in the factor group of coreference, NSs used null forms 16.7% of the time in "same underlying" situations, where the referents of adjacent objects were the same, but the surface forms were different, whereas learners used explicit forms obligatorily. Another example is the first-person plural form. NSs had almost 19% null object use, but learners used explicit forms exclusively for all 40 tokens of first-person plural cases.

This finding corroborates previous literature that showed learners' tendency to overuse explicit forms of optional language features. Li (2010, 2014) reported that CSL learners used the morphosyntactic particle DE and subject pronouns much more frequently than NSs. Li suggested two reasons for learners' overuse of target language forms. One is that learners tend to land on the side of clarity in optional cases of language use. The other is the influence of the input they received from their teachers and textbooks.

According to Rehner's (2005) proposal of three criteria for learners' success in acquiring Type 2 variation, i.e., same expressions, similar frequency, and similar constraints, these learners satisfied two of them. They were able to use the same expressions with similar constraints as NSs, but the learners' frequencies of the use of different forms did not align with those of NSs. Therefore, the results of this study agree with Li (2010) in that learners tended to prioritize clarity when it came to object use and were cautious about using null forms. This suggests that learners need time to become more proficient in the nuances of object use and to further develop their ability to adapt their style in object omission. In addition, learners need time to develop more advanced proficiency in managing more complicated sentence structures that provide more opportunities for topic chains and object omission.

6. Conclusions

In general, object use in L2 Chinese is systematic and subject to different linguistic and social constraints. A multivariate analysis of NS and CSL learner natural speech data showed that learners' patterns were similar to those of their NS peers in most dimensions explored, except that they tended to overuse overt personal pronouns and underuse null objects. Specifically, coreference and object person/number/animacy were the two main constraints of object use. Other significant factors included referent specificity, discourse context, length of stay in China, learners' L1, and proficiency levels. The results indicated that the learners had acquired the object use pattern in Chinese rather successfully, but still needed more work on acquiring more complex sentence structures and the nuances of using pronouns and null forms to further develop their sociolinguistic competence.

Bridging significant gaps in the literature, this study contributes to the fields of sociolinguistic variation, SLA, and CSL acquisition. The study extended variationist sociolinguistics to an underexplored linguistic feature—null object use in Chinese—where prior research was largely absent. Additionally, it adds to the growing body of work on how nonnative speakers acquire and use stylistic variation, deepening the understanding of learner grammar in interlanguage variation. By demonstrating the interplay of various linguistic and social constraints, the study provided insights into how CSL learners acquire the subtle nuances of object omission, which is a challenging aspect of learning and using Chinese. These findings not only advance knowledge within the variationist paradigm and SLA but also offer practical insights into the challenges learners face in acquiring sociolinguistic competence in a L2. Future research can build on these findings to further explore the acquisition of stylistic variation in other underexplored linguistic features and languages.

However, this study is not without limitations. As mentioned earlier, the learner participant group was not balanced in terms of their native language, length of stay, and proficiency level. Future studies should aim to include a larger and more balanced participant group, accounting for these three factors. For example, each group of learners should have a balanced number of participants with varying lengths of stay and proficiency levels. It should also be noted that the length of stay and proficiency might interact. Sometimes, a learner with a shorter stay has a higher proficiency level than one with a longer stay. Therefore, careful planning is needed, although finding enough participants with all the needed variables might be a challenge.

Since this is the first variation study of object use in L2 Chinese, further studies along this line are certainly needed for a deeper understanding of this topic. Possible future directions include exploring more linguistic and social constraints in L2 object use, investigating object use by L3 learners, and comparing subject and object use by L2 learners.

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Appendix A

Table A1. Transcription Abbreviations.

ATT	Attributive (*de*)
CL	Classifier
EXP	Experiential aspect (*-guò*)
Q	Question (*ma*)

Source: Li and Thompson (1981).

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Why Do Back Vowels Shift in Heritage Korean?

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Abstract: For heritage speakers (HSs), expectations of influence from the community's dominant language are pervasive. An alternative account for heritage language variability is that HSs are demonstrating sociolinguistic competence: HSs may either initiate or carry forward a pattern of variation from the homeland variety. We illustrate the importance of this consideration, querying whether /u/-fronting in Heritage Korean is best interpreted as influence from Toronto English, where /u/-fronting also occurs, or a continuation of an ongoing vowel shift in Homeland (Seoul) Korean that also involves /ɨ/-fronting and /o/-fronting. How can patterns of social embedding untangle this question that is central to better understanding sociolinguistic competence in HSs? For Korean vowels produced in sociolinguistic interviews by Heritage (8 adult immigrants, 8 adult children of immigrants) and 10 Homeland adults, F1 and F2 were measured (13,232 tokens of /o/, 6810 tokens of /u/, and 20,637 tokens of /ɨ/), normalized and subjected to linear regression. Models predict effects of gender, age, orientation toward Korean language and culture, the speaker's average F2 for the other shifting vowels, and duration. These models highlight HS's sociolinguistic competence: Heritage speakers share linguistic and social patterns with Homeland Korean speakers that are absent in English. Additionally, heritage speakers lack the effects of factors attested in the English change.

Keywords: heritage language; vowel shift; variationist sociolinguistics; Korean; cross-linguistic influence; u-fronting

1. Introduction

Heritage language studies often include comparison to a homeland/monolingual variety, whether that homeland variety is imagined/idealized or studied through data collected through psycholinguistic experiments or comparative variationist sociolinguistics. No matter the methodology, such studies often attribute variation within heritage speech to language interference from the dominant language to the heritage language. However, the situation is more complex. Some additional considerations are discussed in this section, before we turn to examine the case of vowel shift in Heritage Korean in the Greater Toronto Area (hereafter, Toronto), working within the comparative variationist sociolinguistic framework (cf. Poplack & Tagliamonte, 2001; Rickford & McNair-Knox, 1994).

While heritage speakers are generally considered to be multicompetent in terms of distinguishing the phonological systems of the heritage and dominant languages (Cheng, 2021 for Heritage Korean; Chang et al., 2011 for Heritage Mandarin; McCarthy et al., 2013 for Heritage Sylheti), there are instances in which heritage speakers pattern differently from homeland speakers. These differences are frequently attributed to dominant language interference that causes a mixed phonological system (see Godson, 2004 for Heritage Western Armenian; Kim, 2011 for Heritage Spanish; Asherov et al., 2016 for Heritage

Russian). An alternative account exists: Heritage language variability demonstrates sociolinguistic competence. That is, HSs may either initiate or carry forward a pattern of variation from the homeland variety. In the case of participating in an ongoing change, there may be cases of incomplete transmission (rather than diffusion) of a homeland pattern (cf. Labov, 2007).

Ongoing changes in the homeland may be reflected in heritage language but misattributed to dominant language interference in the HS context. For example, Heritage Russian speakers in Toronto show decreasing rates of null subjects across generations (Nagy, 2015). This trend could be attributed to English interference, as English has a very low rate of null subjects (2–5%, Harvie, 1998; Benallick, 2010; Marr, 2011). However, a trend of decreasing rates of null subjects is also reported in homeland speakers, with younger speakers using fewer than older speakers (Nagy, 2015). Here, language change in the homeland is continued in heritage speakers' production. In such cases, reproduction of patterns of effects of social factors, in particular, may be taken as evidence of sociolinguistic competence.

Additionally, it is not surprising that heritage speakers vary in how much they participate in language shifts from homeland varieties. Tse (2019) reported that Heritage Cantonese speakers in Toronto participate in some vowel shifts ([y] retraction, [i] fronting) but not others ([ɪ, ʊ, ɔ] backing, [ɛ] split). Importantly, heritage speakers show differences in conditioning effects for both linguistic and social factors. Namely, age is a significant predictor for homeland participation, but generation since immigration, not age, is a significant predictor for HS participation in the vowel shift. Linguistic constraints also exhibit variation, e.g., a linguistic constraint, presence of coda, is a significant predictor for /ɛ/-fronting in the Gen2 model but not for Gen1 or homeland speakers (Tse, 2019, p. 209).

Heritage speakers also exhibit different degrees and directions of participation in homeland sound changes. Currently, homeland speakers in Seoul, South Korea, are reweighting the cues used to distinguish three series of stops, namely, fortis (such as [t*al] "*daughter*"), lenis (such as [tal] "*moon*"), and aspirated (such as [t^{h}al] "*disease*"). The primary cue used to be Voice Onset Time (VOT) or the duration of the period of aspiration following the release of a stop. However, younger speakers increasingly use f0 (fundamental frequency of the sound wave) of the following vowel as the primary cue (cf. H. Kang & Han, 2013; Y. Kang, 2016; Bang et al., 2018). Although females lead this change in the homeland, Heritage Korean speakers in Toronto do not show quite the same conditioning patterns (Y. Kang & Nagy, 2016). Instead, Heritage Korean speakers are potentially slowing or reversing the shift to maintain the VOT contrast (Y. Kang & Nagy, 2016). The reversal may be motivated by the English phonological system, as VOT is a salient cue used to differentiate voiced and voiceless stops (Liberman et al., 1961; Lisker, 1986; Lisker & Abramson, 1964, 1967).

Previous research on heritage language participation in homeland vowel shifts often involves processes that are unattested or uncommon in the dominant language (for example, lenis vs. aspirated stop contrasts, pro-drop, and shifts involving vowels that are not in the English inventory). Additionally, it is harder to distinguish dominant language interference from heritage language influence when both the dominant and the heritage language are undergoing concurrent processes, the situation we address in this paper. To assist in this distinction, we draw on the framework presented in Meyerhoff (2009), which distinguishes types of cross-language influence according to how similar the patterns of constraints are between the languages, with the implication that greater similarity in constraint hierarchies (that is, how and if conditioning effects are shared) reflects more intense contact. We argue that this provides a more accurate picture of the system than comparing just the rates or degrees of vowel shift overall. Meyerhoff's model is quoted in (i)–(iii), and

in our work, we ask whether (or to what extent) English and Homeland Korean can each serve as the *model*, if Heritage Korean is the *replica*.

(i) Where the same factor groups are significant constraints on a variable in the model and in the replica varieties, let us call this weak transfer or *replication*;
(ii) Where the same factor groups are significant in both model and replica, and the ordering of these factor groups is the same in both model and replica, let us call this (strong) *transfer*;
(iii) Where the same factor groups are significant in both model and replica, and the ordering of these factor groups is the same in both model and replica, and the factors within groups have the same ranking in model and replica, let us call this *calquing* (Meyerhoff, 2009, p. 303) [italics added].

In particular, we show how it is possible to distinguish "Korean-based" from "English-based" u-fronting by comparing the behavior of the constraints on fronting in the two languages, as well as how /u/-fronting fits into broader vowel shifts ongoing in both languages.

1.1. Research Questions and Focus of Investigation

Both North American English and Seoul Korean's /u/ are currently advancing (fronting) in the F2 dimension (for English, cf. Denis et al., 2023; Umbal, 2021; Hall & Maddeaux, 2020; Hoffman, 2016; for Korean, cf. Han & Kang, 2013; Y. Kang, 2016; Kong & Kang, 2018). A fronted vowel is produced further forward in the vocal tract compared to its non-fronted equivalent, such as "*goose*" realized as [gus] when non-fronted and as [gu◎s] when fronted. Examples of the relevant vowels in Korean are introduced below when we define the independent variables. Korean Canadians are described as participating in /u/-fronting in English (S. Cho, 2023), and Heritage Korean speakers in California have /u/-fronting in their Korean (Cheng, 2019). However, it is unclear what the sources of this sound change are. In this paper, we focus on Korean Canadians living in Toronto, and to better understand HSs' sociolinguistic competence, we ask the following:

1. Are Heritage Korean speakers fronting /u/ in Korean due to Korean influence or due to English influence? Might the shift in one language influence the other?
2. Are Heritage Korean speakers fully participating in the three-vowel shift (involving /o/, /u/, and /ɨ/) that is underway in Seoul Korean?
3. Contemplating Meyerhoff's (2009) model (see i–iii), what can the examination of the conditioning effects of social and linguistic factors tell us about heritage language variation and change?

In order to tease apart the effects of English and Korean on the heritage language (HL) change in progress, it is critical to examine not only /u/-fronting (see Research Question 1) but also the two other vowels that are part of the vowel shift in Seoul Korean. One vowel, /ɨ/, involved in the Korean shift is not present in English. A second is not shifting in the same direction: /o/ is fronting in Toronto English (Hoffman, 2016) but raising in Seoul Korean (cf. H. Kang & Han, 2013; Y. Kang, 2016). Thus, they provide ideal counterpoints for determining the source of the Heritage Korean /u/-fronting pattern. These shifts are illustrated in Figure 1. If Heritage Korean speakers are only fronting /u/ due to English interference, it is unlikely that they would participate in other homeland processes that are part of the same shift. Rather, if Heritage Korean speakers show overall participation in the homeland shift, it suggests that Homeland Korean influences /u/-fronting in Heritage Korean.

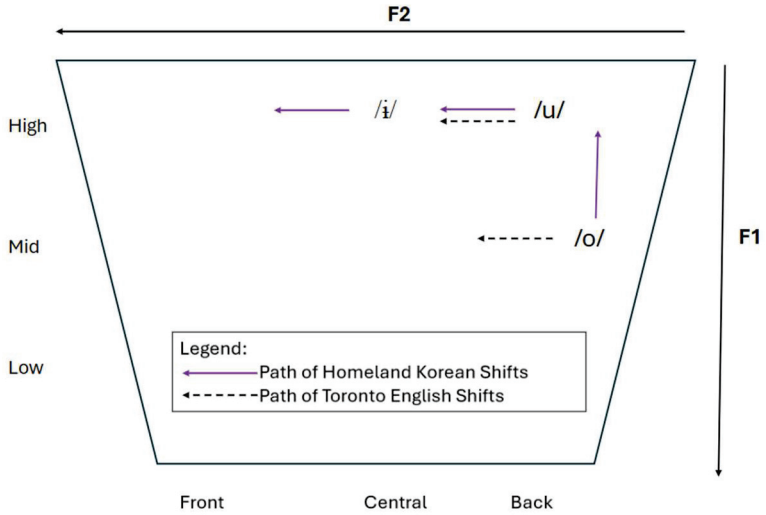

Figure 1. Relevant Seoul Korean and Toronto English vowel shifts.

Seoul Korean has a back chain vowel shift where /o/ is raising and both /u/ and /ɨ/ are fronting (cf. Han & Kang, 2013; Y. Kang, 2016; Kong & Kang, 2018). Similar to the case with stop contrasts originally distinguished by VOT (see above) but increasingly marked by f0, homeland speakers are in the process of reweighting the cues used to distinguish the back vowels. Whereas F1 (vowel height) was previously used to distinguish /u/ and /o/, younger speakers increasingly use F2 (vowel backness) to distinguish them (Yang, 1996; Moon, 2007). This change is described as beginning with /o/-raising and is led by younger female speakers (Han & Kang, 2013). Moon (2007) suggested that the sex-based contrast is marked in vowel production, where females show a greater F2 difference between /o/ and /u/, but males instead show a greater F1 difference. Younger speakers of both genders are described as relying on F2 differences more than older speakers do, who use the conservative F1 cue (H. Kang & Han, 2013; Kong & Kang, 2018). Griffin (2023), in a preliminary examination of data from the same corpus we are using in this paper, did not find evidence of F1 differences between generations or age groups. This change appears to still be in progress as there is a mismatch between production and perceptual tasks, where it is unclear whether F1 or F2 is the dominant cue (Igeta & Arai, 2011; Igeta et al., 2014). The third vowel's participation in the shift, /ɨ/, is relatively underexplored, so we investigate whether it shares the same conditioning as the other two vowels.

In contrast, /u/ and /o/ are both reported to be fronting (but not raising) across multiple Canadian English varieties, including those spoken in Toronto (Denis et al., 2023; Hoffman, 2016; Hall & Maddeaux, 2020; Umbal, 2021), Montreal (Boberg, 2008; S. Cho, 2023), and Vancouver (S. Cho, 2023). In Toronto, this change is primarily advanced by younger female speakers (Denis et al., 2023; Hoffman, 2016). Ethnicity appears to be a conditioning factor, as Hoffman (2016) reported consistent /u/-fronting in speakers of Chinese, Anglo, and Portuguese (but much less so for Italian) descent, and Umbal (2021) found that the Filipino community in Toronto fronts /u/ more than Anglo Canadians do. In addition, cultural orientation can affect the degree of /u/-fronting, as younger Italian male speakers are found to exhibit less fronting of back vowels to resist association with the mainstream sound shift (Hoffman, 2016). /ɨ/ is not part of the inventory of Canadian English phonemes, so we cannot consider a transfer of effect from English to Heritage Korean for that vowel.

1.2. Background: Conditioning of the Vowel Shifts

To determine the source of /u/-fronting in Heritage Korean, we compare its patterns of conditioning effects to those of Homeland Korean and English. If heritage groups share more conditioning effects with homeland speakers, e.g., social or linguistic predictors, then

this similarity in their phonological grammars suggests that heritage speakers' vowels are influenced by Homeland Korean. However, if HSs do not share many effects with homeland speakers, then this suggests that heritage speaker vowel production may have alternate influences (such as contact-based language change, or influence of contact with English). We consider whether Heritage Korean reflects replication, transfer, or calquing (as defined in Meyerhoff (2009), see i–iii above) from both Homeland Korean and English or just from one language. That is, to tease apart the effects of Korean and English on heritage speakers' production of vowels in Korean, we compare the effects of a selection of linguistic and social factors. Previous studies have shown that two linguistic factors, WordPosition and Duration, affect vowel realization in Seoul Korean but not in Toronto English. In contrast, phonological context, particularly the Place of articulation (PoA) of the following segment, conditions /u/-fronting in English: /u/-fronting is favored following coronals and blocked following laterals (Denis et al., 2023; Hall & Maddeaux, 2020). Additionally, the gender of the speaker influences /u/-fronting differently in the two languages. Thus, these predictors may be used to distinguish the influence of each of these languages on Heritage Korean.

We next expand on these predictors, considering first the linguistic and then the social factors in Table 1. Syllable prominence effects are attested for the vowel shift in Seoul Korean (H. Kang & Han, 2013). Namely, /o/ and /u/ tend to be more fronted in non-initial syllables (Y. Kang, 2016). Duration also correlates with the realization of vowels in Seoul Korean. Y. Kang (2016) and Oh (2016) both found that shorter duration is associated with greater degrees of raising and centralizing for vowels in this shift. If heritage speakers share these effects of WordPosition and Duration, this suggests that their participation in the vowel shift is transferred from the homeland process rather than being an effect of a contact-induced shift (since English has not been shown to have either WordPosition or Duration as factors governing vowel shift). In contrast, the effects of adjacent phonological context could suggest transfer from English. However, we must keep in mind that back vowel fronting in postcoronal contexts is cross-linguistically attested (Hillenbrand et al., 2001; Oh, 2008).

Table 1. Primary linguistic and social predictors that have previously been explored in relation to Korean and English /u/-fronting.

	Korean	**English**
Social predictors		
Age	Younger < Older	Men show age differences; women do not
Gender	Female < Male	
Ethnic orientation	Dominant < Heritage	*No data available*
Linguistic predictors		
WordPosition	Other syllable < initial syllable	NA
Duration	Longer < shorter	NA
Phonological context (PoA)		(COR < Other PoA) [1]; Other manner < Lateral

[1] This cross-linguistic effect is less useful than those that differ across languages. Similarly, the age effect by itself is not helpful in distinguishing the source of influence. However, in interaction with other social factors, it may prove useful.

Relevant social factors include ethnic orientation (as measured by questionnaire scores), age, generation, and gender. Ethnic orientation is described as playing a role in determining which speaker groups participate or advance changes in varieties of English, such as Houston Urban English (Niedzielski, 2013). Jeon (2017) found that ethnic orientation scores for Korean Americans in Texas are negatively correlated with /o/-fronting in Houston Urban English. That is, the more strongly the Korean Americans aligned them-

selves with their Korean identity, the less likely they were to participate in /o/-fronting. Based on this, and some findings from Hoffman and Walker (2010) regarding ethnic orientation effects in Toronto English, we predict that alignment to Korean identity will influence participation in Korean sound shifts and that higher ethnic orientation scores (more alignment towards Korea) are associated with greater degrees of /o/-raising, /u/-fronting, and /ɨ/-fronting in Korean.

Younger female speakers are attested as leading /u/-fronting in both Korean and English, so these social factors do not provide much information about the source of the shift. In contrast, the change is described as farther along in Korean than English, with all younger speakers using F2 as the primary production cue to distinguish Korean back vowels rather than F1. Primarily younger female speakers are described as advancing English /u/-fronting (Denis et al., 2023). Our data given below indicate that there are no gender effects for homeland speakers for either /o/- or /ɨ/-fronting, although previous literature suggests that females are advancing the change for /o/-fronting (Kong & Kang, 2018). This provides a further distinction from English, where o-fronting is led by females (Hoffman, 2016). Lastly, we expect to see generational effects, with Gen2 speakers (children of immigrants) exhibiting more fronting than Gen1 (immigrants), based on the English pattern reported in Hoffman (2016).

To summarize, the effects of the linguistic and social factors listed in Table 1 are compared to those in Heritage Korean speech to determine whether there is greater similarity to Homeland Korean or Canadian English vowel shift patterns. We interpret the greater similarity as evidence for the source of the change.

2. Materials and Methods

Vowel production data come from the Heritage Language Documentation Corpus (Nagy, 2009, 2011), which comprises transcribed recordings from the Heritage Language Variation and Change in Toronto Project (Nagy, 2024). Sociolinguistic interviews with 26 speakers were the source of spontaneous speech for the current analysis. This method differs from previous studies on Seoul Korean vowels, which principally used laboratory speech (H. Kang & Han, 2013; Oh, 2016; Kong & Kang, 2018).

2.1. Social Variables Defined

We compare three speaker groups: Homeland (HOM), Generation 1 (Gen1), and Gen2 (Gen2). HOM speakers were born and remained in Seoul, South Korea. There are two generations of Heritage Korean speakers in the corpus. Gen1 speakers were born and raised in Seoul and moved to Toronto after the age of 18. They had lived in Toronto for at least 20 years at the time of recording. (One exception is K1F28A, who arrived as an 18-year-old but has only been in Canada for 10 years.) Gen2 speakers have at least one Gen1 parent (usually both) and were born in Toronto or arrived before the age of 5. Speakers were not tested for language proficiency. All participants self-reported that they were willing to converse for an hour in Korean. The Gender of the speaker is based on each speaker's self-reported gender identity. The distribution of speakers by Generation, Gender, and Age is presented in Table 2. Capitalization indicates factor and level labels.

We use two ethnic orientation scores to quantify heritage speakers' linguistic and cultural practices. These are created by first quantifying open-ended responses to a 37-part ethnic orientation questionnaire, administered verbally after each sociolinguistic interview. Each question is scored on a 3-point scale, with higher values indicating stronger orientation to Korean language/culture/identity than to Canadian or English.

Table 2. Speaker distribution by Gender, Age and Generation.

Gender	Homeland	Generation 1	Generation 2	Total
Female				
Younger (15–39 years) Age: *mean 23, SD 7.7*	3	2	4	9
Older (45–85 years) Age: *mean 63, SD 16.5*	2	2	0	4
Male				
Younger (15–39 years) Age: *mean 23, SD 7.0*	4	0	4	8
Older (45–85 years) Age: *mean 60, SD 11.3*	1	4	0	5
Total	10	8	8	26

Second, scores for 230 speakers across eight languages were subjected to Principal Components Analysis to determine the most revealing response patterns. These patterns fell on two scales, which we defined as EO-Language and EO-Family. The EO-Language score is most influenced by the following questions, listed from greatest to least effect (for further details, see Nagy (2024):

- Do you prefer to speak Korean or English?
- What language do you speak with your friends?
- What language do you speak when you are talking about something personal? When you are angry?
- Where were you born (Seoul or Toronto)?
- Where did you go to school (Seoul or Toronto)?

Thus, the EO-Language score primarily indicates the self-reported choices the speaker currently makes in whether to speak Korean or English. In contrast, the EO-Family score is most influenced by the following questions, again in descending order of how much they contribute to the score:

- Did/do you speak to your parents in Korean? Your grandparents?
- Do your parents think of themselves as Korean, Canadian, or Korean Canadian?
- How old were your parents when they came to Canada?
- Is your husband/wife/boyfriend/girlfriend Korean?
- Does your partner speak Korean? Do you speak Korean to your partner?

While it is not easy to define a shared focus among these questions, the EO-Family score is based *primarily* on responses about the cultural identity of people close to the speaker—not the speaker's own identity. We consider that a speaker has more agency in deciding what language to use with their partner than with older family members, as these latter practices are likely to be set when the speaker is young. Furthermore, parents and grandparents may not be the primary interlocutors of adult speakers at the time of the recordings.

Heritage Korean speakers in this vowel study were selected to provide a maximal spread of ethnic orientation scores, to maximally probe the effect of these scores. Subsequently, HOM speakers were selected to age-match the heritage speaker sample. The EO scores for the Korean speakers included in the cross-linguistic Principal Components Analysis range from −2.8 to 2.9 for EO-Language and from −1.6 to 3.6 for EO-Family.[1] Note that no EO questionnaires are administered with HOM speakers—we do not expect them to orient toward Canadian culture or the English language in a relevant way.

The 26 speakers selected for the vowel analysis include 13 younger speakers (15–39) and 13 older speakers (45–85). Because of our definitions for generations of heritage speak-

ers, described above, coupled with the availability in the population, age and generation are collinear, with Gen2 including younger speakers than Gen1 (Pearson's rho = −0.78, $p < 0.01$). EO-Language is also correlated with both Age (Pearson's rho = −0.56, $p = 0.02$) and Generation (Pearson's rho = 0.67, $p < 0.01$), while EO-Family is correlated with neither Age (Pearson's rho = 0.12, $p = 0.65$) nor Generation (Pearson's rho = −0.34, $p = 0.20$). These patterns are illustrated in Figure 2, in which speakers are arranged left to right by age. The Gen2 speakers are on the left side of the graph, and with one exception, the Gen1 speakers are on the right side. Each speaker is labeled with a code which includes "K" for Korean, "1" or "2" to indicate their heritage generation, "F" or "M" for their gender, two digits recording their age and a final letter to distinguish otherwise identically coded speakers. Note that Speaker K1F28A, the speaker who does not quite fit the "Gen1" definition because she had been in Toronto for only 10 years at the time of the recording, aligns with Gen2 women in their 20s for the EO-Family score.

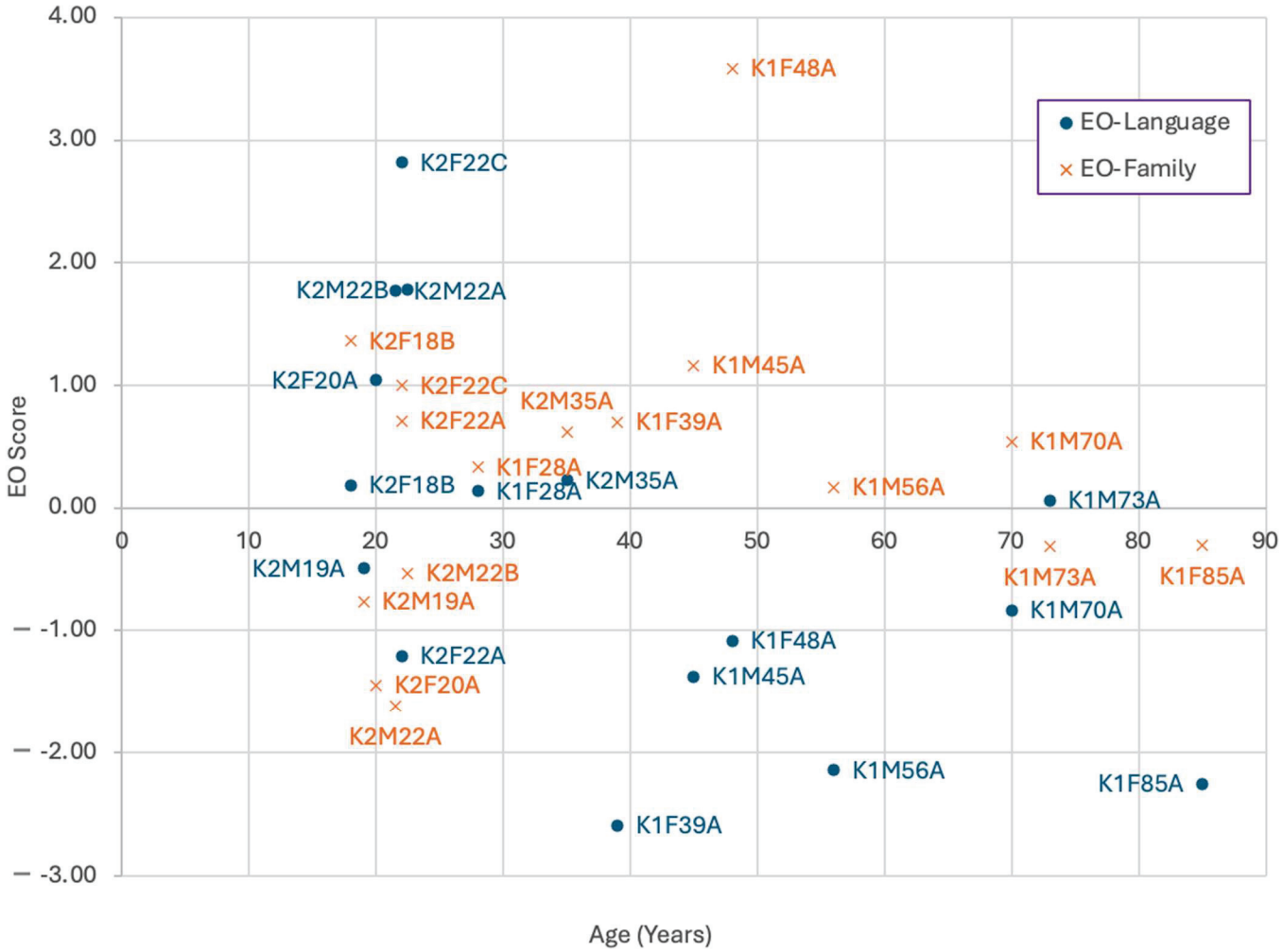

Figure 2. Speakers by Ethnic Orientation Score and Age.

2.2. Data Preparation

Interviews were conducted by a large team of fluent speakers of Korean, following the protocol for sociolinguistic interviews described in Labov (1984) but using the *Heritage Language Variation and Change in Toronto Project's* (HLVC) questionnaire (Nagy, 2024; see full questionnaire at https://ngn.artsci.utoronto.ca/pdf/HLVC/long_questionnaire_English.pdf, accessed on 4 June 2024). Analysis of interviewers' identity and language ability does not constitute part of the HLVC methodology. However, some interviewers' position-

ality in this respect appears at https://ngn.artsci.utoronto.ca/HLVC/3_3_former_ra.php#korean_fieldworkers, accessed on 4 June 2024. A Zoom H4n digital recorder set to a 44.1 kHz sampling rate and Audio Technica lavalier microphone were used to record. Interviews were transcribed orthographically in ELAN (Wittenburg et al., 2006) by research assistants. Annotations roughly divided the speech into sentences. These steps were conducted in accord with a protocol used to create corpora of the 10 languages that constitute the HLVC Project (see Nagy, 2024 and http://ngn.artsci.utoronto.ca/pdf/HLVC/HLVC_Project_Overview.pdf, accessed on 4 June 2024).

Based on the annotations created in ELAN, recordings were chunked into sentence-level segments using Praat (Boersma & Weenink, 2023; Wittenburg et al., 2006). These audio recordings and transcriptions were time-aligned at the segmental level using Yoon and Kang's (2012) Korean-specific forced alignment system. Praat was then used to extract formants at five equidistant points from each vowel using the "To Format (burg)" method (Boersma & Weenink, 2023). The durational midpoint measure was used in this analysis since it is the most stable value (less influenced by adjacent segments). Trial and error determined appropriate and reliable formant ceilings to apply for extracting formants. Male speakers were given a ceiling of 4500 Hz for back vowels and 5000 Hz for front vowels, while female speakers were given a ceiling of 5000 Hz for back vowels and 5500 Hz for front vowels. We measured 130,064 tokens across all speakers for all vowels, but here focus on a smaller set, culled as follows.

All tokens with undefined F1 and F2 values were removed (n = 242), as well as tokens shorter than 5 ms (n = 49,252) or longer than 200 ms (n = 15,031). Tokens shorter than 5 ms were excluded to remove potential instances of vowel devoicing, while tokens longer than 200 ms were usually due to alignment errors (Y. Kang, 2016). These tokens were further processed in R (R Core Team, 2024) to remove measurement errors and outliers (n = 5457), which were identified by converting F2 values to z-scores and removing all tokens that were at least two standard deviations away from the average values from each speaker group (separated by gender and by vowel). From this total, 26,329 tokens from non-target vowels (e.g., /e/ or /i/) were excluded. Lastly, tokens where the /o/ or /u/ vowel came from a code-switching component were removed (n = 41), e.g., if a speaker used the English word "Korean" during the interview. This left 33,753 tokens for analysis (approximately 26% of original tokens).

2.3. Dependent Variables

We normalize the raw formant measurements using a vowel-intrinsic, speaker-intrinsic method, following recommendations from Thomas and Kendall (2007) and Watt et al. (2011). We opted for a vowel-intrinsic method because we have culled the data set only for a subset of vowels, rather than the whole vowel space. That is, normalization of each vowel is based on measurements of only that vowel. Such methods are "immune to differences in the phonological inventories of dialects or languages" (Thomas & Kendall, 2007)—a potential distinction across our speakers. The vowel /a/ was chosen as an anchor as it is not described as involved in any shifts in Korean and occurs in a consistent position across our speakers (see Speaker vowel spaces plotted in Appendix A). Each speaker's average F2 for /a/ was subtracted from each measurement of that same speaker's F2 for /o/, /u/, and /ɨ/, resulting in three dependent variables, illustrated in Figure 3.

1. Frontness of /o/ $F2_a$–$F2_o$
2. Frontness of /u/ $F2_a$–$F2_u$
3. Frontness of /ɨ/ $F2_a$–$F2_ɨ$

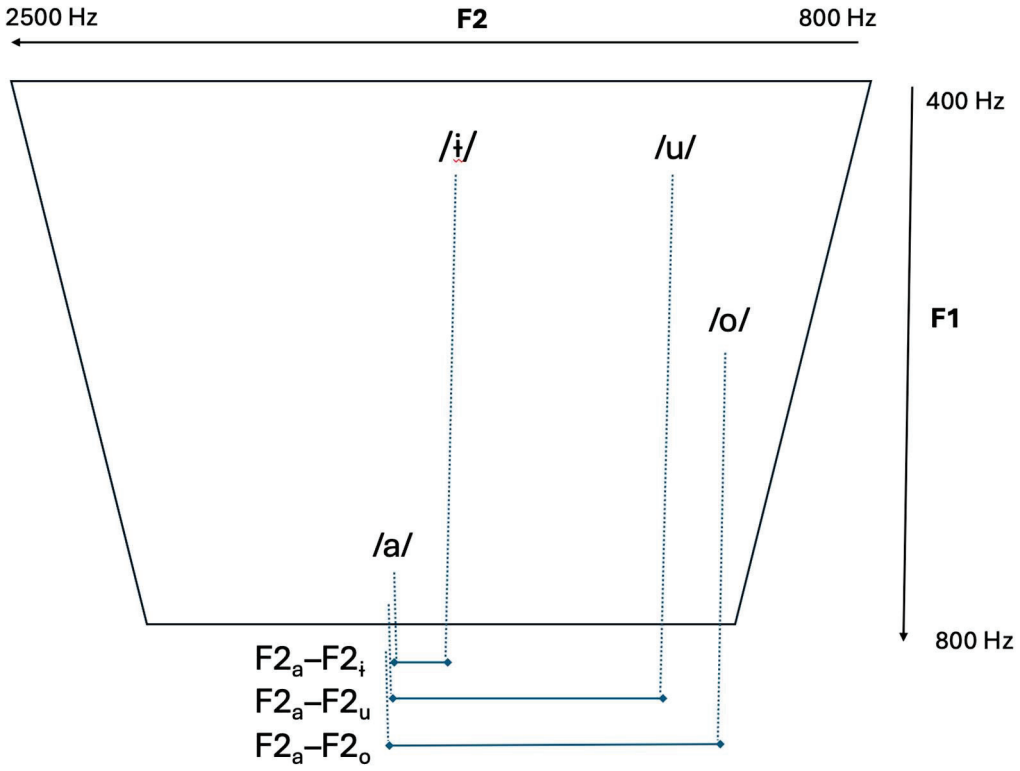

Figure 3. Illustration of how the three dependent variables values were calculated (frontness of each vowel, relative to /a/).

These values represent the degree of fronting for each vowel token relative to the low central vowel /a/. For example, if a speaker's average F2 of /a/ is 1500 Hz and a particular token of /o/ was measured at 1000 Hz, then the dependent variable value for that token would be 500 Hz, represented by the duration of the horizontal line next to "$F2_a$–$F2_o$" in Figure 2. The smaller the value, the closer /o/ is in the F2 dimension to the center of the vowel space, which represents the degree of /o/-fronting for that speaker. The larger the value, the farther back that token of /o/ is.

2.4. Independent Variables

As illustrated in Table 3, WordPosition was coded as a binary variable: The relevant vowel either appears in a syllable that is word-initial or not-word-initial. This binary coding does not consider the number of syllables in a word or the presence of an onset in a CV sequence. For example, both of the /u/ tokens in [pu.ti.ɾʌp.kɛ] "*smoothly*" and [u.san] "*umbrella*" were coded as word-initial, even though one token is a CV syllable and the second token is a V syllable. Similarly, both of the /o/ tokens in [t*a.ro] "*separately*" and [nɛŋ.tɕaŋ.ko] "*refrigerator*" were coded as non-initial, even though one word has two syllables and the other word has three. Vowels in single-syllable words were coded as occurring in word-initial position, such as the /o/ token in [tɕom] "*a little*", as monosyllables are likely to be subsumed into the initial position of a neighboring accentual phrase (O. Kang, 1992).

Duration of the vowel token was the second linguistic factor, coded as a continuous variable. It is well-attested that longer vowels are likely to be more peripheral, so this is important to include as a control variable when considering spontaneous speech.

The place of articulation of the preceding consonant was coded to investigate positional effects that affect fronting. Preceding Place of Articulation of the preceding segment (PoA) was collapsed into three groups: Coronal, Dorsal, and Other (including all vowels, bilabials, and word-initial contexts). The member phonemes of each are provided in Table 3. Due to low token counts (and because we do not have hypotheses that require

separating them), bilabial phonemes were collapsed into one group with vowel and word-initial tokens, which showed similar patterns.

Table 3. Independent variables.

Factor Type	Factor	Levels
Social	Gender	Male Female
	Age	Younger (15–39) Older (45–85)
	Generation	HOM Gen1 Gen2
	EO-Language Score	*Continuous* Lowest: −2.6 (More English oriented) Highest: +2.8 (More Korean oriented)
	EO-Family Score	*Continuous* Lowest: −1.6 (More Canada oriented) Highest: +3.6 (More Korean oriented)
Linguistic	Duration of vowel (Duration)	*Continuous* (s) Shortest: 5 ms Longest: 200 ms
	WordPosition (Position)	Non-Initial [t*a.**ro**] "*separately*" [nɛŋ.tɕaŋ.k**o**] "*refrigerator*" Initial [p**u**.ti.ɾʌp.kɛ] "*smoothly*" [**u**.san] "*umbrella*"
	Place of Articulation of the preceding segment (PoA)	Coronal (/n/, /t/, /t^{h}/, /t*/, /s/, /s*, /l/, /ɾ/, /tɕ/, /tɕ*/, /tɕ^{h}/) Dorsal (/ŋ/, /k/, /k^{h}/, /k*/, /h/) Other (/i/, /ɛ/, /ɯ/, /u/, /o/, /ʌ/, /a/, /m/, /p/, /p^{h}/, /p*/, word-initial)
	Average $F2_a$–$F2_u$	(for third type of model, for dependent variable $F2_a$–$F2_i$)
	Average $F2_a$–$F2_i$	(for third type of model, for dependent variable $F2_a$–$F2_u$)
Random	Speaker	Speaker codes, e.g., K1F85A

Age was included as a factor. Speakers were grouped into two levels, Younger (15–39) and Older (45–85). Generation was coded as one of three levels (HOM, Gen1, and Gen2). Gender was defined as a binary variable based on participants' self-reported gender identity. Two ethnic orientation scores, one for language and one for family, were also included for models with only heritage speakers.

Lastly, Speaker was included as a random effect in mixed effects models (MEMs) to account for individual variation that may otherwise be masked. Word was not run as a random intercept due to the wide variety of words attested in the data and the low rate of repetition of many of them, patterns which preclude convergence in models.

With these factors, we develop three sets of statistical models in R 4.4.0 (R Core Team, 2024). The first set determines whether there are intergenerational rate differences. The second set compares the conditioning effects for each generation, and for each vowel, allowing us to classify each pattern within Meyerhoff's language transfer framework. The third set tests for evidence of participation in chain shifts, that is, the relationship of one vowel's movement to another.

2.5. Models to Compare Rate or Degrees of Fronting Across Groups

Our first set of models shows, for each of the vowels separately, but with all speakers combined, which groups of speakers have significantly different *rates* or degrees of fronting, when (linguistic and social) contextual effects are controlled. Models were constructed using the Rbrul package (Johnson, 2009) in R (R Core Team, 2024). In the first set, consecutively considering the F2 of each vowel as the dependent variable, step-up/step-down mixed effects linear regression models were compared to identify the best-fitting model that contained the fewest factors and accounted for the most variation in the data. These models first identify the factor that has the greatest effect on the variable being tested (accounts for the most variation), and then adds (in the case of step-up) factors one at a time until all but only significant factors are included in the model, and then reverses the set of comparisons (for the step-down) to start with all the variables and remove them one at a time (Johnson, 2009). For each vowel, two versions of modeling that differed only in including either Age (coded as a binary factor) or Generation (coded as a ternary factor) were then run, as these collinear factors must not be included in the same model. Akaike Information Criterion (AIC), which measures the fit of a model to the data, was used to compare these two models (Symonds & Moussalli, 2011). Models were selected as optimal if they scored the lowest AIC without any mismatch in ranking of levels between ranking of estimates and observed values. Finally, a one-level model with only those selected factors was constructed using the lme4 package (Bates et al., 2015), which provides more statistics regarding the model's fit (e.g., Std. error, t-value) than Rbrul's step-up, step-down procedure. This best-fitting model is reported and discussed for each of the three vowels. We discuss the *effects* of the other predictors, within each generation, in the second set of models. Models included the linguistic and social factors summarized in Table 4 (except the average distances between vowels, reserved for the third set of models). The threshold for significance used in all models is $p < 0.05$.

Table 4. Number of vowel tokens by Generation and by vowel (n = 7948).

Vowel	/o/	/u/	/i/	/a/
Homeland	693	543	781	2720
Gen1	261	211	290	953
Gen2	143	138	198	1017
Total	1097	892	1269	4690

2.6. Models to Compare Conditioning Effects Across Generations

The second set of one-level models (again using the lme4 package), with the same predictors except Generation, was then constructed for each Generation so that their variables grammars could be compared. These models compare the grammars of heritage and homeland speakers to determine whether the same factors are significant across speaker groups and whether the direction of the effects are the same for each population. That is, they allow us to implement the comparisons described in (i)–(iii).

2.7. Models Seeking Evidence of a Chain Shift

The third set of models investigates the relationship between two parts of the vowel shift, /u/-fronting and /i/-fronting, in more depth, again using the lme4 package. Here we determine whether the two high vowels are moving in coordinated fashion, as might be expected for a chain shift, and as reported for Seoul Korean. If, instead, we see that only /u/ is shifting, we might interpret it as evidence that the shift is replicating the English pattern (which does not, and cannot, implicate the high central vowel).

For this third set of models, to mitigate the influence of coarticulation, only vowels in tokens preceded by bilabial consonants or monophthongal vowels were included. The distribution of tokens for these models is presented in Table 4 (n = 7948 tokens of /o/, /u/, /ɨ/, and /a/).

For these models, the dependent variable was a centered version of Average $F2_a$–$F2_u$ and Average $F2_a$–$F2_ɨ$: That is, values were centered around the mean distance (for each speaker) between the anchor vowel /a/ and either /u/ or /ɨ/. Factors tested in these models are Age or Generation, Duration, Gender, WordPosition, EO-Language, EO-Family (with levels shown in Table 3), plus whichever inter-vowel distance is not the dependent variable, to test whether a speaker's inter-vowel distance was a predictor of other vowels' locations in their vowel space. Since these models include an average value by speaker, no random effect of speaker was included.

3. Results

The first set of mixed effects models investigates fronting of /o/ in Section 3.1, of /u/ in Section 3.2, and of /ɨ/ in Section 3.3. For each vowel, we first report a model of the data for all speakers combined and compare the rates of vowel shift for each generation. Then, we discuss models for each generational group and compare conditioning effects by generation. A summary of the models is provided for each vowel. The models may be reviewed in Appendices B–D. As a follow-up analysis, models examining the relationship between fronting of /u/ and /ɨ/ are presented in Section 3.4.

For each model, we report the estimate, or predicted difference in value from the reference level for each level; standard error; number of degrees of freedom; t-value; and *p*-value. Estimates for categorical factors are differences from these reference levels: "Initial" for WordPosition, "Coronal" for PoA, "Older" for Age, and "Female" for Gender. For continuous factors, estimates show the predicted change in value of the dependent variable for one unit of the factor (e.g., in Table 5, for each second of increasing duration, the estimate increases by 1348 Hz).

Table 5. MEM of /o/-fronting for all generations, 26 speakers, n = 5941 [1].

Fixed Effects	Estimate	Std. Error	df	t Value	Pr(>|t|)
(Intercept)	187	23	32	8	$p \ll 0.05$
Duration	1348	82	5932	16	$p \ll 0.05$
PoA-Other	134	8	5923	16	$p \ll 0.05$
PoA-Dorsal	117	8	5928	15	$p \ll 0.05$
Age-Younger	−108	25	22	−4	$p \ll 0.05$
WordPosition-Non-initial	−36	7	5933	−5	$p \ll 0.05$

[1] Random effects for Table 5:

Groups	Name	Variance	Std. Dev.
Speaker	(Intercept)	3225	57
Residual		59,611	244

In each model, fixed factors are listed by decreasing estimate size. This allows us to see that, across vowels, Duration and PoA usually have the largest effect, while WordPosition has a small effect, with Age and EO-Language usually in between and EO-Family rarely reaching significance. Statistics for random effects are in a footnote for each cross-generational model.

3.1. /o/-Fronting

We first present one cross-generational model for /o/ in detail to illustrate our approach (Table 5). Models for each generation for this vowel are in Appendix B, and these

models are summarized in Table 6. The same approach is followed for each of the three vowels we investigate.

In Table 5, a model with all speakers investigates whether each generation of heritage speakers participates in /o/-fronting to the same degree as HOM speakers. Here the dependent variable under investigation is $F2_a$–$F2_o$, the F2 distance between a token of /o/ and that speaker's average value for /a/ (see Figure 2). If /o/ is fronting, then there will be a shorter distance between /o/ and /a/, given the position of /a/ as a central and /o/ as a back vowel. However, if /o/ is not fronting, then there will be a greater distance between /o/ and /a/. Thus, larger positive Hz values in the Estimate column of Table 5 indicate a more peripheral (less-fronted) vowel than smaller positive values. Negative values indicate a value for /o/ that is more fronted than the /a/ average.

Significant factors in this cross-generational model are Duration, Place of Articulation, Age, and WordPosition. Including Generation worsened the fit of the model to the data, so it is excluded. This indicates that generational differences are not the best way to characterize patterns of /o/-fronting. Rather, the Age effect indicates a change in progress, as has been reported for Seoul Korean.

From that model, however, it is unclear whether speaker groups have similar conditioning patterns. Individual models for each generation were constructed to answer this question. These models are compared and summarized in Table 6, and, although not shown here, they are reported in Tables A1–A3 in Appendix B. In Table 6, the predominant direction of effect for each variable is listed in the first column. For example, we see that Younger speakers front more than Older speakers. The predictors are ordered from the biggest to smallest effect size. A checkmark indicates a group exhibiting a significant effect of that predictor, in the predominant direction indicated in the first column. Significance is indicated by asterisks.[2] Factors that are not significant for any groups are greyed out. A direction of effect is mentioned in greyed-out rows only for non-significant factors showing a trend that we will discuss later.

Table 6. Significant predictors for /o/-fronting ($F2_a$–$F2_o$), 26 speakers, 5941 observations [1].

Direction of Effect	HOM	Gen1	Gen2
n	3232	1288	826
PoA (Other > DOR > COR)	✓ ***	✓ ***	✓ ***
Age (Younger > Older)	✓ ****		
WordPosition (Non-initial > Initial)	✓ **	✓ **	
Duration (Shorter > Longer)	✓ *	✓ *	✓ **
EO-Family (Less > More Korean oriented)	n/a		✓ *
Gender			
EO-Language (English > Korean)	n/a		
Generation	n/a	n/a	n/a

[1] Significant predictors in MEMs are indicated with "✓". Significant predictors are ordered from the biggest to smallest effect size. Factors that are non-significant for any group are greyed out. See Note 2 for explanation of asterisks representing significance levels.

In the summary of models for /o/ in Table 6, we see that two linguistic factors, PoA and Duration, are consistently significant across all three groups. These factors also show similar rankings of factor levels and directions of effect (one exception is the ordering of Dorsal vs. Other groups in the Gen1 model, see Table A2 in Appendix B). This consistency across models suggests that heritage and homeland speakers pattern similarly in these regards. HOM speakers have a bigger effect size for Age than for PoA. However, due to collinearity, Age effects cannot be tested among heritage speakers. Similarly, ethnic orientation effects cannot be tested in HOM speakers. Overall, where comparisons are possible, the three groups behave similarly in terms of the conditioning of /o/-fronting.

Additionally, HOM and Gen1 speakers show similar effects of WordPosition, where non-initial tokens favor /o/-fronting. The effect of WordPosition is best attributed to Korean input, as Korean has a syllable-initial prominence effect on vowel realization (Y. Kang, 2016), but English does not. See, for example, T. Cho (2005), a study on /i/-fronting which shows accentual but not prosodic-boundary effects. Thus, this factor's effect cannot be accounted for by reported patterns within English and, thus, is not attributed to English influence.

Lastly, EO-Family is significant in the Gen2 model, where an increase in the ethnic orientation score (higher engagement with Korean culture by people around the speaker) is associated with less /o/-fronting. This provides evidence that Gen2 speakers may not associate /o/-fronting with Korean language, and that heritage speakers may, in fact, resist fronting due to its overlap with English /o/-fronting.

3.2. /u/-Fronting

The second dependent variable we consider is the F2 of /u/ relative to /a/ ($F2_a$–$F2_u$), which measures the degree of /u/-fronting. The same interpretation of the estimates and Hz values from Section 3.1 is used: If /u/ is fronting, then the distance between /u/ and /a/ will decrease (smaller positive number); if /u/ is not fronting, the distance between /u/ and /a/ will increase (larger positive number). Models are organized as for /o/-fronting in Section 3.1.

Table 7 provides a model with all speakers to investigate generational effects on degree of /u/-fronting. The model with the best fit included significant effects of Preceding PoA, Age, and Duration. Including Generation worsened the fit of the model (in the step-up procedure), which indicates that, again, generational differences are not the best way to characterize variation in /u/-fronting. As with /o/-fronting, the relevant social factor is Age: Younger speakers front /u/ more than older speakers.

Table 7. MEM of /u/-fronting ($F2_a$–$F2_u$), for all generations, 26 speakers, n = 2465.

Fixed Effects	Estimate	Std. Error	df	t Value	Pr(>|t|)	
(Intercept)	79	29	57	2.7	$p << 0.05$	**
Duration	725	180	2458	4.0	$p << 0.05$	***
PoA-Dorsal	223	17	2460	13.5	$p << 0.05$	***
PoA-Other	188	15	2456	12.6	$p << 0.05$	***
Age-Younger	−157	28	23	−5.5	$p << 0.05$	***

[1] Random effects for Table 7:

Groups	Name	Variance	Std. Dev.
Speaker	(Intercept)	3363	58
Residual		88,794	298

Models for each speaker group are compared and summarized in Table 8. These models are reported in Appendix C (Tables A4–A6).

Table 8. Significant predictors for /u/-fronting ($F2_a$–$F2_u$), 26 speakers, n = 2465.

Predictor	Homeland	Gen1	Gen2
n	1244	554	433
PoA (COR>Other>DOR)	✓ ***	✓ ***	✓ *
Age (Younger>Older)	✓ **	✓ **	
Duration (Shorter>Longer)	✓ *	✓ *	
WordPosition			
EO-Language	n/a		
Gender			
EO-Family	n/a		
Generation	n/a	n/a	n/a

[1] Same schema as Table 6 footer.

As seen in Table 8, all three groups show identical PoA effects: /u/-fronting is favored in post-coronal contexts and disfavored in word-initial position or when /u/ follows a vowel or bilabial. Gen2 models include no other significant effects. The lack of Duration as a significant effect here is surprising. In contrast, HOM and Gen1 models share Age and Duration patterns, where /u/-fronting is favored in post-coronal contexts and in shorter vowels (Age cannot be tested in Gen2 due to the lack of a range of ages, see Table 2). The shared social and linguistic effects between Homeland and Gen1 speakers again indicate similarities between their phonological grammars. The consistency of linguistic effects in these analyses suggests that /u/-fronting is associated with Korean rather than English language influence.

3.3. /ɨ/-Fronting

Next, we present models for /ɨ/-fronting. In the all-speaker model, shown in Table 9, the same factors are significant as for the other vowels, and with the exception of WordPosition, the levels also rank in the same order as for /o/-fronting.

Table 9. MEM of /ɨ/-fronting ($F2_a$–$F2_i$) for all generations, 26 speakers, n = 7442 [1] .

Fixed Effects	Estimate	Std. Error	df	t Value	Pr(>|t|)	
(Intercept)	−142	24	37	−5.9	$p << 0.05$	***
Duration	316	90	7434	3.5	$p << 0.05$	***
PoA-Other	184	13	7434	13.8	$p << 0.05$	***
PoA-Dorsal	113	8	7424	13.4	$p << 0.05$	***
Age-Younger	−72	27	24	−2.7	0.01	*
WordPosition-Non-initial	47	8	7432	5.7	$p << 0.05$	***

[1] Random effects for Table 9:

Groups	Name	Variance	Std. Dev.
Speaker	(Intercept)	3700	61
Residual		76,972	277

We provide a summary of conditioning effects on /ɨ/-fronting in Table 10, with Tables A7–A9 showing models of each speaker group in Appendix D. This summary again shows strong continuity between the HOM and Gen1 speakers. The same conventions are used in Table 10 as for Table 6.

Table 10. Significant predictors for /ɨ/-fronting ($F2_a$–$F2_i$).

Predictor	Homeland	Gen1	Gen2
n	4253	1973	1216
PoA (Other > DOR > COR)	✓ *****	✓ ******	✓ ****
Age	✓ ****	✓ *****	
WordPosition	✓ **	✓ ***	
Duration	✓ *	✓ **	
Gender	✓ ***	←→ [1] ****	✓
Less > More Korean oriented	n/a	✓ *	✓
EO-Language	n/a		
Generation	n/a	n/a	n/a

[1] Same schema as Table 6 footer. This two-sided arrow indicates that the factor is significant for this speaker group, but the direction of effect is the opposite of the other groups.

As presented in Table 10, Gender and PoA are significant across all three speaker groups. Overall, the factor ranking (by effect size) and direction of effects are also shared across three groups, with the exception of Gender, whose effect is reversed in Gen1 speakers (see Table A8 in Appendix D). The direction of Gender and Age effects in HOM speakers suggests a change in progress in Homeland Korean: Younger speakers and females have more fronted /ɨ/ than older and male speakers. This trend is fully replicated in Gen1

speakers and is partially replicated in Gen2 speakers (see Table 2). Again, Age cannot be tested in Gen2 models due to collinearity with Generation.

Gen2 shows fewer significant factors than the other groups (see Table 10). This suggests, perhaps, that the pattern for /i/ has diffused, rather than being faithfully transmitted, from Gen1 (cf. Labov, 2007). It may also be the result of a smaller sample. For the significant factors, the direction of effect is the same as for the HOM speakers, and the factors are ranked the same way by effect size (see Table A9 in Appendix D). This shows replication of some aspects of the HOM pattern in Gen2 speech. Moreover, the lack of significant ethnic orientation effects in Gen2 precludes attributing the difference to increasing contact with, or influence of, English.

3.4. Seeking Evidence of Chain Shifts

The models presented in Sections 3.1–3.3 offer insights to movement of the three vowels independently, relative to a stable anchor vowel, but they do not shed light on whether speakers are participating equally across all three shifts (/o/-fronting, /u/-fronting, and /ɨ/-fronting). That is, they do not indicate whether the three vowels that have been posited to be part of a chain shift in Seoul Korean are behaving as a cohesive system in these speaker groups. We seek evidence of chain shift patterns in two ways. First, we look at plots of raw formant frequencies pairwise across pairs of vowels. These ignore any contextual conditioning effects. Those will be added in subsequently by modeling the relationship between the position of the pairs of vowels.

To see whether fronting of one vowel can predict fronting in another vowel, each speaker's average F2 of each of the three vowels was first plotted pairwise. Figure 4 shows the average F2 of /o/ by the average F2 of /u/ for each speaker, with female speakers on the left facet and male speakers on the right. The ranges of the axes are held constant across Figures 4–6 to facilitate comparison. There appears to be a relatively consistent pattern, where speakers with a higher F2 of /o/ (x-axis) tend to have a higher F2 of /u/ (y-axis). There are no visible Age-related patterns for female speakers. For male speakers, older speakers (in red) have lower F2 of both /o/ and /u/ than younger speakers (in blue). The younger males occupy a similar vowel space as the females, suggesting a change in progress where males are moving toward the female target, while females may be stable.

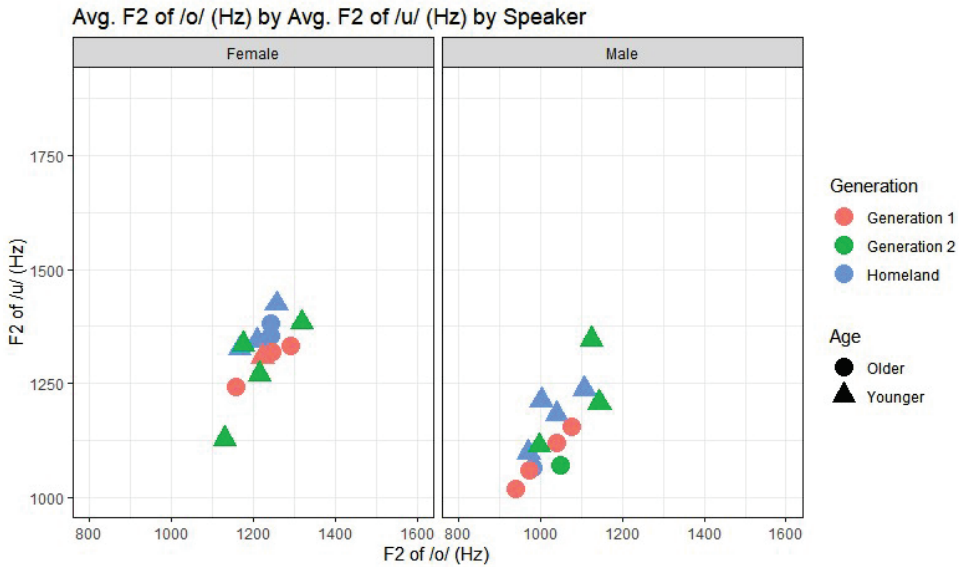

Figure 4. Average F2 (Hz) of /o/ plotted against average F2 (Hz) of /u/ by Speaker.

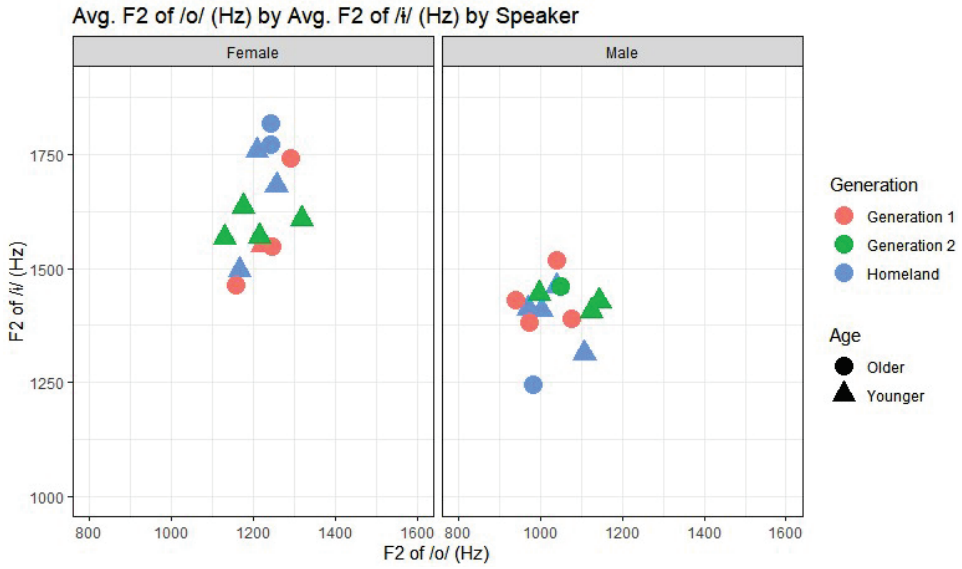

Figure 5. Average F2 (Hz) of /o/ plotted against average F2 (Hz) of /ɨ/ by Speaker.

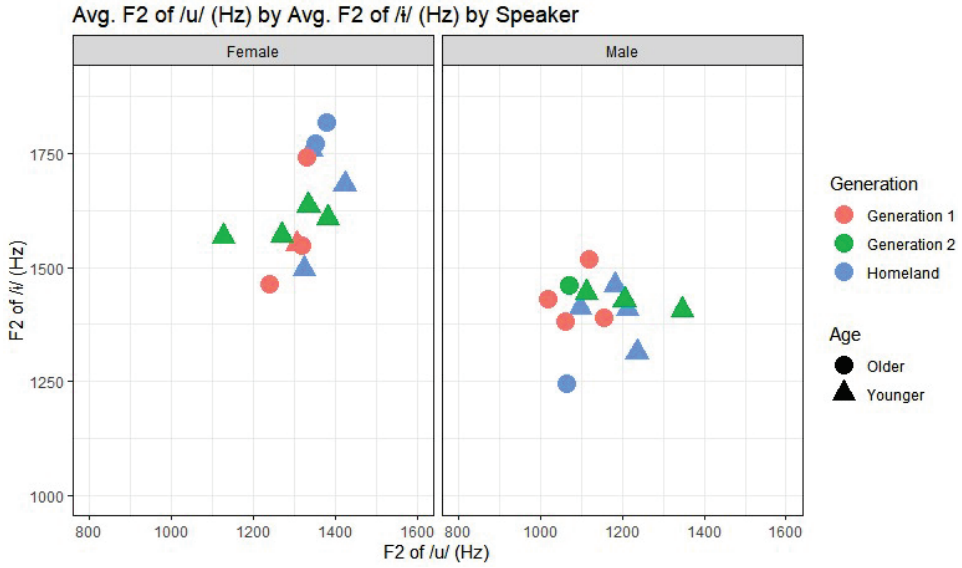

Figure 6. Average F2 (Hz) of /u/ for each speaker plotted against average F2 (Hz) of /ɨ/.

Plots of the average F2 of /o/ by the average F2 of /ɨ/ are presented in Figure 5. No relationship between these two vowels appears. The age groups are not distinguished for either gender. Thus, we do not see clear evidence of a change in progress (age and gender effects) nor a relationship between the behavior of these two vowels. However, they have been posited to be part of a chain shift in Seoul Korean where /o/ raises as /u/ fronts. As stated earlier, Griffin (2023) found no evidence of /o/-raising in Seoul Korean. For all of these reasons, we do not further investigate /o/-fronting as a dependent variable in this examination of chain shifts.

Finally, we compare /u/- and /ɨ/-fronting in Figure 6. Similarly to the case of /o/- and /u/-fronting, we see different patterns for female versus male speakers. For females, speakers with a higher F2 of /u/ tend to have a higher F2 of /ɨ/. No age-related pattern emerges. For male speakers, no relationship is apparent between the two vowels. Older male speakers have a lower F2 of /u/ compared to younger male speakers, suggesting a change in progress consisting of /u/-fronting among the males.

To further investigate the relationship between /u/- and /ɨ/-fronting that is illustrated in Figure 6, linear regression models were constructed using a centered version of the de-

pendent variables $F2_a$–$F2_u$ and $F2_a$–$F2_i$, respectively, and including the speakers' average values for the other vowel as a predictor as well as the other factors, now familiar, from the earlier models. Here we simplify presentation of the models to focus on the estimates of significant predictors so that we can present Heritage (Gen1 and Gen2 combined) and HOM models side by side, for ease of comparison.

Results from models of $F2_a$–$F2_u$, with speaker's average for /o/ and /ɨ/ as predictors, are presented in Table 11. All estimates are in Hz. Significance levels are coded as in the summary tables above, see Note 2. Only one significant factor is shared across Heritage and HOM models, which is the speaker's average F2 of /o/: For every increase of 1 Hz in the F2 of /u/, we see about a 0.7 Hz increase in the F2 of /o/. This suggests that a speaker's participation in /o/-fronting correlates to fronting /u/, as suggested in Figure 4. In contrast, the smaller effect size of speaker's average F2 of /ɨ/ just misses the significance threshold for each speaker group. The degree of /ɨ/-fronting does not strongly predict whether a speaker will also participate in /u/-fronting. Yet, it does pattern in the same direction as /o/-fronting: A speaker's participation in /u/-fronting is also positively associated with /ɨ/-fronting. Additionally, Duration is significant in the Heritage model. Duration patterns consistently with previous models, where longer tokens are more peripheral (further back). Lastly, for the HOM model, Age is a significant factor, where younger speakers exhibit more /u/-fronting than older speakers do, confirming the existence of an ongoing shift in Seoul Korean, but this is not replicated by heritage speakers.

Table 11. Linear regression models of /u/-fronting ($F2_a$–$F2_u$) for Homeland and Heritage groups, 3258 observations.

		Heritage			**Homeland**		
		Estimate	**Pr(>|t|)**		**Estimate**	**Pr(>|t|)**	
(Intercept)		34	73		151	0.34	
	Duration	−927	0.04	*	−325	0.45	
Gender-Male		−68	0.14		17	0.76	
Age-Younger		31	0.67		248	0.04	*
EO-Language		−30	0.10		N/A		
EO-Family		−20	0.20		N/A		
Speaker's Ave. F2 of /o/		0.68	0.004	**	0.93	0.003	**
Speaker's Ave. F2 of /ɨ/		0.47	0.07		−1.7	0.10	.

The second model, presented in Table 12, investigates the conditioning of /ɨ/-fronting. The relative fronting of /u/ does predict fronting of /ɨ/ for heritage but not homeland speakers. However, /ɨ/-fronting is not conditioned by /o/-fronting for either group. Age is significant only for homeland but not heritage speakers, where younger speakers have higher degrees of /ɨ/-fronting than older speakers do. Again, this confirms the existence of an ongoing shift in Seoul Korean that is not replicated by heritage speakers.

Two interesting patterns emerge from these last two models. One is that social factors play a much smaller role (than in the earlier models) when the position of other vowels is included as a predictor. This suggests an important phonetic cue for how effects that are normally reported as stochastic social factor effects may be perceived and transmitted. Perhaps speakers attune directly to the vowel system rather than, or, more likely, in addition to, the social characteristics of their interlocutors. The second is that Heritage and Homeland speaker models are, again, quite similar in terms of the effects of linguistic predictors—the outcome of successful transmission from one group to the other.

Table 12. Linear regression models of /ɨ/-fronting ($F2_a$–$F2_ɨ$) for Heritage and Homeland groups, 3258 observations.

	Heritage			Homeland		
	Estimate	**Pr(>|t|)**		**Estimate**	**Pr(>|t|)**	
(Intercept)	−33	0.52		−57	0.08	.
Duration	94	0.28		−42	0.51	
Age_Younger	62	0.25		116	0.008	**
Gender_Male	55	0.13		11	0.77	
EO-Language	20	0.24		NA		
EO-Family	12	0.37		NA		
Speaker's Ave. F2 of /u/	0.36	0.04	*	0.10	0.72	
Speaker's Ave. F2 of /o/	0.10	0.70		0.16	0.50	

4. Discussion

We examine Heritage Korean speakers' participation in three vowel shifts, /o/-, /ɨ/-, and /u/-fronting, querying whether this shift is due to English interference or, rather, reflects concurrent change in Seoul Korean (whose vowel shifts we also examine). Within Meyerhoff's (2009) framework of language transfer types, we investigate the extent to which Heritage Korean speakers participate in the Homeland sound shift, seeing whether there is full participation, partial participation (cf. vowel shift in Heritage Cantonese in Toronto, Tse, 2019), or even reversal of the shift (cf. VOT in Heritage Korean in Toronto, Y. Kang & Nagy, 2016). This allows a deeper, more considered comparison than looking at rates alone. We begin the discussion, however, by remarking that generation did not play a significant role in distinguishing the degree of fronting for any of the three vowels (see all-speaker models in Tables 5, 7 and 9).

For the homeland vowel shift, Y. Kang (2016) described /u/- and /ɨ/-fronting in homeland speakers in Seoul based on read speech, finding that males lead /u/-fronting and younger and female speakers lead /ɨ/-fronting. We find similar patterns of these results in spontaneous speech by homeland speakers (see Table A4 for /u/-fronting and Table A7 for /ɨ/-fronting). While we find no gender effect for /u/-fronting for homeland speakers, we do see an age effect, where younger speakers exhibit greater /u/-fronting than older speakers do. We find stronger replication for /ɨ/-fronting, where younger and female speakers favor fronting. We next compare homeland and heritage speakers. Although we cannot test for age effects within heritage generations due to collinearity with generation, we might expect generational differences. However, the inclusion of generation as a factor in models worsened the fit to the model to the data, showing that generation is not a consistent predictor of participation in these shifts. Overall, our evidence indicates that heritage speakers are participating in all three vowels of the sound change occurring in Seoul Korean, with patterns influenced by much the same set of linguistic factors in homeland and heritage models (see Tables 6, 8 and 10). This is in keeping with the broader set of findings that have emerged from the HLVC project (Nagy, 2024). Examination of ten variables across eight languages does not reveal *consistent* differences between heritage and other languages.

> Heritage languages may be defined by their migration history and ethnolinguistic vitality, but not by a set of features that distinguishes them from varieties spoken by monolinguals. . . . (Nagy, 2024, p. 247)

The studies reported in Nagy (2024) found that EO scores (factors relating to language use or preference, the same as used in this paper) had less effect than other factors. It also showed only a few cases of generational differences. Rather,

> as in majority languages, many variable patterns are transmitted faithfully from one generation to another. (Nagy, 2024, p. 247)

Although Gen2 speakers receive some input in the community's majority language (English, in the case of Toronto), and concomitantly less input in their heritage language, this often shows no effect in their language production. Rather, as expected in a world where the majority of people develop bi- or multilingually, speakers of heritage languages also may fully develop multiple languages simultaneously (Nagy, 2024, pp. 247–248).

This emerges from sampling ecologically valid (i.e., communication-oriented) speech rather than data from experimental tasks, which target differences between heritage and homeland speakers. Experimental approaches often discount the linguistic capabilities of heritage speakers, framing their skills as "deviant" from those of their homeland counterparts (Nagy, 2024, p. 248).

Here, instead, we are able to illustrate strong similarities between the groups. To further interpret these similarities and differences between homeland and heritage speakers, we turn to Meyerhoff's (2009) model (i–iii in Section 1). Meyerhoff posited three types of contact effects, differing in the degree and extent of transfer through contact, and described how these are evidenced by particular patterns of significant factors and their respective rankings across languages. We propose that, for this classification task, social and linguistic factors be considered as two separate classes when comparing heritage and homeland speakers due to their different behaviors.

We first discuss the linguistic factors. Shared linguistic factors between homeland and heritage models show the similarities between these groups' vowel patterns and the linguistic contexts where back-vowel fronting is observed. Shared factors between groups that are not also described as relevant to English back vowel fronting (see the literature reviewed in Section 1) strongly suggest that heritage groups' participation in the shift is not based on English input. However, linguistic factors that are significant in heritage models that are described as relevant to English back vowel fronting, and that are not significant in the Homeland Korean models, would be evidence that heritage speakers' back vowel fronting is due to English influence. This would be further bolstered by ethnic orientation scores that show the more English input speakers have, the more strongly they exhibit these patterns.

The Gen1 grammar reflects strong transfer from homeland speakers: There is almost complete overlap between significant factor groups, and the ordering of factor groups is identical in the models for both groups (see Tables A2, A5 and A9). While some of these factors are more universal in nature (i.e., less fronting for longer vowel tokens is not unique to Korean), WordPosition accounts for syllable-initial prominence, which is not a feature of English phonology (T. Cho, 2005; T. Cho & Keating, 2009). The shared significance and ranking of domain-initial strengthening effects suggests that Gen1 speakers receive enough input to incorporate this factor into their overall grammars and also to apply the pattern to innovative sound changes. Gen1 and HOM speakers also show the same effect of WordPosition, where it is significant for /o/-fronting and /ɨ/-fronting but not for /u/-fronting. This is further evidence of strong transfer across the phonological grammars of these two speaker groups.

Gen2 speakers do not show even weak transfer effects for linguistic factors except PoA: There is no other overlap between significant factor groups between Generations 1 and 2 (see Tables 5, 7 and 9). The primary significant linguistic effect in Gen2 models shows that back vowels are fronted most in post-coronal contexts. This pattern is robustly attested cross-linguistically (Hillenbrand et al., 2001; Oh, 2008) and is not strong evidence for a shared phonological grammar between Gen2 and HOM speakers.

Social factors show more variation across speaker groups. One factor that was predicted to play a role does not emerge as significant in any relevant group: EO-Language. The variation in significant social effects leads us to consider the contact effect as *transfer*.

Gen1 speakers show strong transfer effects for the social factors Age and Gender for /u/-fronting, where Age has a similar relative effect size compared to other significant factors (see Tables A2, A5 and A8). The effect of Age is also in the same direction, with younger speakers advancing fronting. However, Gen1 speakers do not share the same direction of effect for Gender in /ɨ/-fronting, where males lead fronting rather than females. Gen2 speakers do not show any of the replication patterns (see Tables A3, A6 and A9). Since there are no shared significant social factors between Gen2 speakers and other speaker groups (except the cross-linguistic PoA effect), these results cannot be used to argue that there are even *weak transfer* effects, when it comes to social factors.

However, that is not our final answer. To tease apart the linguistic systems of these three speaker groups with different degrees of influence from social factors, linear regression models were constructed that include cues from the other vowels. These models clarify the relationship between vowels in the shift. When we consider the vowel shifts as a system, we see more similarities across heritage and homeland groups. For F2 of /u/, two significant predictors are shared across speaker groups, namely, the effects of a speaker's F2 of /o/ or /ɨ/ (see Table 11). Their similar direction and degree of effect suggest *strong transfer*: The same factor group and ranking between the model and replica groups indicate similar phonological systems. This indicates that the vowel shift, as a system, has been transmitted from homeland to heritage speakers. This third set of models provides evidence for Heritage Korean participation in the homeland chain shifts: The relationship across the vowels is maintained. These patterns present another possible interpretation of what heritage speakers know. Perhaps, as listeners, they tune into the phonemic system (i.e., the shift patterns), as much as or perhaps instead of, specific predictors, e.g., co-articulatory cues. Recognition of ongoing systemic shifts is another aspect of sociolinguistic competence that these heritage speakers have acquired.

Ethnic orientation scores have been explored to help shed light on motivation for heritage speakers' participation in the sound change. The EO-Language scores show speakers' relative alignment towards using Korean and English. In contrast EO-Family scores indicate the relative strength of the two languages and cultural orientations in the speakers' immediate environment. Ethnic orientation of the speaker has been shown to correlate with participation in vowel shifts in the majority language, where a stronger orientation towards Korean identity is associated with less participation in English sound shifts (Jeon, 2017). In this study, there is potential for ethnic orientation scores to show ambiguous results, as both languages are undergoing /o/ and /u/-fronting. However, we find that ethnic orientation scores are not a consistent predictor of speaker participation in these vowel shifts in the heritage language.

For /o/-fronting, the EO-Family scores, which indicate the degree of Korean vs. English orientation in the speakers' environment, represent a significant predictor for Gen2, where a higher score (more "Koreanness" in their family, see topics in Section 2.1) is associated with less /o/-fronting (see Table A2). EO-Family is also significant for Gen1 for /ɨ/-fronting, where more Korean in the input environment is associated with greater /ɨ/-fronting (see Table A8). Thus EO-Family can favor or disfavor participation in different vowel shifts. We posit that the difference here may be because /ɨ/-fronting has no reflex in English, while /o/-fronting does, and the speakers therefore reject the pattern. That is, although /o/-fronting is occurring in both Toronto English and Seoul Korean, Gen2 speakers who orient towards Korean culture resist /o/-fronting in their production of Korean. Their Korean identity in Canada may be linked to resisting vowel shifts that are present in the dominant language. In contrast, given that /ɨ/ is not in the Toronto English vowel inventory, this vowel may not carry the same connotations as /o/. Heritage speakers are ad-

vancing /ɨ/-fronting in Canada, similar to their Homeland counterparts, and may be doing so due to its lack of association with English.

The EO-Language score did not have a significant effect in any of these vowel shifts. Participation in the shifts is not influenced by how much the speaker uses English. Perhaps the reason that the ethnic orientation scores are not significant for /u/-fronting is that both poles (English orientation and Korean orientation) are associated with a language that exhibits this fronting, minimizing the utility of this feature as a tool for identity-marking. The lack of automatic or consistent effect of the EO-Family predictor suggests that language contact effects are mediated by attitude. This can be seen as attributing more agency to heritage speakers: They *construct* their identity, just like other speakers, rather than having contact effects thrust upon them.

5. Conclusions

We investigate Heritage Korean speakers' participation in a Homeland Korean sound change involving /o/, /u/, and /ɨ/-fronting and ask whether this participation can be attributed to language interference from English, the language that is dominant in the wider community, or is better understood as a continuation of the Homeland Korean pattern. Through the lens of Meyerhoff's (2009) framework for language transfer in multilingual contexts, we examine whether the source of processes shared by both languages can be accurately attributed to just one source in a heritage language. We find a comparable degree of vowel shifting by Heritage and Homeland Korean speakers. Shared significant factor groups and their ranking of effects indicate more similarity between Gen1 and HOM speakers. This, in turn, illustrates the sociolinguistic competence of heritage speakers: Not only do they replicate rates of fronting and some aspects of linguistic conditioning found in homeland speech, but they also, to varying degrees, replicate the effects of social factors (i.e., age, gender). Our data thus also point to the necessity of separating social and linguistic factors when considering language transfer: Replication is more complete with linguistic factors than social.

However, the effects of ethnic orientation scores suggest that Gen2 speakers who are strongly oriented to Korean culture resist fronting of /o/, a vowel-shift shared by Korean and English, while participating in /ɨ/-fronting, a vowel not present in English. This highlights the important role of identity-marking, a key component of sociolinguistic competence. Future investigations of other chain shifts (in other heritage languages, potentially with different majority languages) are needed to solidify this conclusion. Comparing cases with concurrent or divergent sound changes between the majority and heritage language(s) will help pinpoint the role of heritage speakers' alignment in their participation in sound shifts.

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Appendix A. Vowel Spaces for Each Speaker

A plot of each speaker's average F1 (y-axis) and F2 (x-axis) for each vowel is presented in Figure A1. The legend indicates the color that corresponds to each vowel quality. Each vowel space is separated by speaker and labeled with each speaker's unique code. K0 refers to HOM speakers, K1 refers to Gen1 speakers, and K2 refers to Gen2 speakers. Male speakers are labeled with M and female speakers are labeled with F. Finally, each speaker code includes the speaker's age. Further letters (e.g., A, B) are used to identify speakers who may share all other relevant social information.

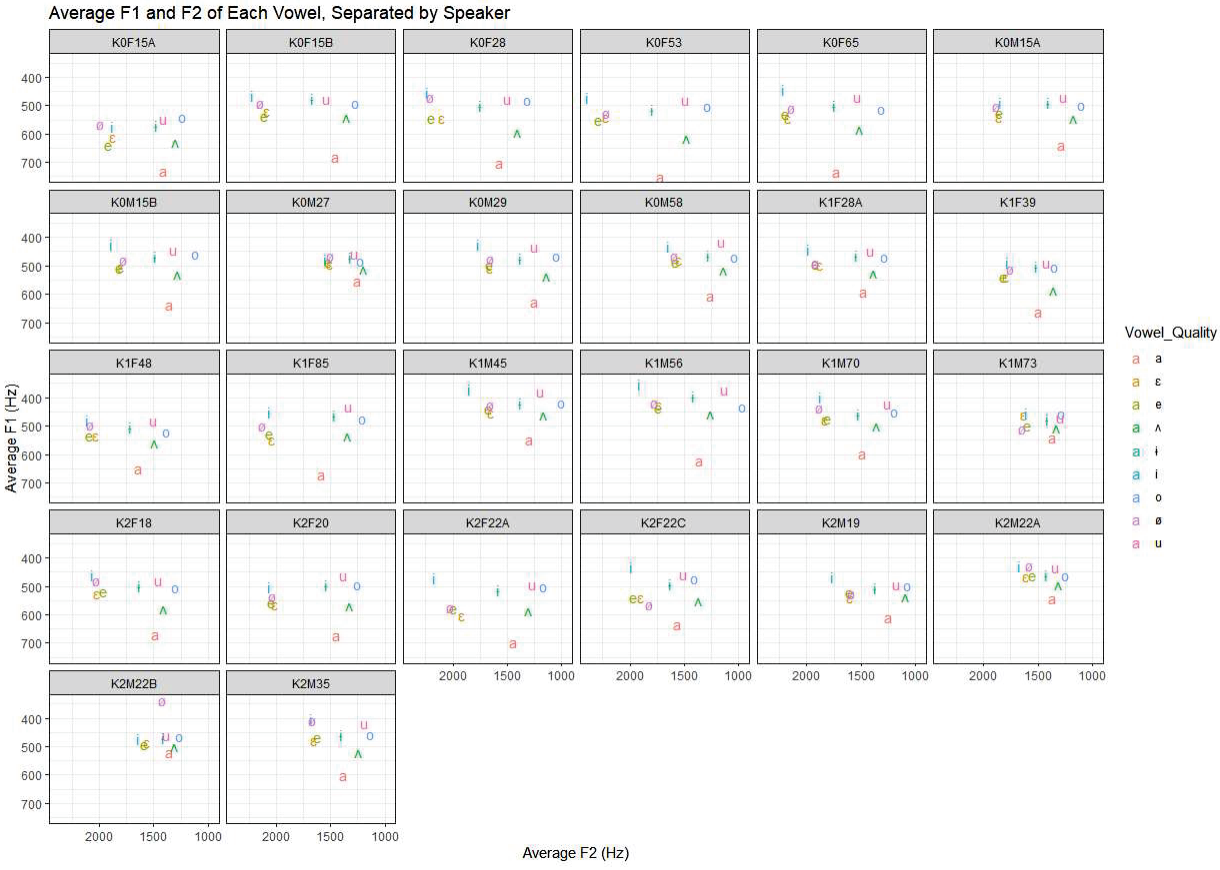

Figure A1. Average (Raw) F1 and F2 (Hz) of Each Vowel, by Speaker.

Appendix B. /o/-Fronting

The full set of models examining /o/-fronting in individual speaker groups (HOM, Gen1, and Gen2) is presented in Tables A1–A3, respectively. For a full discussion of the tables, please refer to Section 3.1. Asterisks in the last column of each table indicate significance level: '***' indicates $p < 0.001$, '**' for $p < 0.01$, '*' for $p < 0.05$, '.' for $p < 0.1$ and blank for larger p-values.

Table A1. MEM of /o/-fronting ($F2_a$–$F2_o$) for HOM speakers, 10 speakers, n = 3559.

Fixed Effects						
	Estimate	**Std. Error**	**df**	**t Value**	**Pr(>|t|)**	
(Intercept)	196	46	9	4.26	$p << 0.05$	**
Duration	1544	114	3550	13.52	$p << 0.05$	***
Age-Younger	−150	53	8	−2.81	$p << 0.05$	*
PoA-Other	145	11	3548	13.06	$p << 0.05$	***
PoA-Dorsal	129	10	3547	12.63	$p << 0.05$	***
WordPosition-Non-initial	−37	9	3546	−4.12	$p << 0.05$	***
Random Effects						
Groups	Name		Variance		Std. Dev.	
Speaker	(Intercept)		5743		76	
Residual			64,537		254	

Table A2. MEM of /o/-fronting ($F2_a$–$F2_o$) for Gen1 speakers, 8 speakers, n = 1436.

Fixed Effects						
	Estimate	**Std. Error**	**df**	**t Value**	**Pr(>|t|)**	
(Intercept)	143	47	6	3.0	0.02	*
Duration	1343	149	1425	9.0	$p << 0.05$	***
PoA-Dorsal	105	14	1429	7.5	$p << 0.05$	***
PoA-Other	98	16	1425	6.2	$p << 0.05$	***
WordPosition-Non-initial	−56	13	1423	−4.3	$p << 0.05$	***
Random Effects						
Groups	Name		Variance		Std. Dev.	
Speaker	(Intercept)		3589		60	
Residual			49,954		224	

Table A3. MEM of /o/-fronting ($F2_a$–$F2_o$) for Gen2 speakers, 8 speakers, n = 946.

Fixed Effects						
	Estimate	**Std. Error**	**df**	**t-Value**	**Pr(>|t|)**	
(Intercept)	139	21	941	6.51	$p << 0.05$	***
Duration	772	185	941	4.16	$p << 0.05$	***
PoA-Other	135	20	941	6.62	$p << 0.05$	***
PoA-Dorsal	90	18	941	5.12	$p << 0.05$	***
EO-Family	17	7	941	2.33	0.02	*
Random Effects						
Groups	Name		Variance		Std. Dev.	
Speaker	(Intercept)		0		0	
Residual			54,440		233	

Appendix C. /u/-Fronting

The full set of models examining /u/-fronting in individual speaker groups (HOM, Gen1, and Gen2) is presented in Tables A4–A6, respectively. For a full discussion of the tables, please refer to Section 3.2. Asterisks in the last column of each table indicate significance level: '***' indicates $p < 0.001$, '**' for $p < 0.01$, '*' for $p < 0.05$, '.' for $p < 0.1$ and blank for larger p-values.

Table A4. MEM of /u/-fronting ($F2_a$–$F2_u$) for HOM speakers, 10 speakers, n = 1385.

Fixed Effects						
	Estimate	**Std. Error**	**df**	**t Value**	**Pr(>|t|)**	
(Intercept)	78	46	14	1.71	0.11	
Duration	659	269	1376	2.45	0.01	*
PoA-Dorsal	213	24	1375	8.73	$p << 0.05$	***
PoA-Other	189	21	1378	9.22	$p << 0.05$	***
Age-Younger	−177	47	7	−3.79	$p << 0.05$	**
Random Effects						
Groups	Name		Variance		Std. Dev.	
Speaker	(Intercept)		3757		61	
Residual			103,483		322	

Table A5. MEM of /u/-fronting ($F2_a$–$F2_u$) for Gen1, 8 speakers, n = 604.

Fixed Effects						
	Estimate	**Std. Error**	**df**	**t Value**	**Pr(>|t|)**	
(Intercept)	45	54	16	0.8	0.42	
Duration	1113	318	598	3.5	$p << 0.05$	***
PoA-Dorsal	235	30	598	7.7	$p << 0.05$	***
PoA-Other	183	27	598	6.7	$p << 0.05$	***
Age-Younger	−157	48	4	−3.3	0.03	*
Random Effects						
Groups	Name		Variance		Std. Dev.	
Speaker	(Intercept)		2165		47	
Residual			72,472		269	

Table A6. MEM of /u/-fronting ($F2_a$–$F2_u$) in Gen2 speakers, 8 speakers, n = 476.

Fixed Effects						
	Estimate	**Std. Error**	**df**	**t Value**	**Pr(>|t|)**	
(Intercept)	28	37	15	0.7	0.47	
PoA-Dorsal	233	33	471	7.1	$p << 0.05$	***
PoA-Other	190	34	472	5.6	$p << 0.05$	***
Random Effects						
Groups	Name		Variance		Std. Dev.	
Speaker	(Intercept)		3278		57	
Residual			67,225		259	

Appendix D. /i/-Fronting

The full set of models examining /i/-fronting in individual speaker groups (HOM, Gen1, and Gen2) is presented in Tables A7–A9, respectively. For a full discussion of the tables, please refer to Section 3.3. Asterisks in the last column of each table indicate significance level: '***' indicates $p < 0.001$, '**' for $p < 0.01$, '*' for $p < 0.05$, '.' for $p < 0.1$ and blank for larger p-values.

Table A7. MEM of /i/-fronting ($F2_a$–$F2_i$) for HOM speakers, 10 speakers, n = 4253.

Fixed Effects						
	Estimate	**Std. Error**	**df**	**t Value**	**Pr(>|t|)**	
(Intercept)	−197	34	10	−5.87	$p << 0.05$	***
Duration	376	124	4245	3.03	$p << 0.05$	**
PoA-Other	218	18	4244	12.33	$p << 0.05$	***
PoA-Dorsal	136	12	4243	11.25	$p << 0.05$	***
Age-Younger	−112	35	7	−3.19	0.01	*
Gender-Male	89	32	7	2.73	0.03	*
WordPosition-Non-initial	51	12	4242	4.28	$p << 0.05$	***
Random Effects						
Groups	Name		Variance		Std. Dev.	
Speaker	(Intercept)		2170		47	
Residual			82,423		287	

Table A8. MEM of /i/-fronting ($F2_a$–$F2_i$) for Gen1 speakers, 8 speakers, n = 1973.

Fixed Effects	**Estimate**	**Std. Error**	**df**	**t Value**	**Pr(>|t|)**	
(Intercept)	−27	34	10	−0.78	0.46	
Duration	343	164	1909	2.10	0.04	*
PoA-Other	166	25	1965	6.53	$p << 0.05$	***
Age-Younger	−126	32	4	−3.91	0.02	*
Gender-Male	−113	30	4	−3.82	0.02	*
PoA-Dorsal	99	16	1965	6.04	$p << 0.05$	***
WordPosition-Non-initial	65	16	1965	4.14	$p << 0.05$	***
EO-Family	−48	10	4	−4.66	0.01	**
Random Effects						
Groups	Name		Variance		Std. Dev.	
Speaker	(Intercept)		627		25	
Residual			67,727		260	

Table A9. MEM of /i/-fronting ($F2_a$–$F2_i$) for Gen2 speakers, 8 speakers, n = 1216.

Fixed Effects						
	Estimate	**Std. Error**	**df**	**t Value**	**Pr(>|t|)**	
(Intercept)	−132	35	5	−3.76	0.02	*
PoA-Other	78	17	1210	2.30	0.02	*
PoA-Dorsal	23	53	1187	4.61	$p << 0.05$	***
Random Effects						
Groups	Name		Variance		Std. Dev.	
Speaker	(Intercept)		3919		63	
Residual			71,699		268	

Notes

1 All 38 available Heritage Korean speakers were included in the full-corpus Principal Components Analysis of Ethnic Orientation (EO) scores. 16 of those are included in this vowel analysis (along with 10 Homeland Korean speakers).

2 Significance levels are coded as follows in all tables: "***" indicates $p < 0.001$, "**" for $p < 0.01$, "*" for $p < 0.05$, "." for $p < 0.1$, and blank for larger p-values.

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Article

Sociolinguistic Competence in Chinese Heritage Language Speakers: Variation in Subject Personal Pronoun Expression

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Abstract: Learning a language means both mastering the grammatical structures and using contextually appropriate language, or developing *sociolinguistic competence*, which has been examined by measuring the native-like patterns of sociolinguistic variables. This study investigates subject personal pronoun expression (SPE) variation in Mandarin by young adult and child heritage language learners (or Chinese Heritage Language, CHL) and explores the development of sociolinguistic competence. With data collected from 15 young adults and 27 children, regression analyses show that internal linguistic constraints, psychophysiological constraints, and social constraints all significantly affect SPE variation in CHL. Overall, CHL children used fewer subject pronouns than young adults. The use of pronouns in both child language and young adult speech is constrained by similar factors. However, the difference in SPE patterns between the two groups was not statistically significant. This suggests that children may have already established some adult-like variation patterns, but these are not further developed until early adulthood. By exploring the development of sociolinguistic competence, this research contributes to the current understanding of how sociolinguistic variables are acquired and employed in heritage language at different developmental stages.

Keywords: sociolinguistic competence; Chinese heritage language; variation acquisition; subject personal pronoun; child language

1. Introduction

Learning a language means not only mastering the grammatical structures of a target language but also becoming a legitimate member of the target speech community. It requires knowledge about how to recognize and produce contextually appropriate language, or *sociolinguistic competence*, which has been examined by measuring the native-like patterns of sociolinguistic variables (Bayley et al., 2022; Bayley & Regan, 2004; Lyster, 1994; Regan, 1996). Previous studies showed that besides internal grammatical constraints, external factors, including age, gender, language proficiency, and language contact (e.g., studying abroad), may all affect learners' choice of different linguistic variants (Edwards, 2011; Eisenstein, 1982; Kennedy Terry, 2022; Pozzi, 2022; Preston & Bayley, 1996; Regan et al., 2009; Romaine, 2003). However, language learning often differs between typical L2 learners and heritage language learners due to input, language environment, and learner background. It may be reasonable to suspect that these factors also contribute to the development of sociolinguistic competence. This study investigates the subject personal pronoun expression (SPE) variation in Mandarin by young adult and child Chinese Heritage Language (CHL) learners and explores the development of sociolinguistic competence in early childhood and early adulthood. With spontaneous speech data collected

from 15 young adults and 27 children, regression analyses show that internal linguistic constraints, psychophysiological constraints, and social constraints all significantly affect SPE variation in CHL. By exploring variation acquisition and the development of sociolinguistic competence in heritage language, this research contributes to the current understanding of how sociolinguistic variables are acquired and employed by heritage language learners at different developmental stages.

2. Literature Review

2.1. Sociolinguistic Competence and the Use of Sociolinguistic Variables

The development of sociolinguistic competence, or the ability to use the target language appropriately in various contexts as an active interlocutor with native speakers, differs in first language (L1), second language (L2), and heritage language (e.g., Bayley & Regan, 2004; Dewaele, 2004; Holmes & Brown, 1976; Lyster, 1994; Mede & Dikilitaş, 2015; Mougeon et al., 2010; Nagy et al., 2011; Regan, 1996; Regan et al., 2009; Van Compernolle & Williams, 2012; Young & Lee, 2004; Yu, 2005; Zhang, 2021). In L1, children gradually acquire sociolinguistic patterns via interactions with more experienced community members (Holmes & Brown, 1976; Roberts, 1997; Smith & Durham, 2019). Labov (1989) argues that before all the basic grammatical rules have been fully acquired, children begin to learn constraints on sociolinguistic variables. However, this is more challenging for L2 learners who often lack resources to acquire native-like patterns. Early studies on L2 French use in Montreal have revealed that when L2 learners had close interactions with native speakers, they were able to use the vernacular variants in near-native ways (Nagy et al., 2003; Sankoff et al., 1997). However, for classroom L2 students, this is much more difficult, as only limited types of language input can be provided. For example, Mougeon et al. (2010) illustrated that high school French immersion students tended to overuse formal linguistic variants, and this may be attributed to the underuse of colloquial variants in pedagogical materials and teachers' speech. For heritage language learners, it depends on how the heritage language has been acquired and maintained (or not maintained). Only a few scholars have explored how heritage language learners acquire and develop sociolinguistic patterns. Representative works by Nagy (2015) and Nagy et al. (2011) examined several heritage languages, including Cantonese, Italian, Russian, and Ukrainian spoken in Toronto. The results revealed cross-generational differences in Voice Onset Time (VOT), but not in subject pronoun use, and both variables were not related to language contact, use, or attitudes.

Two fundamental aspects of sociolinguistic competence have been discussed: the interpretation of the sociocultural context in which the conversation occurs and the appropriate use of the language (Van Compernolle & Williams, 2012). From a variationist perspective, this has been mainly examined by analyzing variation patterns in a particular sociolinguistic variable, such as *ne* deletion in French (Dewaele, 2004; Regan, 1996). The following sections review previous studies on SPE, which is a widely examined sociolinguistic variable across languages and the one that the current study investigates.

2.2. Constraints and Patterns in Subject Pronoun Variation: Adult Language

Pronominal subject variation has been widely explored in many languages, including Spanish, Italian, Portuguese, Persian, Chinese, and German, among others (e.g., Barbosa et al., 2005; Barrenechea & Alonso, 1973; Bayley & Pease-Alvarez, 1997; Beaman, 2024; Bohnacker, 2013; Cameron & Flores-Ferrán, 2004; Kato & Duarte, 2021; X. Li et al., 2012; Nagy et al., 2011; Nanbakhsh, 2011; Otheguy & Zentella, 2012; Paredes Silva, 1993; Zhang, 2021). In these pro-drop languages where a grammatical subject is eligible to be unexpressed, the overt expression of a subject pronoun is not always required. As shown in the

following examples in Chinese Mandarin, the subject "frog" can be expressed with a noun phrase, a subject pronoun, or be unexpressed. In this case, the subject pronoun is optional and, to some extent, can reflect the speaker's sociolinguistic competence: the absence of pronoun in some cases may cause misunderstanding, while the overuse of pronoun may sound inappropriate.

Sentence (1)

Qīngwā	kànjiàn	nàge	chuán,	***tā***	jiù	zhǔnbèi	tiào	dào	nàge	chuán	shàng
青蛙	看见	那个	船，	他	就	准备	跳	到	那个	船	上。
frog	see	that	boat	***3sg***	just	prepare	jump	to	that	boat	on

'**The frog** saw that boat, ***he*** was preparing to jump on that boat'.

Sentence (2)

Qīngwā	kànjiàn	nàge	chuán,		jiù	zhǔnbèi	tiào	dào	nàge	chuán	shàng
青蛙	看见	那个	船，	∅	就	准备	跳	到	那个	船	上。
frog	see	that	boat	∅	just	prepare	jump	to	that	boat	on

'**The frog** saw that boat, ∅ was preparing to jump on that boat'.

Following the variationist approach, most of the SPE investigations have been based on spontaneous speech collected from adult language users. Previous research has shown how native SPE variation is constrained by various factors and to what extent L2 and/or heritage learners diverge from native speakers. Pioneered by Barrenechea and Alonso (1973) who explored Spanish personal pronoun use in Buenos Aires, L1 research has revealed that, as observed in other sociolinguistic variables, SPE variation is not random but is systematically constrained by internal linguistic, psychophysiological, and social factors (Erker et al., in press). However, to what extent L2 and/or heritage language learners can acquire the native-like patterns depends on learners' L1 background, the learning environment, and L2 proficiency, among other factors. For example, in an early study that investigated pronoun use by Japanese and English learners of Mandarin, Polio (1995) found that L2 learners employed fewer unexpressed forms compared to native speakers, and pronoun absence increased with their Mandarin proficiency. Furthermore, Japanese students used more unexpressed pronouns than their English counterparts. This discrepancy could partially be attributed to the influence of structural transfer, given that Japanese lacks genuine third-person pronouns and relies on classifier constructions to replace pronouns. The study by X. Li (2014) resonated with these findings: learners whose L1s were languages where subject pronouns are less frequently dropped (e.g., English and Russian) used more overt pronouns than learners whose L1s often allow unexpressed pronouns (e.g., Korean and Japanese); and lower-proficiency learners across language groups used more overt pronouns. For SPE variation in heritage languages, Nagy et al. (2011) analyzed subject pronoun use in three heritage languages (Cantonese, Italian, and Russian) and English in Toronto. No significant difference was identified across generations, suggesting that SPE was not undergoing change in any of these communities. In addition, X. Zhang (2021) revealed that Mandarin heritage students largely used the SPE patterns found in classroom input, and students who had spent their early childhood in Mandarin-speaking regions (e.g., mainland China and Taiwan) significantly employed fewer overt subject pronouns (56%) than their US-born peers (83%).

Besides the discrepancy in SPE patterns between native speakers and L2/heritage learners, SPE variation is found to be consistently constrained by internal linguistic factors or the structural features of the variation envelope, psychophysiological factors or cognitive conditions, and social factors or social characteristics of the speakers and contexts (Otheguy & Zentella, 2012). Firstly, linguistic constraints that have been frequently investigated by previous studies concern morphosyntactic aspects of the subject, verb form, and

clause type (Erker et al., in press). For example, person and number of the subject have emerged cross-linguistically as strong linguistic constraints in predicting pronoun use (e.g., Bouchard, 2018; Cameron & Flores-Ferrán, 2004; Jia & Bayley, 2002; X. Li et al., 2012; X. Li & Bayley, 2018; Otheguy & Zentella, 2012; Zhang, 2021). Secondly, psychophysiological constraints such as referential continuity (or switch in subject referent) and priming have been shown as significant conditioning factors: a subject pronoun tends to be unexpressed if it repeats the same referent that has been mentioned in the preceding clause (Azar & Özyürek, 2015; Bayley & Pease-Alvarez, 1996; Bouchard, 2018; X. Li & Bayley, 2018; Shin & Otheguy, 2009; Tamminga et al., 2016; Zhang, 2021). Thirdly, the effects of social constraints are more community-specific, depending on who the interlocutors are and the particular characteristics of the contexts. For example, females tended to use more subject pronouns in L1 Mandarin, but this gender differentiation was not identified in L2 Mandarin or heritage Mandarin (X. Li et al., 2012; X. Li, 2014; Zhang, 2021).

2.3. Constraints and Patterns in Subject Pronoun Variation: Child Language

While SPE variation has been widely explored as a sociolinguistic variable in adult speech, it has been mainly interpreted from the developmental perspective for child language. Around the age of one to two, children begin to combine single words and form sentences (Clark, 2016; Erbaugh, 1982). Subject-missing sentences, such as "hug mommy" instead of "Lillian/I hug mommy," are typical in early child language cross-linguistically, even in non-pro-drop languages such as English (P. Bloom, 1990; Guasti, 2002). Empirical studies have identified subject drop in English (Hyams, 1983; Hyams & Wexler, 1993), Mandarin (Wang et al., 1992), Cantonese (Lee, 1997), Italian (Valian, 1991), Brazilian Portuguese (Valian & Eisenberg, 1996), Korean (Kim, 2000), and Japanese (Nakayama, 1996) by children under the age of five. In general, young children use fewer subjects than adults and may drop up to 30% of the subjects even in English, Dutch, or French where subjects are obligatory (Clark, 2009, p. 204). However, their overt subject expression increases with age and quickly reaches the adult level (Kim, 2000). It was found that personal pronouns first appear in native Mandarin child language by the end of the second year (Hsu, 1987; Li, 1995; Xu & Min, 1992), and children seemed able to use unexpressed pronouns at about the age of two to three in their two-word stage (Chao, 1973; Erbaugh, 1982; Zhu et al., 1986).

Due to the unique patterns of language development, pronominal subject variation in child language has been found to be significantly affected by processing capability, which increases with children's age, while linguistic and social constraints also play a role, as found in adult language. For psychophysiological effects, findings are inconsistent. As the processing hypothesis proposes, P. Bloom (1990) found that lexical subjects with the most phonetic length led to the heaviest processing load, followed by pronouns, then unexpressed subjects. However, Hyams (1983, 1986) demonstrated that children who produced subject-absent sentences were also capable of producing longer utterances. On the other hand, as children gradually develop their native language and acquire the communicative rules in their speech community, their language variation patterns become more similar to adult patterns. For example, Shin and Cairns (2012) found that Spanish-learning children could not perform as well as native adults in SPE usage at five years of age, but exhibited sensitivity to referent continuity at the age of eight and were able to deal with unexpressed pronouns appropriately. Linguistic constraints seem to be more language-specific in SPE variation: unexpressed pronouns were more frequently employed in pro-drop languages such as Mandarin, Spanish, or Portuguese than in non-pro-drop languages such as English by monolingual children aged two to five (Sorace et al., 2009; Wang et al., 1992). Some strong social constraints, such as gender, can sometimes be observed in SPE patterns among older children. For instance, as female adults often tend to

use more pronouns than their male counterparts, girls are also found to prefer overt pronouns more than boys. This gender differentiation did not appear statistically significant among Spanish-speaking children aged under eight from Mexico (Shin, 2012), but it had a strong effect on Spanish SPE variation among children aged ten to twelve in California (Bayley & Pease-Alvarez, 1996, 1997).

2.4. The Current Study

This study explores an aspect of sociolinguistic competence among CHL children and young adult speakers. Heritage language speakers, who usually have been exposed to their heritage languages from birth at home, often outperform non-heritage peers in communication and comprehension (Weger-Guntharp, 2006; Xiao, 2006). However, limited home input and the lack of formal language instruction can hinder their full language development and sociolinguistic competence (Kondo-Brown, 2001; Kondo-Brown & Brown, 2017). Although heritage language research has been emerging, longitudinal and cross-sectional studies on heritage language development, especially sociolinguistic skills, are still rare. By comparing subject pronoun use by CHL children and young adults, this study examines the development of sociolinguistic competence in CHL and the extent to which it is influenced by internal linguistic, psychophysiological, and external social factors. Based on the theories of variation acquisition and previous findings on SPE variation, three hypotheses are proposed:

Hypothesis 1: *As subject absence is a typical feature in early grammar (Clark, 2009; Hyams & Wexler, 1993), subject pronouns will be dropped more in child language than in young adult speech. And because young children are not as grammatically competent as adults (L. Bloom et al., 1975; Chomsky, 1964; Miller & Ervin, 1964; Solan, 1983), their SPE patterns may be constrained by fewer conditioning factors than those of young adults.*

Hypothesis 2: *Children could show sensitivity to SPE variation at a young age (Shin, 2012; Shin & Cairns, 2012), and this knowledge may be maintained but not further developed until early adulthood due to the limited input of heritage language (Duff et al., 2017; Xiao, 2010). Thus, young adults may demonstrate similar SPE patterns to what is observed in child language.*

Hypothesis 3: *Children tend to use more subject pronouns than young adults, and their SPE patterns are constrained by more factors. This may be associated with crosslinguistic transfer in bilingual children's language development (Liceras & Fernández Fuertes, 2019; Qi, 2010; Serratrice, 2007; Sorace et al., 2009): in the early stages of Mandarin–English bilingual development, children might transfer the English non-pro-drop structure into CHL, leading to a higher frequency of subject pronouns in Mandarin. As young adults have more experience with pro-drop structures as a language-specific feature in CHL, they may use fewer pronouns in Mandarin.*

3. Materials and Methods

3.1. Data Collection

In the school years, 2021–2023, spontaneous speech data were collected from 27 children (12 girls, 15 boys, aged 3;01–5;09) from two English–Mandarin dual immersion preschools in Northern California. All children were CHL learners with at least one parent or grandparent who was a native speaker of a Chinese language. All families belonged to the middle class, and all parents had received bachelor's or higher degrees. The preschools adopted both English and Mandarin for instruction in a 50:50 ratio. Mandarin teachers, most of whom were native speakers, were responsible for providing Mandarin language input in class. Most children used 50% or more Mandarin along with English or other Chinese dialects (e.g., Taiwanese or Shanghainese) at home. Family information, including

demographic background and home language practice, was collected via a family background questionnaire. Language practice in school, teacher–child communication, and peer interaction were recorded in field notes via about 300 h of classroom observation. At the beginning (time 1) and the end (time 2) of the school years, children completed several language tasks, including a Mandarin version of the Peabody Picture Vocabulary Test 5 (Chow & McBride-Chang, 2003; Lu & Liu, 1998; Zhang, 2017), the Woodcock–Johnson IV Oral Language for English oral communication skills (Schrank & Wendling, 2018), a story-retelling task of a frog story (Mayer, 1969), and a casual conversation in which the child was encouraged to talk about their personal experiences such as weekend activities, favorite friends at school, and animals at zoo. All language tasks were conducted in Mandarin, except for the English language assessments.

Young adult language data were collected from 15 CHL undergraduate students (11 females, 4 males, aged 18–27) who self-identified as CHL learners. All of them enrolled in the "heritage student track" for Chinese learning at a research university in Northern California. All students were from Chinese immigrant families: they either were born in the United States or arrived with their families in the United States around the age of four or five. They used Mandarin or other varieties (e.g., Taiwanese, Cantonese, or Chaoshan dialect) at home with their parents and grandparents, but not with siblings. Formal Chinese education was usually interrupted or even absent, and family education was not enough to support their Chinese literacy development. Spontaneous data were elicited via sociolinguistic interviews (25–35 min) in Mandarin. The conversations dealt with family background, language learning experience, daily life, and opinions about Chinese varieties, after which students watched the wordless Pear Story film and retold the story in Mandarin (Chafe, 1980).

The participants' demographic and language backgrounds can be found in the appendices (Appendix A for children and Appendix B for young adults). All speech data were audio-recorded with a Sony ICD-UX570 Digital Voice recorder with a Lavalier lapel microphone at a 44.1 kHz sampling rate. Audio recordings were transcribed verbatim in ELAN (*ELAN*, 2024).

3.2. Data Coding

With text transcriptions, the use of SPE in each clause was coded for its internal linguistic constraints, psychophysiological constraints, and socio-stylistic constraints following the variation conditioning schema proposed by Tamminga et al. (2016). Specifically, internal linguistic constraints (i-conditioning) are structural conditioning factors, such as person and number of the subject and clause type; psychophysiological constraints (p-conditioning) deal with cognitive conditioning factors including referential continuity and structural priming; and socio-stylistic constraints (s-conditioning) involve social characteristics of the context or the speaker, such as discourse type, age, gender, regional origin, and heritage generation.

3.2.1. I-Conditioning: Person and Number

Many studies across languages have shown that speakers are sensitive to person and number of the subject when they choose between a present or absent subject pronoun (e.g., Barrenechea & Alonso, 1973; Bayley et al., 2017; Bayley & Pease-Alvarez, 1997; Bohnacker, 2013; Cooper & Engdahl, 1989; Flores-Ferrán, 2007; Haag-Merz, 1996; McKee et al., 2011; Otheguy & Zentella, 2012; Rosenkvist, 2018; Wulf et al., 2002). Although Chinese is a non-inflectional language, the effect of person and number on SPE is still consistent and significant, as previous research revealed (Jia & Bayley, 2002; X. Li et al., 2012; X. Li &

Bayley, 2018; Zhang, 2021). In this factor group, six categories were coded: first-person, second-person, and third-person singulars and plurals.

3.2.2. I-Conditioning: Clause Type

Prior findings in Spanish and Mandarin by Carvalho and Bessett (2015), X. Li and Bayley (2018), Nagy (2015), Orozco (2015), and Otheguy and Zentella (2012) demonstrated that clause type is another significant linguistic factor for SPE. Following their models, clause type was coded as main, subordinate (e.g., relatives, complementizers, etc.), and other (e.g., imperatives, etc.).

3.2.3. P-Conditioning: Referent Continuity

Many studies have shown that when the referent is mentioned in the same form as in the preceding clause, an absent pronoun is often preferred by speakers (Cameron, 1992, 1993, 1995; Carvalho et al., 2015; Erker & Guy, 2012; X. Li et al., 2012; X. Li & Bayley, 2018; Otheguy & Zentella, 2012; Zhang, 2021, etc.). Thus, referent continuity or a switch in reference from the preceding finite verb was coded as same when the previous clause contained the same subject referent as the current one and different when the referent was switched.

3.2.4. P-Conditioning: Priming

Priming, or the non-conscious tendency to repeat some structural aspect that occurs in a previous utterance, has been found to be a powerful influencing factor in language use, language development, and language change (Bock, 1986; Mahowald et al., 2016; Pickering & Garrod, 2017). For SPE variation, priming is also a significant predictor as "unexpressed subjects tend to be followed by unexpressed subjects, while preceding pronouns favor subsequent pronouns" (Torres Cacoullos & Travis, 2016, p. 733). In this study, priming was coded as pro_present if the preceding subject was expressed as a pronoun, pro_absent if the preceding subject was a pronoun but unexpressed, lexical_np if the preceding subject was expressed as a lexical noun phrase, and n/a if the subject was not available in the preceding clause.

3.2.5. S-Conditioning: Discourse Type

Previous studies showed that discourse type (e.g., classroom speech, telephone conversation, narration, or sociolinguistic interview) or the pragmatic characteristics of a particular register, such as formality, may affect speakers' choices of SPE in Mandarin (Jia & Bayley, 2002; X. Li & Bayley, 2018; Zhang, 2021). Regarding the speech content in CHL child and young adult speech, discourse type was coded as casual for sociolinguistic interviews, narrative for storytelling or story-retelling, and test for language assessment (child language only).

3.2.6. S-Conditioning: Age, Gender, Regional Origin, Test, and Heritage Generation

Social characteristics of the speakers that were coded included age (numerical), gender (female, male), regional origin (child language only), test (child language only), and heritage generation (young adult language only). Regional origin categorized the birthplaces of the parents: whether they were born in mainland China or Hong Kong and Taiwan. According to the time and language tasks children were asked to do, the test coded the context of the token in another form. For example, test CHN1 means the data were collected at the beginning of the school year with Chinese language assessments. Heritage generation was coded as early-arrival for those who migrated to the United States around age of four or five and US-born for those who were born in the United States.

3.3. Data Analysis

To examine the SPE variation in CHL child and young adult language, generalized linear mixed-effects models were adopted to model the binary outcome of the presence or absence of a subject personal pronoun based on conditioning factors as described above. To control for individual variation, the individual speaker was set as a random effect (Baayen, 2008). Three models were adopted: model 1 examined the SPE variation in child language, model 2 examined the SPE variation in young adult language, and model 3 examined whether the SPE variation in child language and young adult language differed significantly. All the statistical models were implemented in R with the *glmer()* function in the *lme4* package (Bates et al., 2015).

4. Results

In total, 5238 tokens of SPE were elicited from child language, and, 5565 tokens were elicited from young adult language, after a few factor groups had been excluded. Following the coding scheme by X. Li and Bayley (2018), tokens in false starts, repeated clauses, formulaic expressions (e.g., 谢谢 'thank you'), and serial verbal constructions (e.g., 我不喜欢放在这里 'I don't like to put (it) here') have been excluded. In addition, to avoid extreme or unreliable coefficient values that may have been caused by few tokens in a factor (Johnson, 2009), second-person plurals (3 or 0.04% in child language and 4 or 0.07% in young adult language) were excluded. The tokens that occurred during language tasks in child language were also excluded as there was no comparable context in young adult speech. Corresponding token numbers and SPE rates of each factor are listed in Table 1. The overall SPE rate in child language reached 69.76%, which was slightly lower than the overall SPE rate of 70.73% in young adult language. Both were higher than the SPE rate of native speakers: 53% for teachers, students, and university administrators (aged 19–73) in telephone conversations (Jia & Bayley, 2002), 47.2% for teachers and students (aged 18–65) in conversation and narration (X. Li et al., 2012), and 65.7–69.8% for interlocutors (various occupations, aged 14–63) in sociolinguistic interviews (Erker et al., in press). The variation in SPE rates may be attributed to the social characteristics of the interlocutors and contexts, style differences, or dialectal differences.

Table 1. Data summary.

		CHL Child Language		**CHL Young Adult Language**	
factor group	factor	token N	SPE rate	token N	SPE rate
pers_num	s1	2451	66.79%	3125	72.83%
	s2	278	82.01%	198	77.78%
	s3	2077	71.40%	1056	69.70%
	p1	97	74.23%	706	59.21%
	p2	3	excluded	4	excluded
	p3	335	69.85%	480	73.33%
clause_type	main	4906	68.83%	4843	70.80%
	subordinate	302	84.77%	639	70.27%
	other	30	70.00%	83	69.88%
referent_cont	same	2277	70.97%	3364	62.81%
	different	2961	68.83%	2201	82.83%

Table 1. *Cont.*

		CHL Child Language		CHL Young Adult Language	
priming	pro_present	2119	80.23%	3183	76.15%
	pro_absent	730	51.51%	1239	52.38%
	lexical_np	953	64.64%	784	75.13%
	n/a	1436	66.99%	359	76.32%
speech	casual	3140	71.08%	4938	71.75%
	narrative	2098	67.78%	627	62.68%
	test	1439	excluded	-	-
test	CHN1	1416	67.23%	-	-
	CHN2	1455	69.42%	-	-
	ENG1	1031	71.29%	-	-
	ENG2	1336	71.63%	-	-
gender	female	2954	70.75%	3920	73.11%
	male	2284	68.21%	1645	65.05%
heritage_gen	early-arrival	-	-	2366	60.19%
	US-born	-	-	3199	78.52%
TOTAL		5238	68.92%	5565	70.73%

4.1. SPE Patterns in CHL Child Language

As shown in Table 2, the regression results of SPE patterns in child language reveal that the i-conditioning factor of clause type, the p-conditioning factors of referent continuity and priming, and the s-conditioning factors of discourse type, age, and test were all significant constraints on pronoun usage by children. Specifically, for internal linguistic constraints, children favored the presence of subject personal pronouns in subordinate clauses ($\beta = 0.673$, $p < 0.001$). For psychophysiological constraints, the same referent continuity favored the unexpressed pronoun use ($\beta = -0.190$, $p = 0.025$). Priming effect was also significant: when the pronoun was absent in the preceding clause, the pronoun in the current clause tended to be absent ($\beta = -0.333$, $p = 0.004$); when the pronoun was present in the previous clause, the current pronoun tended to be expressed ($\beta = 0.668$, $p < 0.001$). For social constraints, SPE used in narration was unexpressed more than SPE in casual speech ($\beta = -0.338$, $p < 0.001$). In addition, children significantly used more expressed pronouns in the first English assessment ($\beta = 0.462$, $p < 0.001$), and their pronoun use increased with age ($\beta = 0.537$, $p = 0.004$). Besides these constraints, person and number, regional origin, and gender did not reach significance in this model.

Table 2. SPE variation in child language [1].

Predictors	Odds Ratios	95% CI	p [2]
(Intercept)	0.17	[−3.37, −0.12]	**0.036**
DISCOURSE [narrative]	0.71	[−0.52, −0.15]	**<0.001**
TEST [CHN2]	1.09	[−0.14, 0.32]	0.476
TEST [ENG1]	1.59	[0.26, 0.66]	**<0.001**
TEST [ENG2]	1.05	[−0.21, 0.30]	0.721
PERS NUM [p3]	1.25	[−0.34, 0.80]	0.435
PERS NUM [s1]	0.79	[−0.75, 0.27]	0.358
PERS NUM [s2]	1.80	[−0.01, 1.18]	0.052
PERS NUM [s3]	1.23	[−0.31, 0.73]	0.438
CLAUSE TYPE [other]	0.68	[−1.23, 0.47]	0.382

Table 2. *Cont.*

Predictors	Odds Ratios	95% CI	p [2]
CLAUSE TYPE [subordinate]	1.96	[0.34, 1.01]	**<0.001**
REFERENT CONT [same]	0.83	[−0.36, −0.02]	**0.025**
PRIMING [n/a]	1.06	[−0.13, 0.25]	0.579
PRIMING [pro_absent]	0.72	[−0.56, −0.12]	**0.004**
PRIMING [pro_present]	1.95	[0.47, 0.87]	**<0.001**
REG ORIGIN [TW]	1.30	[−0.06, 0.58]	0.110
GENDER [male]	0.79	[−0.51, 0.03]	0.078
AGE	1.71	[0.17, 0.90]	**0.004**

[1] For this model, σ2 = 3.29, τ00 SPEAKER_ID = 0.27, ICC = 0.08, N SPAKER_ID = 27, Observations = 5238, Marginal R2/Conditional R2 = 0.097/0.166. [2] Values that reached statistical significance are marked in bold.

4.2. SPE Patterns in CHL Young Adult Language

Table 3 lists the results of the regression analysis of SPE variation in young adult language. As shown below, the i-conditioning factor of person and number, the p-conditioning factors of referent continuity and priming, and the s-conditioning factors of discourse type, heritage generation, gender, and age appeared to be significant predictors. Specifically, for internal linguistic constraints, all singular pronouns and third-person plural 他们 'they' tended to be overtly expressed (s1 $\beta = 1.033$, $p < 0.001$; s2 $\beta = 1.000$, $p < 0.001$; s3 $\beta = 0.909$, $p < 0.001$; p3 $\beta = 0.784$, $p < 0.001$). The other linguistic constraint, clause type, did not reach significance in this model. For psychophysiological constraints, again, the same referent continuity favored the use of unexpressed pronouns ($\beta = -1.273$, $p < 0.001$). Priming was still significant, but in a slightly different way: young adults preferred unexpressed subject personal pronouns when the subject pronoun in the preceding clause was absent ($\beta = -0.542$, $p < 0.001$) or when the subject in the preceding clause was not available in the structure ($\beta = -0.425$, $p = 0.012$). Lastly, for social constraints, compared with other discourse types, narration appeared to be a favorable environment for absent subject pronouns ($\beta = -0.464$, $p < 0.001$). Additionally, young adults who were born in the United States preferred to use more pronouns than their early-arrival counterparts ($\beta = 1.069$, $p < 0.001$). Males in general used fewer pronouns than females ($\beta = -0.765$, $p = 0.017$), and, as found in child language, older adults tended to use more pronouns ($\beta = 0.157$, $p = 0.012$).

Table 3. SPE variation in young adult language [1].

Predictors	Odds Ratios	95% CI	p [2]
(Intercept)	0.08	[−5.17, 0.04]	0.053
DISCOURSE [narrative]	0.63	[−0.71, −0.21]	**<0.001**
PERS NUM [p3]	2.19	[0.49, 1.07]	**<0.001**
PERS NUM [s1]	2.78	[0.83, 1.22]	**<0.001**
PERS NUM [s2]	2.72	[0.59, 1.42]	**<0.001**
PERS NUM [s3]	2.48	[0.65, 1.17]	**<0.001**
CLAUSE TYPE [other]	0.74	[−0.84, 0.24]	0.282
CLAUSE TYPE [subordinate]	0.93	[−0.27, 0.13]	0.471
REFERENT CONT [same]	0.28	[−1.43, −1.12]	**<0.001**
PRIMING [n/a]	0.65	[−0.76, −0.09]	**0.012**
PRIMING [pro_absent]	0.58	[−0.77, −0.09]	**<0.001**
PRIMING [pro_present]	1.16	[−0.06, 0.36]	0.166
HERITAGE GEN [US born]	2.91	[0.49, 1.64]	**<0.001**
GENDER [male]	0.47	[−1.39, −0.14]	**0.017**
AGE	1.17	[0.04, 0.28]	**0.012**

[1] For this model, σ2 = 3.29, τ00 SPEAKER_ID = 0.22, ICC = 0.06, N SPAKER_ID = 15, Observations = 5565, Marginal R2/Conditional R2 = 0.202/0.252. [2] Values that reached statistical significance are marked in bold.

4.3. Insignificant Group Difference

To examine whether the SPE patterns differed significantly between children and young adults, model 3 tested SPE variation in both child and young adult language with group-specific factors (i.e., test, heritage generation, and regional origin) removed. As shown in Table 4, the same constraints were found in child language and young adult language: i-conditioning factors including person and number, p-conditioning factors including referent continuity and priming, and the s-conditioning factor of discourse type. However, group (children versus young adults) did not reach significance in this model, which indicates that the two groups of speakers did not differ significantly in their SPE patterns (for young adults, $\beta = 0.174$, $p = 0.452$). When group was set as the only fixed effect in the model, the group difference was still not statistically significant (for young adults, $\beta = 0.188$, $p = 0.395$).

Table 4. SPE variation in child and young adult language [1].

	Estimate	Std. Error	z Value	Pr (>|z|) [2]
(Intercept)	0.53424	0.18331	2.914	**0.00356**
PERS_NUM_p3	0.79924	0.12222	6.539	$\mathbf{6.18 \times 10^{-11}}$
PERS_NUM_s1	0.69141	0.08861	7.803	$\mathbf{6.04 \times 10^{-15}}$
PERS_NUM_s2	1.10548	0.15061	7.340	$\mathbf{2.13 \times 10^{-13}}$
PERS_NUM_s3	0.92121	0.10453	**8.813**	$\mathbf{<2 \times 10^{-16}}$
DISCOURSE_narrative	−0.33687	0.07351	−4.582	$\mathbf{4.60 \times 10^{-6}}$
CLAUSE_TYPE_other	−0.34633	0.22698	−1.526	0.12706
CLAUSE_TYPE_subordinate	0.15407	0.08494	1.814	0.06969
REFERENT_CONT_same	−0.76580	0.05581	−13.721	$\mathbf{<2 \times 10^{-16}}$
PRIMING_n/a	−0.25643	0.08196	−3.129	**0.00176**
PRIMING_pro_absent	−0.30632	0.07825	−3.914	$\mathbf{9.06 \times 10^{-5}}$
PRIMING_pro_present	0.51388	0.07107	7.231	$\mathbf{4.81 \times 10^{-13}}$
GENDER_male	−0.25895	0.13672	−1.894	0.05821
GROUP_young_adult	0.17402	0.23134	0.752	0.45190

[1] For this model, Speakers = 42 (27 children, 15 young adults), number of tokens = 10,803, AIC = 11,777.1, BIC = 11,886.4, log likelihood = −5873.6, deviance = 11,747.1; [2] Values that reached statistical significance are marked in bold.

5. Discussion

5.1. Linguistic Internal Constraints

Linguistic structural factors such as phonological environment or grammatical rule often shape the envelope of variation in which a particular sociolinguistic feature can vary in a few forms. Variation in the use of personal pronouns is common historically and dialectically in Chinese. A larger number of personal pronouns was present in early and middle Chinese compared to modern Chinese (Hong, 2020; Jiang & Ren, 2023). Absent subject pronouns have been identified in classical, middle, and modern Chinese. Overall, it seems that the types of subject pronouns have reduced, whereas the overall use of subject pronouns has increased from Old Chinese to Modern Chinese (e.g., Dong, 2005; Tang, 1996). There is, however, no evidence to determine whether this is a cross-regional or cross-dialectal language change. For linguistic conditioning factors of Chinese SPE variation, previous studies showed that person and number, clause type, animacy, referent specificity, and verb type have significant impacts on variable use (Jia & Bayley, 2002; X. Li et al., 2012; X. Li & Bayley, 2018; Nagy et al., 2011; Zhang, 2021). In this study, regression analyses showed that person and number were powerful predictors of SPE variation in young adult speech, while clause type had a significant influence on SPE in child language.

For person and number, results (see Tables 2–4) demonstrate that in young adult speech, all singular forms and third-person plural forms were preferred to be expressed. Only first-person plurals 我们 'we' were more unexpressed when the pronoun was used to refer to the speaker and their family members or classmates as a group. Child language showed the same person and number constraint pattern, though the results were not statistically significant. The correlation between singularity and pronoun expression echoes previous findings in Mandarin speech by native adult speakers (Jia & Bayley, 2002; X. Li et al., 2012). The differences in person and number constraints on SPE in child and young adult language suggest that at the age of four or five, children may not have reached a native-adult-like SPE pattern regarding the singularity preference. Young adults, on the other hand, performed similarly to native speakers for this linguistic constraint.

Clause type only reached significance in child language: children expressed more pronouns (84.77%) in subordinate clauses, such as 那是我选的 'that is what I chose'. Based on this result, it may be reasonable to suspect that the highly frequent use of pronouns in subordinate clauses is to avoid reference ambiguity as Chinese lacks inflectional markers, and the interpretation of unexpressed pronouns mainly relies on discourse clues. However, young adults did not seem to be sensitive to this linguistic difference. They demonstrated similar SPE usage patterns in all clause types and did not emphasize the pronoun in a complex sentence structure where a misunderstanding of the referent was possible. Previous findings show that compared to imperatives, native Mandarin speakers tended to express more pronouns in statements and questions (Jia & Bayley, 2002; X. Li et al., 2012). However, due to the sociolinguistic characteristics of CHL speech, declarative clauses occurred much more often than other clause types (>95%) and may have caused skewed results in statistical analyses. In this case, L1 findings cannot be compared as a baseline.

5.2. Psychophysiological Constraints

Sociolinguistic research has traditionally categorized constraints on variation into linguistic and social factors. Psychophysiological factors, as mentioned by Tamminga et al. (2016), are concerned more with how variables are processed cognitively and affected by articulation/perception characteristics. As regression results show, SPE in CHL was significantly affected by two p-conditioning factors: referent continuity and priming. Overall, the p-conditioning factors appeared to be consistent in both child and young adult speech.

When language is used in a conversation, the listener and the talker often need to track and hold the referents that have been mentioned in the conversation in short-term memory via linguistic signs (Azar & Özyürek, 2015; Contemori & Dussias, 2016; Davidson, 1996; Nieuwland et al., 2007). For SPE, referent continuity, sometimes called coreference in previous studies, plays a key role in completing this task. As many studies have revealed, when a referent is the subject of the preceding clause, the speaker tends not to use a pronoun for the same referent again (Jia & Bayley, 2002; X. Li et al., 2012; X. Li & Bayley, 2018; Nagy, 2015; Zhang, 2021). The referent continuity effect was consistent in both child language and young adult speech (see Tables 2 and 3 and Figure 1). Although the average SPE rate for the same referent (70.97%) was slightly higher than the rate for a different referent (68.83%) in child language, regression analysis indicates that referential continuity is a favorable environment for unexpressed pronouns. Echoing previous findings, speakers favored unexpressed pronouns when the same referent had been mentioned in the preceding clause. Though Shin and Cairns (2012) found that Spanish monolingual children were not as sensitive as native adults to referent continuity until age eight, CHL children appeared to become native-like regarding this p-conditioning feature around the age of four or five. If this is earlier than Chinese native children (no empirical evidence to date),

then language contact or the bilingual environment may facilitate an early establishment of sociolinguistic patterns.

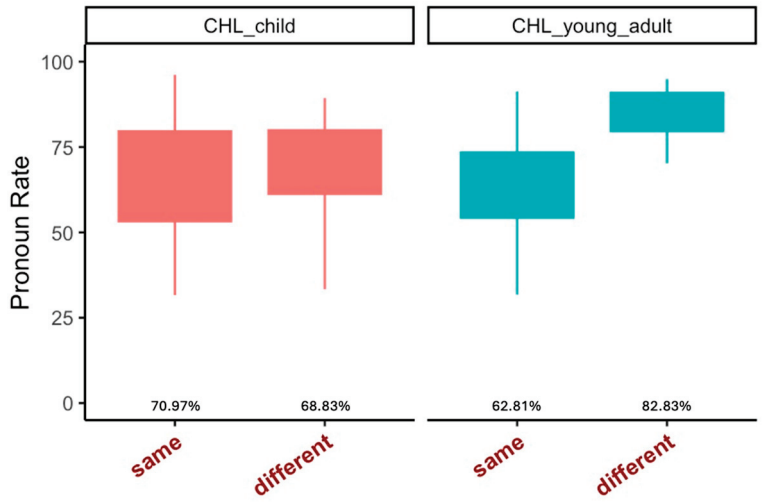

Figure 1. SPE across referent continuity.

There is substantial evidence indicating that language users tend to repeat structures that have been recently used (Bock, 1986; Branigan et al., 2000; Hartsuiker et al., 2004). This priming effect has also been found in the use of subject pronominal variation (Tamminga et al., 2016; Travis, 2007). SPE variation in CHL data was also significantly affected by priming. Specifically, children tended to omit the pronoun when the previous one was absent (SPE rate = 51.51%, see Figure 2) and preferred to express the pronoun when the previous one was present (SPE rate = 80.23%). Similarly, the absence of the preceding pronoun favored the unexpressed pronoun in young adult speech (SPE rate = 52.38%).

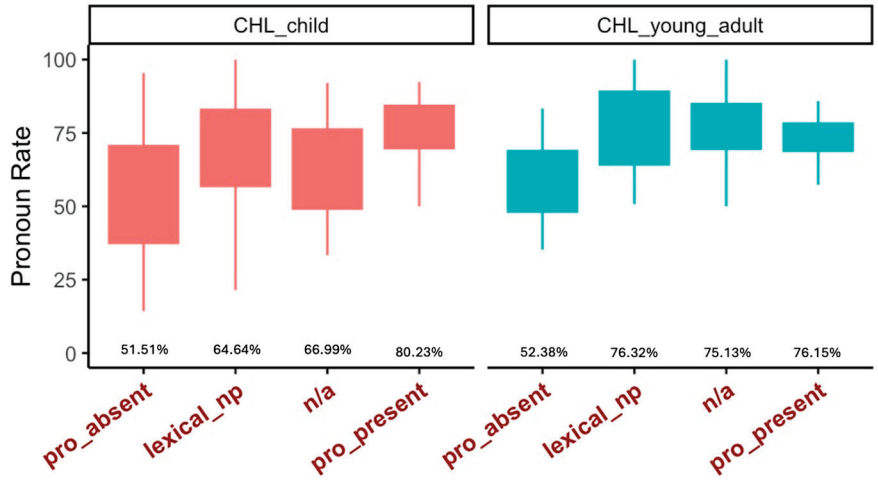

Figure 2. SPE across priming.

5.3. Social Constraints

In variationist research, the analysis of social factors affecting speakers' choices among variable forms constitutes one of the key areas for investigation as it reveals the social meanings behind the sociolinguistic variables and what they might index in a given speech community (Eckert, 2012; Labov, 1972). In the examination of SPE in CHL speech, it was found that discourse type and age are significant social constraints in both child and young adult language, and heritage generation and gender—only in young adult speech.

Discourse type was shown to be a strong predictor of SPE patterns in previous studies, although different discourse types were examined (e.g., telephone conversation, classroom instruction, storytelling, casual interaction, or sociolinguistic interview) (Jia & Bayley, 2002; X. Li & Bayley, 2018; Zhang, 2021). For CHL data, all children and young adults were recorded in a private and quiet classroom, which provided a relaxing context for interacting with the researcher. In this case, both children and young adults significantly reduced their use of subject pronouns in narration when there were extensive descriptions of sequential actions involving the same referent (see Figure 3).

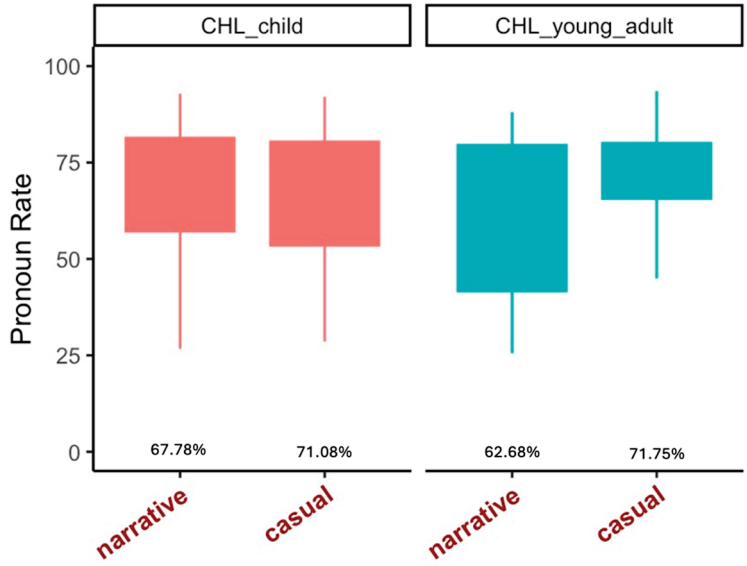

Figure 3. SPE across discourse type.

Moreover, older children tended to use more pronouns in their utterances. The same age effect was also found in young adult language. It is possible that with the exposure to English increased, children's SPE patterns in their heritage language were influenced. As English always requires an expressed subject, speakers may transfer this feature into Chinese and use more pronouns on subject positions. The high SPE rates in English assessments (71.29% and 71.63%) in child language can also be attributed to the language contact effect. This has been identified in Spanish SPE variation in child language as well: while Spanish monolingual Mexican children (aged 6;4–7;8) overtly expressed SPE at a rate of 6.3%, Spanish–English bilingual children in California (aged over 8) had a higher SPE rate of around 20–24% (Shin, 2012).

In addition, heritage generation and gender also strongly affected how subject pronouns were used by young adults. Specifically, speakers who were born in the United States, compared to their peers who spent four or five years living in mainland China or Taiwan, used significantly more subject pronouns (78.52% vs. 60.19%) in their speech. This provides more evidence to support the assumption that SPE patterns in heritage language could be affected by language contact with English. Moreover, males favored unexpressed pronouns significantly more than females. This gender difference whereby males tend to use the vernacular variant has been identified in SPE variation in child Spanish (Bayley & Pease-Alvarez, 1996, 1997), adult Mandarin (X. Li et al., 2012), and the use of other variables (Cameron, 2010; Holmquist, 2008; Roberts, 1997). In CHL child language, boys tended to use fewer pronouns than girls, but this was not statistically significant. It seems that children are not sensitive to how adults use the variable according to their gender roles in early childhood as gender differences emerge and increase during elementary school, then peak in adolescence (Cameron, 2010).

5.4. Group Differences

By comparing the SPE patterns in child and young adult speech, results show that (1) the i-conditioning factor of person and number, (2) both p-conditioning factors, including referent continuity and priming, and (3) discourse type and age among s-conditioning factors significantly constrain SPE variation in child and young adult language. This may suggest that compared to linguistic and social constraints, psychophysiological factors are more powerful predictors with consistent effects on SPE patterns. However, the difference between the two groups was not statistically significant. These findings align with what hypothesis 2 proposes: in early childhood, children may have already established some adult-like variation patterns, and these patterns or the corresponding sociolinguistic competence could be maintained but would not be further developed with limited language input until early adulthood. To determine whether the observed SPE patterns in CHL have reached a native-adult level, further investigations comparing data from native and heritage speakers are required.

6. Conclusions

By investigating the use of subject pronoun as a sociolinguistic variable in CHL, this study explored the development of sociolinguistic competence in early childhood and early adulthood between which the formal instruction of heritage language was largely interrupted and the use of heritage language was limited. Regression statistics show that linguistic, psychophysiological, and social constraints all significantly affect the use of subject personal pronouns by CHL children and young adults. Among all the tested factors, the i-conditioning factor of person and number, the p-conditioning factors of referent continuity and priming, and the s-conditioning factors of discourse type and age appear to be strong predictors. In addition, by comparing the pronoun use in child and young adult speech, the results reveal that the difference of SPE patterns between cohort groups is not statistically significant, indicating that heritage language learners' sociolinguistic competence regarding subject pronoun use may have not been further developed after early childhood.

The development of sociolinguistic competence regarding the acquisition of variation is an integral part of language learning (Labov, 2013; Roberts, 1997; Smith & Durham, 2019). To become a legitimate member of a local speech community, children need to learn both grammatical rules and sociolinguistic norms from more experienced community members (Bayley & Regan, 2004; Holmes & Brown, 1976; Shin, 2012). However, L2 learners and heritage language speakers have to do this in more than one language and figure out "how they [can] deploy their linguistic resources in day to day interactions in the multiple speech communities to which they belong and to which they aspire" (Bayley & Regan, 2004, p. 18). To answer these questions, future studies should address how the use of sociolinguistic features varies among different groups of speakers in various contexts. The comparison among native, heritage, and L2 speakers within and across age cohorts will be able to reveal the potential effects of dialectal difference, language contact, and the developmental trajectory of variation acquisition in detail.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of University of California, Davis (protocol code: 1425729-2, date of approval: 18 April 2019; protocol code: 1602628-1, date of approval: 17 June 2020).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Written informed consent has been obtained from the participants to publish this paper.

Data Availability Statement: The data presented in this study are available upon request from the corresponding author due to privacy issues.

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Conflicts of Interest: The author declares no conflicts of interest.

Appendix A

Table A1. CHL children's demographic background.

Name	Gender	Age	Home Language	English Oral Level	Mandarin Vocabulary Level
Naomi	F	3;01	Mandarin	Time 1: average Time 2: average	Time 1: average Time 2: average
Simon	M	3;02	Mandarin	Time 1: average Time 2: average	Time 1: high Time 2: average
Lily	F	3;06	Mandarin	Time 1: low Time 2: low	Time 1: average Time 2: average
Owen	M	3;07	Mandarin	Time 1: average Time 2: average	Time 1: average Time 2: average
Kathy	F	3;08	Mandarin	Time 1: average Time 2: average	Time 1: average Time 2: average
Mike	M	3;08	Mandarin	Time 1: low Time 2: low	Time 1: high Time 2: high
Eleanor	F	3;10	Mandarin	Time 1: high Time 2: high	Time 1: average Time 2: average
Luis	M	3;11	Mandarin	Time 1: average Time 2: average	Time 1: average Time 2: average
Shane	M	3;11	Mandarin	Time 1: high Time 2: average	Time 1: low Time 2: average
Ben	M	4;00	Mandarin	Time 1: average Time 2: average	Time 1: high Time 2: high
Emily	F	4;00	Mandarin	Time 1: average Time 2: average	Time 1: high Time 2: high
Emma	F	4;01	Mandarin	Time 1: average Time 2: high	Time 1: average Time 2: high
Andrew	M	4;04	Mandarin	Time 1: average Time 2: average	Time 1: low Time 2: average
Peter	M	4;04	Mandarin	Time 1: low Time 2: low	Time 1: average Time 2: average
Sheldon	M	4;06	English, Mandarin	Time 1: low Time 2: low	Time 1: low Time 2: low

Table A1. *Cont.*

Name	Gender	Age	Home Language	English Oral Level	Mandarin Vocabulary Level
Tessa	F	4;07	Mandarin	Time 1: low Time 2: low	Time 1: average Time 2: high
Dylan	M	4;08	Mandarin	Time 1: low Time 2: low	Time 1: low Time 2: low
Lia	F	4;08	English, Mandarin	Time 1: average Time 2: average	Time 1: low Time 2: average
Ophelia	F	4;08	Mandarin	Time 1: low Time 2: low	Time 1: high Time 2: high
Alice	F	4;08	Mandarin	Time 1: low Time 2: average	Time 1: average Time 2: high
Jay	M	4;10	Mandarin	Time 1: low Time 2: low	Time 1: average Time 2: average
Cameron	M	4;11	Mandarin	Time 1: low Time 2: low	Time 1: average Time 2: high
Julian	M	4;11	Mandarin	Time 1: average Time 2: average	Time 1: high Time 2: high
John	M	4;11	Mandarin	Time 1: low Time 2: low	Time 1: average Time 2: average
Natalie	F	5;00	Mandarin	Time 1: low Time 2: low	Time 1: high Time 2: high
Mason	M	5;09	Mandarin	Time 1: average Time 2: average	Time 1: average Time 2: average

Notes: All children's names are pseudonyms. Children's age was calculated from the beginning of the academic year when the first language tasks were completed.

Appendix B

Table A2. CHL young adults' demographic background.

Name	Gender	Age	Languages (L1, L2, L3)	Age of Arrival in the U.S.	Chinese Schools/Programs
Betty	F	18	English, Mandarin, Spanish	0	No
Tracy	F	18	English, Mandarin, French	0	No
Alice	F	18	English, Cantonese, Mandarin	0	Yes
Tina	F	19	English/Mandarin, French	0	Yes
Lia	F	19	Chaoshan dialect, English, Spanish	0	Yes
Jerry	M	19	Mandarin/English	0	Yes
Jolyn	F	19	Mandarin, English, Spanish	4	Yes
Kattie	F	19	English, Cantonese, Spanish	0	Yes
Melody	F	20	English, Mandarin/Cantonese, Spanish	0	Yes
Tim	M	20	Mandarin, English, Spanish	5	Yes
Nel	M	21	English, Mandarin	0	Yes
Anna	F	21	Mandarin, English, Korean	6	Yes
Cindy	F	22	Mandarin, English, German	5	Yes
Lynn	F	22	English, Mandarin	0	No
Steven	M	27	Mandarin, English, Japanese	4	No

Notes: All names are pseudonyms. L1, L2, and L3 indicate the order in which the languages were learned. Language A/Language B means the two languages were acquired simultaneously.

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Article

Variation in the Amplifier System Among Chinese L2 English Speakers in Australia

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Abstract: This study investigates the English adjective amplifier system of eleven Mandarin Chinese L2 speakers of English residing in Australia compared to a sample of ten native Australian English (AusE) speakers from the AusTalk corpus. Employing a variationist framework, we find that the L2 speakers employ a markedly overall higher rate (50.2%) of use of adjective amplifiers than AusE speakers (34.8%). This has been shown to be a common phenomenon among L2 speakers, who have a smaller range of adjectives at their disposal, and thus "over-use" amplifiers. However, we also argue that the propensity for amplifier–adjective bigrams in Mandarin Chinese transfers to their L2 English. The results show that Chinese L2 speakers use *very* more than *really*, whereas *really* is more frequent than *very* in AusE, suggesting that the L2 speakers may be lagging behind in this previously-reported change in AusE. The results also show that higher rates of English proficiency and length of residence in Australia result in more Australian-like amplifier behavior among the Chinese L2 group. The present paper can provide meaningful insights for future language teaching and learning in classroom and naturalistic settings, revealing potential for the instruction of more authentic language among L2 English learners.

Keywords: sociolinguistic variation; amplifiers; intensifiers; L2 learners of English; Chinese; Australian English

1. Introduction

In a globalized world, sociolinguistic competence, or the ability to be aware of sociolinguistic variation and apply this awareness to language production (Canale & Swain, 1980; Geeslin & Long, 2014, p. 6), is essential in language teaching and learning. However, non-native English learners and teachers can experience challenges in developing this kind of competence (Izumi, 1996; Mede & Dililitaş, 2015), which can have fundamental implications for the attainment of native-like proficiency (Kanwit, 2022, p. 33). A pertinent question relating to the L2 acquisition of sociolinguistic competence is how capable L2 speakers are of replicating and acquiring variation and change in progress in the L1 community (see e.g., Schleef et al., 2011; Davydova, 2019).

This paper focuses on L2 acquisition of linguistic variation in the use of English amplifiers (cf. Quirk et al., 1985). Amplifiers such as *very*, *really*, and *so*, also referred to as degree adverbs, are defined as having a raising and "scaling up" effect on adjectives (Bolinger, 1972, p. 17) and are frequently used in everyday spoken English. Amplification is a highly dynamic and "unstable" variable (Davydova, 2023, p. 3). While *really* is becoming the leading variant in the adjective amplifier system of native speakers, *very* is declining. As with many situations regarding language change, this results in synchronic variation as forms

"compete" with each other (see Tagliamonte, 2006, p. 11). This results in a challenging set of targets for language learners. Do they choose the new, incoming variants, or the traditional variants?

Ongoing change in the English adjective amplifier system has been studied in a range of native English varieties (see Section 2.2 for a detailed overview). Meanwhile, previous research has examined the use of adjective amplifiers among non-native English speakers (see Section 2.4). However, to date, there has been no variationist sociolinguistic study of amplifiers among Chinese L2 English speakers in Australia (or L2 speakers of any other L1 background, for that matter), despite ever-increasing numbers of Chinese international students, who constitute an essential immigrant group in Australia (Tao, 2023). Further, with the exception of Davydova (2023), who studies the distribution and patterning of English adjective amplifiers in German learner English and the effect of three sociolinguistic factors (linguistic identity, naturalistic exposure, and gender) on the use of *really*, *very*, and *so*, none of the studies in L2 contexts have adopted a fully accountable variationist sociolinguistic approach, unlike studies in L1 variation in amplifiers (e.g., Ito & Tagliamonte, 2003). Meanwhile, a range of linguistic-external constraints including language proficiency (LP) and length of residence (LoR) have also not been thoroughly examined in previous research, despite these factors being central to the research on how L2 speakers participate in linguistic variation more broadly (see, e.g., Geeslin, 2022). The present paper will address these research gaps.

Applying the variationist sociolinguistic framework, the current study investigates the English adjective amplifier system of Chinese L2 English speakers residing in Australia, incorporating the social factors of (self-reported) gender, language proficiency, and length of residence in Australia. We analyze quantitative data (frequencies and percentages of amplifiers) from sociolinguistic interviews (cf. Labov, 1984) with 11 Chinese students at an Australian university. The results are compared with those of ten native AusE speakers from the AusTalk corpus (Burnham et al., 2011).

2. Literature Review

2.1. Amplifiers

Intensifiers are a particular type of adjective modifier, corresponding to adverbs of degree (Allerton, 1987, p. 16), and ranging from very low intensification to very high. While downtoners[1] scale downwards from an assumed norm, amplifiers, which are the focus of this study, have a raising effect (Quirk et al., 1985). Amplifiers can be viewed on a continuum from boosters (e.g., *very*, *pretty*, *really*) to maximizers (e.g., *totally*, *extremely*, *perfectly*) (Quirk et al., 1985, pp. 590–591). Table 1 provides a list of the main amplifier variants identified in Schweinberger (2021) for Australian English (AusE), which provide the principal points of reference for this paper.

Table 1. Main amplifier variants in AusE.

English Variety	Amplifier Variants
AusE (Schweinberger, 2021)	*Really*, *very*, *so*, *pretty*, *bloody*, *absolutely*, *totally*, *completely*, *extremely*, *particularly*, *true*, *actually*, *awfully*, *genuinely*, *incredibly*, *real*, *strongly*

It is crucial to determine the syntactic position of the adjective heads with which amplifiers occur (cf. Ito & Tagliamonte, 2003; D'Arcy, 2015; Schweinberger, 2021). Amplifiers can modify nouns in attributive position, in which the noun being amplified is positioned after the amplifier (1a–b), and in predicative position, where the noun being amplified is positioned before the amplifier (1c–d).

(1) a. I think that would be a ***very good*** try. (participant B6)
b. So I think the market is- is a ***very important*** factor here. (participant B4)
c. It's still ***very hard*** for me. (participant A5)
d. They're all ***very delicious***. (participant B7)
(nouns underlined; amplifiers and adjectives bolded and italicized)

2.2. Variation in the Amplifier System of Native English Speakers

A range of research has centered on the amplifier system in spoken native English varieties, e.g., AusE (Schweinberger, 2021), BrE (Ito & Tagliamonte, 2003; Xiao & Tao, 2007; Aijmer, 2018), Canadian English (Tagliamonte, 2008; Tagliamonte & Denis, 2014), New Zealand English (D'Arcy, 2015), etc. Much attention has been given to the distribution of amplifier variants. A significant and consistent trend is found in apparent time studies: *really* is increasing, while *very* is declining, and the observed change "does not proceed in a haphazard manner but […] is highly systematic" (Schweinberger, 2021, p. 4).

Ito and Tagliamonte (2003) find that *very* is the most frequent amplifier (38.3%) among native BrE speakers, and 68.5% of all amplifiers are subsumed under two variants: *very* and *really*. Furthermore, a notable pattern is found in apparent time data: for BrE speakers aged over 35, *very* is the most popular amplifier, but the variant is declining among younger speakers (17–34), where *really* is becoming the preferred variant (Ito & Tagliamonte, 2003, p. 267). Similarly, D'Arcy (2015) reports that *very* is the most frequent form across 100 years (1850s–1950s) in New Zealand English (NZE), but *really* overtakes *very* among NZE speakers born after the 1950s (p. 467). Tagliamonte (2008) also finds that *very* is the most popular variant in Toronto English speakers over 50, but it declines rapidly thereafter, particularly among young Toronto English speakers (under 30) (p. 372). By contrast, *really* increases sharply from the oldest to the youngest group, while *so* is the second most frequent amplifier among the young speakers (Tagliamonte, 2008, p. 372).

With respect to linguistic-external constraints identified across the English-speaking world, the situation is complex (Schweinberger, 2021, p. 5). With regard to gender, Fuchs (2017) finds that men consistently employ amplifiers less frequently than women in the Spoken British National Corpus, while Ito and Tagliamonte (2003), D'Arcy (2015), as well as Tagliamonte (2008), find no consistent gender differences in spoken data from other native varieties. Further, Tagliamonte (2016) reports the pattern of gender differentiation found in Canadian English and television series, whereby "the pattern of females using more *so* has persisted" (p. 92), and using *pretty* is found to be the mark of being young and male (p. 90). Previous studies have also shown that educational background conditions the use of amplifiers to some extent. Higher education has been found to be correlated with higher use of *really* in both middle-aged and younger speakers (Ito & Tagliamonte, 2003, p. 275). Xiao and Tao (2007) find that BrE speakers with higher education generally employ amplifiers more frequently (p. 256).

2.3. English Amplifiers in Australia

Drawing on the spoken private dialogue section in the Australian component of the International Corpus of English (ICE-Aus), Schweinberger (2021) investigates the amplifier system, finding that *really* has replaced *very* to become the dominant amplifier variant used in both syntactic positions (attributive and predicative) among young AusE speakers (aged 17–25), while *so* is the second most popular amplifier in predicative contexts (p. 14). He uses a lexical diversity (LD) score to investigate the collocational profile of amplifiers, which "is calculated by dividing the number of adjective types a given amplifier co-occurs with by the number of tokens of that amplifier" (p. 11; see also Section 3.6). Schweinberger (2021) argues that examining the LD scores of amplifiers is more meaningful than focusing

on the semantic categories of adjectives (which have been examined in previous studies, e.g., Ito & Tagliamonte, 2003), as the results of Boruta analysis[2] show that examining the semantic categories of adjectives is not a meaningful predictor for the use of *really* in AusE (p. 17).

Schweinberger (2021) reports a low LD score (0.3) for *really* among younger AusE speakers (17–25), but a higher score (0.7) among older AusE speakers aged 41–80 (p. 15). In other words, older speakers employ *really* to modify a greater range of adjective heads than younger speakers do. Additionally, a covarying co-lexeme analysis illustrates that, compared with other adjectives, *really* and *good* (the most frequent adjectives in the AusE data) significantly collocate with each other among the young AusE speakers, which indicates "specialization with a focus on high-frequency adjectives" (p. 16). By contrast, *so* occurs less frequently with *good* than would be expected by chance (Schweinberger, 2021, p. 16). For comparative purposes, the present paper also includes the use of a LD score, which has not yet been employed in previous studies of L2 learners' use of the amplifier system in English. Further, as we do not aim to examine the delexicalization process of intensifiers (see, e.g., Ito & Tagliamonte, 2003; Davydova, 2023), traditional linguistic-internal variables (e.g., adjectival frequency and emotional value) are not included.

2.4. Amplifier Variation Among L2 English Learners

Amplification among non-native English speakers has been the subject of much linguistic research (e.g., Liang, 2004; de Klerk, 2005; Qi, 2006; Dunn, 2012; Edmonds & Gudmestad, 2014; Su, 2016; Hendrikx et al., 2019; Schweinberger, 2020, 2024). The most relevant paper to the current study is Liang (2004)'s study of Chinese L2 English learners. Comparing two spoken English corpora, Liang (2004) finds that Chinese L2 learners employ a much larger proportion of intensifiers (including amplifiers and downtoners) by normalized frequency, as compared to BrE native speakers, which indicates a tendency for "overstatement" among the L2 learners (p. 108). Moreover, *very* is found to be the most frequent variant, and it is much more popular than *really*, the third most frequently used amplifier variant (Liang, 2004, p. 108).

Schweinberger (2024) analyzes adjective amplifier systems in Hong Kong English (HKE), Indian English (IndE), and Philippine English (PhiE)[3] with spoken English data from ICE to assess if *really* or *so* is replacing *very* as the dominant adjective amplifier in these outer circle Asian varieties. The quantitative results show that the amplifier systems of HKE and IndE are consistently dominated by *very*, which mirrors the patterns found in native varieties before *really* starts replacing *very* (p. 13). In contrast, *so* and *really* have replaced *very* as the dominant amplifier in PhiE. Schweinberger (2024) also reports that more than 90% of adjectives are amplified by *very*, *so*, and *really* across these Asian Englishes (p. 9). Regarding the effect of language-internal and-external factors, Schweinberger (2024) finds that amplifier choice in HKE and IndE is primarily determined by internal constraints (i.e., adjective type, syntactic context, and semantic category). Meanwhile, ongoing change in PhiE from *very* to *really* and *so* is driven by social factors (i.e., age and gender) (p. 14).

Dunn (2012), taking a variationist sociolinguistic approach, compares the use of amplifiers among five L1 and five L2 English speakers from three backgrounds (Mandarin, Spanish, and Vietnamese) at a university in the U.S. The rates of amplification are reported across the speaking groups, with a minor but visible difference (44.3% for the L2 group; 39.4% for the native group). Dunn (2012) finds that *very* is the most frequently used variant in the amplifier system of the L2 English learners, followed by *so* and *really* (p. 27). Dunn (2012) also finds that L2 English speakers "used common boosters, such as *very*, *really*, and *so*, at higher overall rates, but produced a smaller variety of amplifier lexemes" than the native English speakers (pp. 27–28).

Within the framework of variationist sociolinguistics, Davydova (2023) studies the amplification rate of 53 advanced German learners of English and finds a higher rate of amplification (50.4%) in the German L2 data compared with L1 English, such as British English (24%, reported in Ito & Tagliamonte, 2003), which echoes Liang (2004) and Dunn (2012). Davydova (2023, p. 10) also reports that *really*, *very*, and *so* stand out as frequently used variants. Moreover, she finds that male speakers overwhelmingly prefer the use of *very* and *pretty*, while *really* and *so* tend to be more frequent among female speakers (p. 11).

To summarize this previous research, L2 English speakers, with some differences across language backgrounds, employ amplifiers at higher rates in comparison to native speakers, and *so*, *really*, and *very* are the most popular variants for both L1 and L2 English speakers. Consequently, this paper also centers on these three amplifiers. Moreover, the use of *pretty* will be included when we investigate the effect of external factors, as this has been found to be prevalent among male English speakers in particular (see, e.g., Tagliamonte, 2016; Davydova, 2023).

2.5. The Collocation Patterns of Amplifiers Among L2 English Learners

Collocation patterns have been extensively researched in the context of the amplifier system of L2 English learners (e.g., Liang, 2004; de Klerk, 2005; Edmonds & Gudmestad, 2014; Hendrikx et al., 2019; Schweinberger, 2020). First of all, the reduplication of a (basic) amplifier has been widely observed among L2 English learners, such as *very very good* (cf., Liang, 2004; de Klerk, 2005; Hendrikx et al., 2019; Davydova, 2023). Davydova (2023) argues that German L2 learners employ double intensification to "increase the pragmatic force of an already established variant" (p. 11). Liang (2004) also suggests a possible explanation: "In cases where a maximizer is optimal, learners tend to go one step down the intensifier scale and resort to the booster word *very*", but "they are well aware that *very* does not warrant them their intended meaning" (p. 112). As a consequence, the booster *very* is used twice, or even three times, to achieve the desired effect. According to de Klerk (2005), this is because L2 speakers lack a range of lexical choices (p. 16), although this kind of construction is also attested in L1 varieties (Méndez-Naya, 2017; Merx, 2018). Another feature that has been found among Chinese L2 learners of English is the use of amplifiers to modify non-gradable adjectives, such as **very perfect* (or *equal*, *exhausted*, or *acquainted*), which shapes the "non-nativelikeness" of Chinese EFL learners' speech (Liang, 2004, p. 111).

Other research has shown that external constraints, such as language proficiency, have an impact on amplifier collocations among L2 English speakers. Edmonds and Gudmestad (2014) find that advanced L2 English learners and native speakers perform similarly on a collocation judgment questionnaire and fill-in-the-blank production task for amplifiers, while different patterns are found among L2 speakers with lower English proficiency. Similarly, Hendrikx et al. (2019) report that longitudinal foreign language input in English leads to a progressive tendency toward more target-like use of intensification among non-native English speakers. It must be noted, however, that the effect of social and contextual factors (e.g., gender, English language proficiency, length of residence in English-speaking country) on the frequency and distribution patterns of various amplifiers has not been extensively studied in the existing literature.

This study aims to address the research gap stated above by investigating the acquisition of amplifiers by Chinese L2 learners of English in Australia. The L2 English speakers' use of amplifiers, and particularly popular variants such as *really*, is compared with amplifiers used by ten native AusE speakers from the AusTalk corpus (Burnham et al., 2011). In doing so, three research questions guide this paper:

1. Do Chinese L2 English learners in Australia follow the distribution pattern of AusE in the use of English amplifiers?

2. How do Chinese L2 English learners compare with AusE speakers in their collocation patterns of the amplifiers *so*, *very* and *really*, that are currently prevalent in English varieties?
3. Do the factors of (self-reported) gender, length of residence in Australia, and language proficiency influence Chinese L2 English learners' use of *so*, *very*, *pretty*, and *really*?

3. Methodology

3.1. Research Setting and Participants

The current study recruited eleven Chinese L2 speakers of English (six female and five male) as participants with full human ethics approval. Their profiles are presented in Appendix A. The participants all come from Mainland China. They listed "Chinese", "Mandarin", or "Standard Mandarin" as their mother tongues in a questionnaire, with English recorded as the second language of all participants. Their ages range from 23 to 26 (mean age: 24). All participants were either completing or had completed master's programs at university, with all but two (participants A4 and B5; see also Appendix A) in the area of applied linguistics.

All participants had met the language requirement for entry into a master's program at their university: an overall band score of $\geq$6.5 in the International English Language Testing System (IELTS) language test, or an equivalent result in another recognized English language test. Nine participants provided an IELTS test band score, with ranges from 6.5 to 7.5, and two participants provided equivalent scores from the Pearson Test of English (PTE). Following Choi and Diskin-Holdaway (2022), participants were divided into two proficiency groups (see Appendix A): a lower proficiency group, consisting of those who scored an IELTS test result of 6.5 or equivalent (N = 5), and an upper proficiency group, consisting of those who scored an IELTS test result of 7 and 7.5 or equivalent (N = 6). The reason for this cutoff point is that participants with a score of 6.5 ("competent users", IELTS, n.d.-a) are classified at the B2 level and as an independent user in the Common European Framework of Reference for Languages (CEFR; see IELTS, n.d.-b), whereas those with a score of 7 and 7.5 ("good users") are classified at the C1 level and as a proficient user in the CEFR, which we believed presented a meaningful difference.

It was hypothesized that length of residence (LoR) in Australia would increase the likelihood of acquisition of the popular variants (e.g., *really* and *so*) in AusE, so it is included as a factor in this study. Participants' LoRs range from 1.5 to 66 months (mean length of residence: 18 months). The eleven Chinese L2 English speakers are divided into two LoR cohorts (see Appendix A): $\leq$12 months ("short"; 1.5–9 months, N = 4, SD = 3.1) and >12 months ("long"; 15–66 months, N = 7, SD = 17.6), as this presented a natural split in the data. There was some overlap between upper English proficiency and long LoR, and lower proficiency and short LoR (see Appendix A).

3.2. Instrument

We used a sociolinguistic interview (Labov, 1984) to obtain the natural speech of the Chinese L2 learners, which offers "examples of variation as evidence for linguistic change" (Becker, 2013, p. 107). The interview protocol is modified from Chen (2021) and Diskin (2015). There were 15 main questions, covering five topics in a semi-structured format: life, study experience, work, socializing, and language in Australia. The research objective—English adjective amplifiers—was not shared with the participants during the interview. Following the interview, participants filled out a questionnaire (see Appendix B; modified from Chen, 2021) designed to collect sociodemographic information (e.g., age, gender, mother tongue), length of residence, and information on language exposure/contact (including social networks) of the L2 English speakers.

3.3. Procedure

The Chinese L2 data were collected in April 2023. Participants engaged in sociolinguistic interviews with the first author either face-to-face or online via Zoom. All interviews were one-on-one and recorded either by the speech recognition software Otter.ai on a laptop, or by a voice memo application on a mobile phone. The length of the sociolinguistic interview ranged from 24 to 40 min (mean length = 29 min). After the interview, a copy of the questionnaire was sent to the interviewee via WeChat or email. Before participants filled out the questionnaire, the first author provided explanations of the different sections. The questionnaire had no time limit, and all the questionnaire files were to be sent back with clear answers within one day. The interview audio recordings were transcribed by Otter.ai, while a broad orthographic transcription convention and anonymization process[4] were applied. The final transcribed output was compiled into a small-scale corpus of 24,710 words.

3.4. Australian English Data

In the present project, AusE data from the AusTalk corpus (Burnham et al., 2011) are used as a reference to compare with the L2 Chinese group. AusTalk is a large audiovisual corpus of modern AusE that contains spoken data recorded between June 2011 and June 2016 from 15 different locations in all Australian states and territories. The spoken data of 10 young AusE speakers were selected from the AusTalk corpus for their demographic comparability with the Chinese L2 data. All the native AusE speakers listed "Australian" as their cultural heritage. The ages of the participants range from 20 to 27 (mean age: 25), and they all were currently completing, or had been conferred with, bachelor's degrees or graduate diplomas. This study analyzes 20 files (approx. 35,000 words) from AusTalk containing the orthographic transcriptions of story retelling and interview tasks where spontaneous speech was elicited. As our AusE sample was imbalanced with regard to gender (eight female versus two male participants), we do not analyze this sociolinguistic factor for the AusE group.

3.5. Coding Process

The principle of accountability is the cornerstone of variationist sociolinguistics (Labov, 1972; Tagliamonte, 2006; D'Arcy, 2015), which holds that "every variant that is part of the variable context, whether the variants are realized or unrealized elements in the system, must be taken into account" (Tagliamonte, 2006, p. 13). Our study is restricted to adjective heads, which enables us to approach the use of amplifiers with a consistent denominator—all English adjectives (Ito & Tagliamonte, 2003, p. 263). This accountable methodology includes all amplifiable adjectives—instances where an amplifier could have occurred, but did not, as well as all amplified adjectives (see D'Arcy, 2015, p. 458).

In accordance with the methodology outlined in Ito and Tagliamonte (2003), as well as D'Arcy (2015), we also exclude contexts that either do not permit amplifiers or block variation. Firstly, comparatives and superlatives, the "effectively categorical zero contexts", were not included (D'Arcy, 2015, p. 459). Such contexts are limited to select amplifiers, such as *the very best* (because **the really best* is not grammatically possible). As shown in (2a–c), cases in which the adjectives work as classifiers (bolded and italicized) were also excluded. Additionally, the current study did not analyze the contexts in which the variants do not function as the modifiers of adjectives, as in (3a–b).

(2) a. I started as an ***international*** student here in Australia out in October 2017. (participant B1)
b. I become more- I became more confident in ***academic*** writing. (participant A2)
c. Because it's a ***compulsory*** subject so I have no choice. (participant B1)

(3) a. ***So (=conjunction)*** first one. (participant A3)
b. It's ***really (=truly)*** a subjective question. (participant B1)

Moreover, if adjectives would "fall immediately under the scope of negation", as in (4a–c), these negative contexts were likewise excluded (see D'Arcy, 2015, p. 459). According to Ito and Tagliamonte (2003), negation alters the meaning of amplifiers and cannot express a higher degree, thus losing their function (p. 264).

(4) a. And it was- it was overall pleasant journey because- even if the weather was not ***so good***. (participant B2)
b. But that's not ***really convenient***. (participant B7)
c. It is not ***very convenient*** in Australia. (participant B6)

The first author coded and noted all amplifier–adjective collocations in the data (167 tokens for Chinese L2; 163 tokens for AusE), along with occasions where an amplifier could have occurred, but did not (166 tokens for Chinese L2; 306 tokens for AusE). Adjective heads and syntactic functions (attributive or predicative) were also included in the coding process. Then, the second author verified a subset of approximately 10% of the data (84 items) from both L1 and L2 speakers for whether the tokens were amplified, amplifiable, or not amplified. An initial inter-rater agreement of 95.2% was achieved, and following discussions over some more challenging contexts, a revised rate of 100% agreement was reached.

3.6. Data Analysis

Descriptive statistics were used to examine differences in the frequencies and percentages of all amplifiers. To investigate the collocational profile of three popular variants—*really*, *very*, and *so*, the lexical diversity (LD) scores for their collocations were also calculated, as shown below. The LD score ranges from 0 to 1: the higher the LD score, the higher the degree of lexical diversity.

$$\mathrm{LD} = \mathrm{N}_{\text{Types of adjectives an amplifier co-occurs with}} / \mathrm{N}_{\text{Tokens of an amplifier}}$$

We also examined the effect of gender, language proficiency, and length of residence. It must be noted, however, that due to the relative sparsity of our sample (11 Chinese L2 participants and 10 AusE speakers), we focused on descriptive statistics rather than inferential statistical analysis of extralinguistic factors. As a result, these descriptive findings should be interpreted with caution and as a preliminary glimpse into the patterning of these data across the two groups.

4. Results

4.1. Overall Distribution of Amplifiers

The analysis of the Chinese L2 data reveals 167 amplifiers, and 166 non-amplified amplifiable adjectives, resulting in an amplification rate of 50.2% (Table 2). By contrast, only 34.8% of amplifiable adjectives were amplified in the AusTalk data, which had 163 amplified adjectives and 306 non-amplified amplifiable adjectives.

Table 2. Overall distribution of amplification in the Chinese L2 corpus and AusE.

	Amplified		**0 Amplification**	
Chinese L2	50.2%	*N* = 167	49.8%	*N* = 166
AusE	34.8%	*N* = 163	65.2%	*N* = 306

The frequencies and percentages of all amplifier variants were compared across the L1 and L2 groups (Table 3). First of all, the data reveal that *very* and *really* are the most popular amplifiers in the Chinese L2 group and AusE. Moreover, we find that the Chinese L2 speakers use *very* at a somewhat higher rate (29.3%) than *really* (24.6%). In contrast, *really* is found to be the most frequently used variant in AusE, with a difference between the proportions of *really* (37.4%) and *very* (30.1%).

Table 3. Frequencies and percentages of variants in the Chinese L2 corpus and AusE.

Variant	**Chinese L2** **%**	**Chinese L2** ***N***	**AusE** **%**	**AusE** ***N***
Very	29.3%	49	30.1%	49
Really	24.6%	41	37.4%	61
So	20.9%	35	6.7%	11
Pretty	18%	30	20.3%	33
Bloody	0	0	0	0
Too	3.6%	6	0.6%	1
Totally	1.2%	2	0	0
Especially	0.6%	1	0	0
Super	0.6%	1	0	0
Extremely	0.6%	1	0.6%	1
Perfectly	0.6%	1	0	0
Completely	0	0	2.5%	4
Absolutely	0	0	1.8%	3
Total		167		163

It is noteworthy that *so* is the third most frequently used variant in the amplifier system of the Chinese L2 group (20.9%), but it is a marginal variant in AusE (6.7%). Overall, 74.8% of English adjective amplifiers employed by the Chinese L2 group consist of *really*, *very*, and *so*, while *really*, *very*, and *pretty* are used 87.8% of the time by the AusE group.

The remaining amplifiers across both corpora comprise a wide range of different variants. Overall, the L2 group employs a somewhat larger lexical range of amplifiers (*N* = 10) compared with the AusE group (*N* = 8). The variants *totally*, *especially*, *super*, and *perfectly* were unique to the L2 group, whereas *completely* and *absolutely* were unique to the AusE group. Furthermore, there were no examples of *bloody* in either corpus, despite it being reported as the fifth most popular variant in the ICE-Aus corpus (Schweinberger, 2021, p. 9).

The percentages of amplifier variants collocating with predicative and attributive adjectives are illustrated in Table 4. Overall, there are far more adjectives amplified in predicative position (126/167 = 75.4% for the L2 group; 128/163 = 78.5% for the AusE group) than in attributive position (41/167 = 24.6% for the L2 group; 35/163 = 21.5% for the AusE group).

The difference in proportions of the use of *so* in predicative context between the L2 group (27.8%) and the AusE group (8.6%) is particularly noteworthy, although this is also bolstered by the overall preference for *so* among the L2 group. *Really* is used more often in predicative position by the AusE group (35.1%) as compared to the L2 group (22.2%). We also find that more than half (53.6%) of the attributive adjectives in the L2 group are

amplified with *very*, while a much lower proportion is found in AusE (31.4%). The predominance of *very* in the attributive position for the L2 group represents the most marked difference in the attributive/predicative ratio across the corpus (53.6% versus 21.4%). Further inspection of the collocations with *very* in attributive position in the L2 group revealed no particular specialized pattern. Finally, *really* is the dominant variant in the attributive context for the AusE group (45.7%), but the second most frequent for the L2 group (31.7%).

Table 4. Percentages of amplifiers in predicative and attributive contexts in the Chinese L2 corpus and AusE.

	Variant	Chinese L2 %	Chinese L2 N	AusE %	AusE N
Predicative	*Really*	22.2%	28	35.1%	45
	Very	21.4%	27	29.7%	38
	So	27.8%	35	8.6%	11
	Pretty	20.7%	26	21.1%	27
	Other	7.9%	10	5.5%	7
	Total		126		128
Attributive	*Really*	31.7%	13	45.7%	16
	Very	53.6%	22	31.4%	11
	So	0	0	0	0
	Pretty	9.8%	4	17.2%	6
	Other	4.9%	2	5.7%	2
	Total		41		35

4.2. Collocation Patterns of the Main Amplifiers

The LD scores of the three dominant amplifiers—*really*, *very* and *so*—were calculated across speaker groups to examine the collocation patterns of adverb (amplifier)–adjective bigrams (Table 5). Overall, the amplifier *so* yielded higher LD scores than *really* or *very*, with the AusE group showing the highest score for this variant at 0.91. However, *so* only appears 10 times in the AusE corpus, and according to Schweinberger (2021), LD scores are likely to be skewed by low frequencies (p. 14). The LD score of *really* is slightly higher in the Chinese L2 corpus (0.68) as compared to the AusE group (0.61), but the LD score for *very* in AusE (0.78) is higher than in the L2 group (0.67), albeit with identical frequencies. In addition, we find that the LD score of *very* (0.78) is higher than that of *really* (0.61) in AusE, while these two variants yielded similar LD scores (0.67 for *very*; 0.68 for *really*) in the Chinese L2 corpus.

Table 5. Lexical diversity scores of *really*, *very*, and *so* in the Chinese L2 corpus and AusE.

Variant	Group	Adjective Types *N*	Variant Frequency *N*	LD Score
Really	Chinese L2	28	41	0.68
	AusE	37	61	0.61
Very	Chinese L2	33	49	0.67
	AusE	38	49	0.78
So	Chinese L2	29	35	0.83
	AusE	10	11	0.91

An analysis was conducted of the main collocations with *really* and *very* (Table 6). The most popular collocation for *really* was *really good*, accounting for 27.9% (17/61) of all lexical collocations in AusE and 19.5% (8/41) in the L2 group. The collocation *very good* was the

most frequently used among the L2 group (7/49 = 14.3%), followed by *very different* (8.2%), *very delicious*, and *very simple* (both 6.1%). In AusE, *very nice* has a slightly larger proportion (5/49 = 10.2%) than *very good* (4/49 = 8.2%).

Table 6. Major lexical collocations of *really* and *very* in the Chinese L2 corpus and AusE.

	Chinese L2		**AusE**	
Really	*Good*	19.5%	*Good*	27.9%
	Different, depressed *	7.3%	*Nice, great*	4.9%
	Hard, interesting	4.9%	*Bad, beautiful, fun, hollow, lovely*	3.3%
Very	*Good*	14.3%	*Nice*	10.2%
	Different	8.2%	*Good*	8.2%
	Delicious, simple	6.1%	*Cute, old*	6.1%

* Adjectives listed on the same line each yielded the same proportions of use.

Collocations including two or three repetitions of the amplifier are accounted for equally across both corpora (five cases in each), and at very marginal rates (5/167 = 3% for the Chinese L2 group; 5/163 = 3.1% for the AusE group). The reduplication of *really* (e.g., 5a) is identified four times in the Chinese L2 group, and there is one reduplication of *very* (5b). We also find two instances of the reduplication of *really* and three of *very* in AusE (e.g., 5c–d).

(5) a. It was good- ***really***, ***really*** good. (Participant A3)
b. I mean, although professors and lecturers they're ***very***, ***very*** patient and very friendly to us. (Participant B2)
c. No, actually they're ***really***, ***really*** tight and uncomfortable and rubbery. (AusE speaker 2–959)
d. And as I was going up there, one of the ***very***, ***very***, ***very*** drunk English woman [sic]- turned around. (AusE speaker 3–794)

4.3. Analysis of the Effect of Linguistic-External Constraints

4.3.1. Comparison Between Gender Groups

First of all, as shown in Table 7, 53.8% of amplifiable adjectives were amplified in the female Chinese L2 group. This figure is higher than the amplification rate of the male group (44.9%), by 8.9%.

Table 7. Overall distribution of amplification in the female and male Chinese L2 groups.

	Amplified		**0 Amplification**	
Female	53.8%	*N* = 106	46.2%	*N* = 91
Male	44.9%	*N* = 61	55.1%	*N* = 75

The distributions of the four major variants (*really*, *so*, *pretty*, and *very*) for the male and female L2 groups are illustrated in Figure 1. First of all, we find that *very* and *so* are popular in both the female and male group. Moreover, *really* tends to be more frequently used in the male group (20.8% for the female group; 31.1% for the male group), with *pretty* being overwhelmingly preferred by the female L2 speakers (24.5% for the female group; 6.6% for the male group).

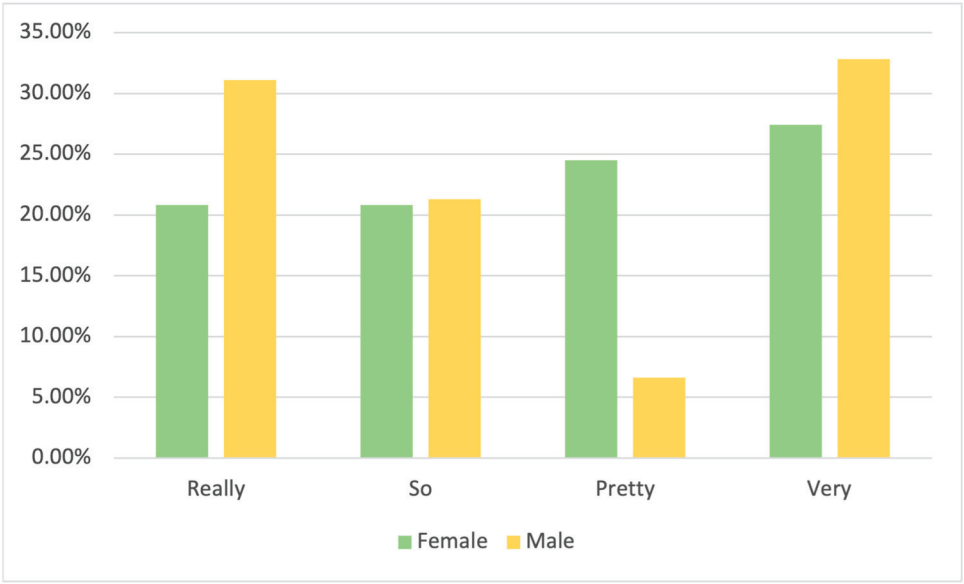

Figure 1. Percentages of major amplifiers in the male (yellow) and female (green) Chinese L2 groups.

4.3.2. Comparison Between English Proficiency Groups

We compared the distribution patterns between two groups of Chinese L2 speakers with different English language proficiency (LP) levels (lower and upper; see Section 3.1) with the AusE speakers for the most popular amplifiers (Figure 2).

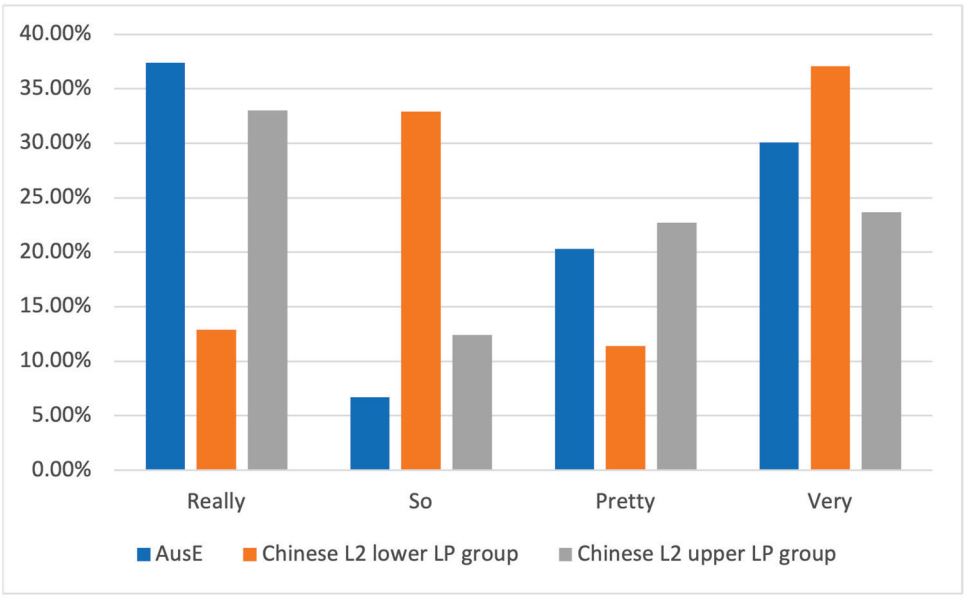

Figure 2. Percentages of major amplifiers in the Chinese L2 upper LP (gray) and lower LP (orange) groups as compared to AusE (blue).

Really is found to be the dominant variant in the amplifier system of both the upper LP group and native speakers, which accounts for more than 30% of all amplifiers, followed by *very* and *pretty*. However, the proportion of *really* is much lower among the lower LP group, at just 12.9%. Instead, the lower LP group uses more *very* (37.1%) than *really*. Notable differences are also observable for *so*, which is the second most popular amplifier in the lower LP group after *very* with a higher rate of use (32.9%) than in AusE (6.7%) and the upper LP group (12.4%). Conversely, the upper LP group and AusE speakers use more *pretty* as compared with the lower LP group.

4.3.3. Comparison Between Length of Residence Groups

Figure 3 shows the distributions of the four major variants across corpora, incorporating different length of residence (LoR) levels (short and long) for the L2 group. The figure shows that while both the long LoR group and the native AusE speaking group use more *really* than *very*, the opposite situation is found among the Chinese L2 learners with short length of residence, who use more *very* than *really*.

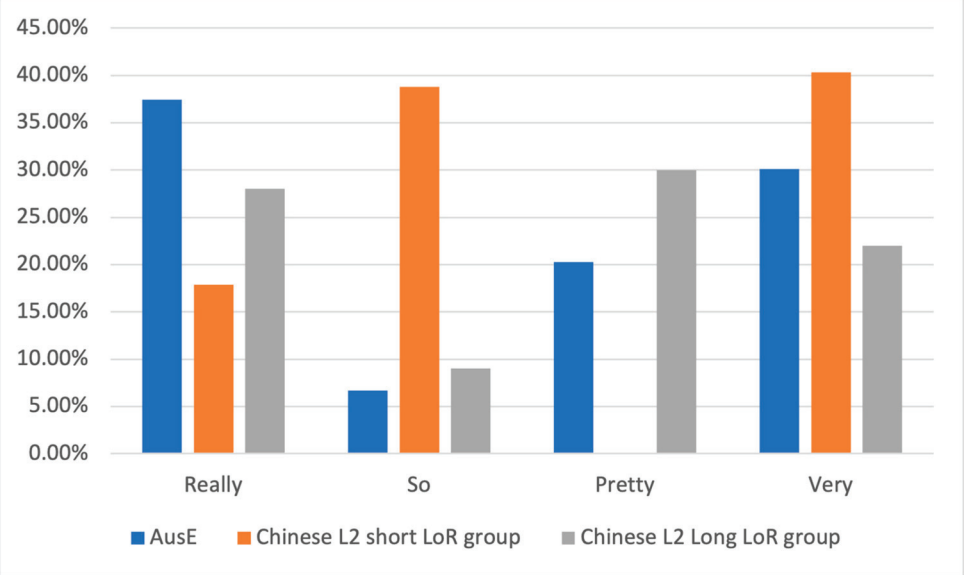

Figure 3. Percentages of major amplifiers in the Chinese L2 long (gray) and short (orange) LoR groups as compared with AusE (blue).

Moreover, we find that the short LoR group has a high proportion of *so* (38.8%), which is in sharp contrast to the figures for the AusE group (6.7%) and the long LoR group (9%). It is also noteworthy that *pretty* is absent in the data of the short LoR group, while it represents the third most frequent variant in both the long LoR group and AusE, accounting for 30% and 20.3% of all amplifiers, respectively.

After reviewing the distribution patterns across various LP groups and LoR groups, we observed that the lower LP and short LoR groups behave similarly to one another, as do the longer LP and the long LoR groups. The only meaningful difference we found was that *pretty* was absent in the short LoR group but present in the low LP group. Overall, this suggests that LP and LoR are related, and indeed present some overlap. Two out of five lower proficiency speakers are in the short LoR group (four participants in total), while there are four (out of six) higher proficiency speakers in the long LoR group (seven participants in total).

5. Discussion

First of all, we examine the overall distribution of amplification to answer the first research question—Do Chinese L2 English learners in Australia follow the distribution pattern of AusE in the use of English amplifiers? The results show that the Chinese L2 group employs more English adjective amplifiers than the AusE speakers, which is consistent with the findings of Dunn (2012), Liang (2004), and Davydova (2023). One interpretation for the greater degree of amplification is that L2 English learners' vocabulary in adjectives may be limited (Dunn, 2012, p. 23). They may want to accomplish the same interactional work as L1 speakers but have a smaller lexical range of adjectives at their disposal (Dunn, 2012, p. 23). Therefore, they have to rely on amplification to achieve the level of expressivity comparable to that of L1 speakers, while native speakers are able to use more specialized and specific adjectives rather than combinations of an amplifier and adjective

(Dunn, 2012, p. 23). In other words, the "overuse" of amplifiers becomes Chinese L2 learners' strategy for effective verbal communication in English. Moreover, while we collected the Chinese L2 data in 2023, the AusE spoken data were recorded before 2016. According to Fuchs (2017), rates of intensification have been expanding over time in L1 varieties. Therefore, this is another possible explanation for the higher amplification rate found in our Chinese L2 group and we may have found more comparable rates of amplification had we compared with more recent AusE data.

Our initial (descriptive) findings also show that the L2 group uses *very* more than *really*, which echoes previous studies on L2 English speakers (e.g., Liang, 2004; Dunn, 2012). It is also in contrast to the distribution found among the AusE group in the current study as well as in work across different native varieties and/or other corpora, e.g., AusE (Schweinberger, 2021), Canadian English (Tagliamonte, 2008), and NZE (D'Arcy, 2015), suggesting that the L2 groups are either (a) not mirroring the change-in-progress in the L1 community in which they live or (b) partaking in the change-in-progress, but lagging behind.

We also note that in recent work on outer circle varieties, *very* is found to be the absolute dominant variant among young speakers of Indian English and Hong Kong English (over 60% in both varieties), whereas *so* and *really* have fully replaced *very* in Philippine English (Schweinberger, 2024, pp. 13–14). In German L2 English, *really* is also leading the way (Davydova, 2023, p. 11). In our sample, the L2 group differs from these findings in the sense that they do have some variability in their amplification strategies (*very* at 29.3%, *so* at 20.9%, and *really* at 24.6%), which is more similar to the patterns in our AusE group. Furthermore, our findings for LoR in particular, whereby the L2 group with longer residence in Australia tend to have more Australian-like patterns of amplification, suggest that the L2 group cleaves more closely to the L1 community in which they are immersed, rather than following any particular general "L2-like" pattern. As a result, we suggest that they are lagging behind, rather than not participating at all, in this change-in-progress. More data would be needed to further lend weight to this proposal.

To answer the second research question—How do Chinese L2 English learners compare with AusE speakers in their patterns of use of *so*, *very* and *really*?—we investigate the amplifier–adjective collocations of the popular amplifiers in both corpora. First of all, the LD scores of *really* (0.68) and *very* (0.67) are comparable in the Chinese L2 corpus. Conversely, in the AusE data, we find that *really* has a relatively low LD score (0.61) compared with that of *very* (0.78). This trend echoes, but does not exactly replicate, the findings of Schweinberger (2021) for a young AusE group (aged 17–25) with even lower LD scores (0.3 for *really*; 0.4 for *very*) in ICE-Aus (p. 15). However, according to Schweinberger (2021), the replacement of *very* by *really* in AusE is accompanied by the broadening of *very* and the specialization of *really* (p. 21), which explains the difference in *really* and *very* LD scores in our AusE data, and contrasts with our Chinese L2 speakers, who show little difference in LD between *very* and *really*. One plausible explanation for this is that, as discussed above, the amplifier system of the Chinese L2 English learners has not yet reached the later stage of the change-in-progress, a benchmark we assume to be set by our AusE data. We also found a much higher proportion of *really good* found among the young AusE speakers, reflecting a specialization of the variant, and echoed by the findings of Schweinberger (2021, p. 16) in a covarying co-lexeme analysis. It is possible that with a larger dataset, our LD scores would be as low as those found in Schweinberger (2021), who, as we mentioned earlier, notes that LD scores can be skewed by low frequencies.

Moreover, the repetitive use of *really* and *very* is found in both our Chinese L2 corpus and AusE corpus at identical (and low) rates (3% for the Chinese L2 group; 3.1% for the AusE group), which is similar to the figure (3%) reported in Davydova (2023)'s variationist study on German learners of English. This indicates a parallel in the use of double

intensification as a widespread cross-linguistic phenomenon in L1 and L2 English varieties. Further, in addition to the explanations by Liang (2004) and Davydova (2023), L1 (Chinese) influence is another potential reason. According to Yang (2022), in the Center for Chinese Linguistics PKU (CCL) Corpus, repetitive use of amplifiers has been found among eight popular Chinese degree adverbs, including two Chinese amplifiers "*fēi cháng*" (非常)[5] "*very/too/pretty*" and "*shí fēn*" (十分) "*very/really/pretty*" (p. 73). Therefore, it is possible that Chinese equivalents of *really* and *very* may have a transfer effect on these amplifiers' collocations in English. It is also worth mentioning that a smaller lexical range of amplifiers ($N = 8$) is identified among our native AusE speakers compared with the Chinese L2 group ($N = 10$), suggesting that the L2 group is not struggling to retrieve appropriate amplifiers. However, our sample sizes are much smaller compared to other corpora (e.g., ICE), so these figures should be interpreted with caution.

Returning to the finding regarding the overall higher amplification rate by our Chinese L1 group, we suggest that an L1 (Chinese) transfer effect could also play a reinforcing role, particularly regarding the higher rates of *so* and *very* in their amplifier system. Emphasis, exaggeration, and overstatement often appear in Chinese, which are fulfilled by the use of "*chéng dù fù cí*" (程度副词) "*degree adverbs*" (including amplifiers) (Qi, 2006, p. 50). Meanwhile, a lot of frequently used adjectives, including around 21% of "new" Chinese adjectives that started to be prevalent in the 1990s (Cai, 2013, p. 8), are monosyllabic, such as "*kù*" (酷) "*cool*", "*huǒ*" (火) "*hot*", "*měi*" (美) "*beautiful*", and "*dà*" (大) "*big/large*", but two-syllable constructions are generally preferred in modern Chinese (Pan, 2003). As a result, Chinese speakers tend to employ combinations of monosyllabic amplifiers (e.g., "*hěn*" 很 "*very/so*") and monosyllabic adjectives, leading to, e.g., "*hěn dà*" (很大) "*very/so large*", "*hěn tián*" (很甜) "*very/so sweet*" (Qi, 2006, p. 50), reflecting the syllable-timed isochrony of Mandarin Chinese. As a result, it could be argued that with the influence of these frequent collocations in their L1, the Chinese L2 speakers with lower proficiency and short LoR in the present study prefer to use similar constructions, using the translation of "*hěn*" (很)—"*very/so*"—into English.

When it comes to the effect of linguistic-external factors, the analysis of language proficiency and LoR shows that higher LP and longer LoR in Australia might lead to a preference for *really* (the dominant amplifier in AusE) and *pretty*, as well as a more native-like, or Australian-like, distribution pattern of amplifier usage. Thus, it can be cautiously suggested that LP and LoR in Australia have an effect on Chinese L2 English speakers' use of amplifiers. According to Hendrikx et al. (2019), from a usage-based perspective, the amount of input an L2 learner receives is an essential factor in second language acquisition. Intensifiers (including amplifiers), and language-specific intensifying patterns such as collocations and recurrent phrases, tend to not feature prominently in explicit second language instruction (Meunier, 2012). Thus, the acquisition of amplifiers likely relies on implicit learning, and "the amount of target language exposure may be key to a target-like acquisition" of amplifiers (Hendrikx et al., 2019, p. 64). Our initial findings support this view, and a larger dataset with a greater time depth for length of residence could further confirm this, and pinpoint more clearly what stage of residence/exposure is pivotal for the acquisition of such features.

With respect to the effect of gender, the female Chinese L2 English speakers tend to use more amplifiers compared with the male speakers. However, more robust evidence is still needed. We also find that *really* is more frequent among the male L2 speakers, which is in contrast to Schweinberger (2021), who reports that women are more likely to use the variant compared with male speakers in AusE (p. 18). Further, it is noteworthy that *pretty* was found to be considerably preferred by the female speakers in the Chinese L2 corpus. This does not align with Davydova (2023) and Tagliamonte (2016), who find that *pretty* is more frequently used by the male speakers in German L2 English and Canadian English, respectively. In brief, some of the patterns of gender differentiation found in our Chinese

L2 sample differ from those reported in other L1 and L2 varieties, which compels us to explore this variable in future studies with a larger dataset.

6. Conclusions

This variationist study investigates the English adjective amplifier system of young Chinese L2 English learners residing in Australia and compares the results with AusE data from the AusTalk corpus. The findings uncover differences in the distribution and collocation patterns between the L1 and L2 groups, indicating that the Chinese L2 group, an immigrant group in Australia, appears to be lagging behind, but still participating in, the ongoing change observed in AusE and other L1 varieties. Our work opens up new opportunities in variationist sociolinguistics for examining the mechanisms of language change in immigrant groups from different linguistic backgrounds and with varying degrees of participation in the L1 community. In future work, we will incorporate a more advanced language exposure metric with a larger set of participants and further examine psychosocial factors such as attitudes towards the target language and towards specific amplifiers.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in this study.

Data Availability Statement: The data presented in this study may be available on request from the corresponding author. The data are not publicly available due to permission not having been obtained from the participants.

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Appendix A

Table A1. Participant profiles.

Participant Code	Gender	IELTS/Equivalent Band (Score)	LP Group	Age	LoR (Months)	LoR Group
A1	Female	6.5	Lower	23	18	Long
A2	Female	6.5	Lower	24	1.5	Short
A3	Female	6.5	Lower	24	9	Short
A4	Male	6.5	Lower	24	15	Long
A5	Female	6.5	Lower	26	15	Long
B1	Female	7.5	Upper	24	66	Long
B2	Female	7	Upper	24	15	Long
B4	Male	7.5	Upper	23	15	Long
B5	Male	7	Upper	23	31	Long
B6	Male	7	Upper	24	6	Short
B7	Male	7.5	Upper	23	9	Short

Appendix B

This questionnaire question list is modified from Chen (2021).

A. Demographic Information

1. Full Name:_____
2. Date of Birth: DD/MM/YYYY
3. Gender:_____
4. What is/are your first language(s)?_____
5. What is your highest English test score to date (e.g., IELTS, TOEFL, etc.)? _____in_____
6. At what age did you start learning English?_____
7. Which university are you studying in?_____-
8. What is/are your major(s)?_____

B. Length of Residence and Language Contact

9. How long have you studied in an Australian university (in months)?_____
10. How long have you lived in Australia (in months)?_____
11. How many Australian friends do you have?
12. How many Australian acquaintances do you have?
13. How many Chinese friends do you have in Australia?
14. How many Chinese acquaintances do you have in Australia?
15. What language do you speak with your acquaintances and friends in Australia most of the time?
16. Do you read English language magazines, newspapers, or online publications? Please select one from the following three options
    a. Yes, frequently.
    b. Yes, occasionally.
    c. No
17. Do you prefer to watch TV and video clips in Chinese or English? Please select one from the following three options
    a. English
    b. Chinese
    c. Other_____
18. Do you use English to deal with daily issues (shopping, renting an apartment, at restaurants, etc.)? Please select one from the following four options
    a. I use English all the time.
    b. I use English most of the time, but I occasionally speak Chinese in places like Asian groceries and Chinese restaurants.
    c. I use Chinese or _____ most of the time, I speak English only when_____
    d. I only find people who speak Chinese to deal with those issues.

Notes

1 Downtoners, including approximators (e.g., *almost*), compromisers (e.g., *more* and *less*), diminishers (e.g., *partly*) and minimizers (e.g., *hardly*), are all excluded in the current study.

2 The Boruta analysis is a variable selection procedure. It is employed to streamline the model fitting process of a mixed-model regression analysis in Schweinberger (2021).

3 Hong Kong English, Indian English, and Philippine English cannot be strictly classified into L2/non-native varieties. However, as "outer circle" varieties, they are distinct from inner circle English (e.g., British English, American English, and Australian English) (Kachru, 1985, p. 12).

[4] Identifiable elements in the recording, including names of places (except cities and countries), university subjects, and people (e.g., teachers, classmates, and friends), were replaced with pseudonyms.

[5] In this case, "*fēi cháng fēi cháng* + adjective" would be employed in a Chinese sentence.

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Article

Testing Cumulative Lexicalized Effects in Study Abroad: Variable Subject Pronoun Expression in Spanish as an Additional Language

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Abstract: We examine variable first-person singular subject pronoun expression in Spanish learner data to investigate the effects of study abroad in Mexico and Spain on the acquisition of sociolinguistic variation. In addition to exploring pre- and post-study abroad effects, this work considers whether such impacts wane over time after the study abroad experience. We include in the analyses novel usage-based factors estimating lexically specific usage patterns. We conduct a mixed-effects linear regression model predicting overt *yo* ('I') expression. Results indicate that overt *yo* expression is more likely after studying abroad (compared to pre-study abroad). Additionally, learners acquire a usage-based pattern of variation evident after the study abroad experience. This effect is not just apparent immediately after studying abroad, but it persists in data collected after a time delay.

Keywords: study abroad; sociolinguistic variation; subject pronoun expression; second-language acquisition; Spanish; usage-based approaches

1. Introduction

Research on the development of sociolinguistic variation—the understanding that two or more linguistic forms or variants can be employed to express the same function or meaning—among additional language learners has focused on examining how learners acquire variation and how such variable patterns compare with that of first language (L1) speakers (K. Geeslin & Long, 2014). In addition to linguistic factors, variationist second language acquisition (SLA) researchers have been particularly interested in extralinguistic factors such as learning context (e.g., studying a language at home versus in a study abroad (SA) context) (Zahler et al., 2023). Prior research has shown that SA may impact the acquisition of variable features such as subject personal pronoun (SPP) expression (e.g., Gudmestad & Edmonds, 2023), the focus of this study.

Meanwhile, usage-based approaches posit that the acquisition or developmental trajectory of an additional language is subject to usage, that is, input and experience (Bybee, 2008; K. Geeslin et al., 2023a; López-Beltrán & Carlson, 2020). In the case of SPP expression, L1 acquisition research demonstrates that a verb's likelihood of use in contexts promoting an overt pronoun predicts the likelihood of SPP expression, regardless of the online contextual production context (E. L. Brown & Shin, 2022). Usage-based approaches (Bybee, 2010) suggest these effects accumulate in memory, become lexicalized, and exert independent effects on variant use. However, less is known about whether similar effects exist among additional language learners. As K. Geeslin et al. (2023a) note, applying

usage-based approaches to SLA can inform the field's understanding of the role of learners' existing language system, as well as exposure, frequency, and input, on acquisition.

To bridge variationist SLA and usage-based research, the current study extends this line of research regarding accumulation in the memory of words' contextual distributions in the speech of additional language learners of Spanish after SA, both immediately and delayed. Two usage-based factors not included in previous SPP research include each verb token's cumulative likelihood of use with an overt subject pronoun (percent subject expression) and each verb token's likelihood of use in a switch (vs. same) reference context. The former will be labeled 'Likelihood of SPP expression' in this work, and the latter FRC (Forms' Ratio of Conditioning). Each will be described below in the Background section.

Using interview data from the LANGSNAP Spanish Corpus (Mitchell et al., 2017), this study tests whether variable SPP expression in additional learners of Spanish provides evidence for the lexicalized details of verbs' patterns of use. Compared to the at-home classroom, SA offers learners the possibility of richer input and greater opportunities to use the target language. As such, we examine whether SA plays a role by considering differences between data prior to SA (labeled pre-SA) and immediately after SA (post-SA1), and whether any effects persist over time (post-SA1 versus delayed post-SA (post-SA2)).

2. Background

2.1. Study Abroad and Acquisition of Sociolinguistic Variation

Research on the acquisition of sociolinguistic variation among additional language learners has had two primary foci. The first is to better understand how learners develop variation over time and whether learners' variation is constrained by factors like those found among L1 speakers. The second are extralinguistic factors that may influence target language use and input, and subsequently the acquisition of sociolinguistic variation. An extralinguistic factor that has received ample attention within variationist SLA research is study (or stay) abroad. Prior studies have examined the development of different variable structures in Spanish as a second language (L2) during SA, including forms of address (Pozzi, 2022), subject-verb word order in *wh*-questions (Denbaum-Restrepo, 2023), present perfect (K. L. Geeslin et al., 2012), future-time expression (Kanwit & Solon, 2023), and SPP expression (Gudmestad & Edmonds, 2023), among others.

Spanish allows for variable SPP expression in that a subject pronoun can be overt (*yo creo 'I believe'*) or null (*Ø creo 'I believe'*). Spanish SPP expression is constrained by multiple factors of the discourse and speech context including referent continuity, priming/perseveration, tense–aspect–mood (TAM), and subject person/number (e.g., Carvalho et al., 2015; Otheguy & Zentella, 2012; Torres Cacoullos & Travis, 2018). Previous research suggests that variable expression (overt vs. null) of pronominal subjects among learners of Spanish increases as proficiency increases and tends to be conditioned by similar linguistic factors as that of L1 speakers (K. Geeslin & Gudmestad, 2016; K. Geeslin et al., 2023b; Gudmestad & Edmonds, 2023; B. G. Linford, 2016; B. Linford et al., 2018).

Gudmestad and Edmonds (2023), who analyzed first-person-singular subject forms utilizing the same language learner corpus as the one in this study, found that polarity, clause type, referent continuity, and perseveration significantly constrained SPP expression. That is, SPP expression was more likely in affirmative statements (polarity), independent clauses (clause type), switch reference contexts (referent continuity), and when the previous mention of the same referent in subject position was a pronoun (perseveration) (Gudmestad & Edmonds, 2023). These findings correspond to that of K. Geeslin and Gudmestad (2016), who also found that L1 Spanish speakers were more likely to express first-person subject pronouns under the same linguistic conditions, except for clause type which was not included in their study.

Previous studies point to an effect of an SA context on target-like SPP expression. B. G. Linford (2016) found that students who had studied in the Dominican Republic increased their selection of overt subject pronouns on a written contextualized task (WCT) as well as in interviews post-SA. Denbaum's (2020) study reported that L2 learners abroad, also in the Dominican Republic, approached significance in their SPP expression on a WCT post-SA compared to their at-home counterparts. Meanwhile, B. Linford et al. (2018) found that students in Spain selected overt subject pronouns on a WCT at rates similar to L1 speakers post-SA. Nonetheless, B. Linford et al. (2018) caution that SA may not have played a unique role since their participants' rates of SPP expression are similar to those which are to be expected among students of similar proficiency levels, regardless of SA, according to K. Geeslin et al.'s (2015) proposed developmental pathway for variable SPP expression in L2 Spanish. Regarding linguistic predictors that constrain variation, Gudmestad and Edmonds (2023) found that polarity, reference continuity, and clause type remained stable factors that did not interact with time (pre- versus immediate post-SA), which B. G. Linford (2016) and B. Linford et al. (2018) also found. However, language learners did show the following developmental changes after a nine-month stay abroad in Spain: frequency of SPP expression increased, participants employed both un/expressed subjects (rather than categorical use of the unexpressed subject), and perseveration was a significant predictor (Gudmestad & Edmonds, 2023).

Adding to this research, our study aims to contribute in two ways. First, we analyze longitudinal learner data, which Bayley and Tarone (2012) argue for within variationist SLA. Apart from pre- and immediate post-SA (post-SA1) utilized by Gudmestad and Edmonds (2023), we include the analysis of delayed post-SA interviews (post-SA2) to measure the extent to which learners' SPP expression changes over the course of SA and both immediately and nine months afterwards when they have returned to their country of origin. Second, we investigated two usage-based factors that have not been included, to our knowledge, in prior research on SPP expression and additional language learners: FRC (each verb token's likelihood of use in a switch- (vs. same-) reference context) and likelihood of overt pronoun expression (each verb token's prior probability of use with an overt subject pronoun).

2.2. Usage-Based Factors

Usage-based approaches to language hold that speakers' experiences with language (in production and in perception) shape language structure, language variation and change (Becker et al., 2009; Bybee, 2010), and L1 acquisition (Tomasello, 2003; Shin, 2016; Shin & Miller, 2022). Acquisition and learning of additional languages (K. Geeslin & Long, 2014; López-Beltrán & Carlson, 2020) are also shaped by usage. Speakers' experience with language is often estimated via lexical frequency counts (token frequency, type frequency, bigram frequency, etc.), which have been shown to impact processes of language acquisition and learning (e.g., Ambridge et al., 2015; Ellis, 2012). Usage-based approaches presume that vast amounts of detail regarding language use and usage patterns become registered in memory as episodic traces [for example, the Exemplar Model (Bybee, 2001)]. The lexical representations of words, thus, come to reflect frequently experienced tokens, which in turn may be selected as production targets, forming a type of Feedback Loop (Kemmer & Barlow, 2000).

One factor consistently found to predict overt (vs. null) SPP is whether the target verb is used in a switch (vs. non-switch) reference context. Switch reference refers to instances in which there is a change in subject between two adjacent clauses. Verbs used in a switch reference context are more likely to be expressed with an overt SPP than verbs with continuity of reference, which holds true across monolingual (Carvalho et al., 2015),

bilingual (Otheguy & Zentella, 2012; Torres Cacoullos & Travis, 2018), and learner data (K. Geeslin & Gudmestad, 2016; Gudmestad & Edmonds, 2023). Importantly, episodic traces of these usage events (verb's usage with and without an overt SPP) accumulate in memory (Bybee, 2002). SPP usage is conditioned by both the online contextual production context (whether appearing in a switch or non-switch reference context) as well as the verb's history of use in a switch reference context (E. L. Brown & Shin, 2022). That is, a verb's likelihood of use in contexts promoting overt SPP predicts the likelihood of SPP expression, independently of the production context. Such episodic traces in memory of usage patterns shape lexical representations and subsequently have an independent effect in predicting variant productions.

Therefore, in this study, we include two relatively under-utilized usage-based factors which will be detailed in the following sections: each verb form's ratio of conditioning by switch reference (FRC) and each verb form's likelihood of use with an overt (*yo creo*) ('*I believe*') versus null (*Ø creo*) ('*I believe*') subject. Both probabilistic measures are understood to be rough estimates of L1 speakers' experiences with language. This method is supported by previous studies' results on additional-language learners' developmental acquisition of (socio)-linguistic variables (Gudmestad, 2021, p. 230) in which variable patterns in learners' data are converging with native speakers'.

2.2.1. FRC

In addition to lexical frequency, words' contexts of use should be considered in studies of variation and change (Bybee, 2002). Online production contexts condition variation in myriad ways, promoting or inhibiting the productions of specific variants in a probabilistic fashion. Additionally, words differ significantly in their likelihood of use in contexts conditioning specific variants. These variant patterns of use become registered in memory serving as potential targets for subsequent productions. Therefore, identifying the recurring contexts of use of words in specific conditioning contexts helps to predict speakers' variant choices. This knowledge contributes to our understanding of how language variation and change take shape.

Specifically, in the case of Spanish SPP variation, it has been shown that discourse continuity of the subject is typically one of the factors with the greatest magnitude of effect as a predictor of expression with regard to SPP in Spanish (Posio, 2018, p. 300). When the subject of the target verb differs from the subject of the previous conjugated verb in the immediately preceding discourse, pronoun expression is favored. When there is discourse continuity (no switch in reference), null subjects are expected. A verb commonly used in discourse lacking continuity of reference (switch reference context) might come to store this probabilistic contextual information as part of the production plan. This usage pattern (likelihood of switch vs. same reference context) accumulates in memory.

This study will measure each verb form's ratio of use in a switch versus a same reference context (FRC). This same measure has been tested previously using adult language data (E. Brown, 2020) as well as L1 acquisition data (E. L. Brown & Shin, 2022). After children acquire sensitivity to switch reference [i.e., greater likelihood of SPP expression in switch vs. same reference context], over time a long-term effect of verbs' use in switch vs. same reference context emerges that conditions expression. For SLA, K. Geeslin et al. (2015) note that the strongest predictors of pronoun expression among adult L1 speakers of Spanish are the first to emerge among additional language learners. Numerous studies demonstrate that learners are sensitive to the online conditioning of discourse continuity (e.g., Gudmestad & Edmonds, 2023; B. Linford & Geeslin, 2022). Nevertheless, the accumulation in memory of the effects of sensitivity to discourse continuity has not been tested for L2 learners.

2.2.2. Likelihood of SPP Expression

In addition to FRC, a contextually informed probability measure, we are interested to know whether, independent of the production context (the online use in either a switch or a no switch reference context), overall likelihood of overt pronoun expression impacts learner acquisition of the sociolinguistic variation. As usage-based approaches to SLA have noted, "if the object or practice to be learned by the L2 speaker is not directly observable, noticeable or in other ways readily available for the human experience [. . .] it will not be learned" (Eskilsen & Cadierno, 2015, p. 4). In other words, quantity and quality of input matters because frequency of exposure drives language learning and enables entrenchment (Ellis, 2015).

If, independent of production context, a verb is frequently realized with an overt subject pronoun in general (e.g., *yo creo 'I believe'*), this pattern of input may become registered in memory. In other words, learners' lexical representation with this particular verb could include an overt subject pronoun. Consequently, learners might replicate this pattern (overt subject pronoun + verb) more often. Knowing that string frequencies such as, for example, *yo creo* have been shown to be registered by children and adults (e.g., Bannard & Matthews, 2008), we hypothesized that verbs more likely to be used with an overt subject pronoun might be stored in memory with an overt subject pronoun compared to verbs less likely to be accompanied by an overt *yo.* Knowing that SPP variation is constrained by numerous factors simultaneously, the effect of co-occurrence patterns in the input could be hypothesized to be independent of the switch-reference effect.

Thus, in this study, employing a well-understood (e.g., Carvalho et al., 2015) sociolinguistic variable, the variable expression (vs. omission) of Spanish first-person subject personal pronoun, we explore the following research questions.

1. What role, if any, do usage-based factors (FRC and Likelihood of SPP expression) identified for L1 acquisition play in L2 acquisition of sociolinguistic variation?
2. What effects, if any, does SA have on the acquisition of variable first-person subject pronoun for additional language learners of Spanish? Do these effects persist across time?

3. Materials and Methods

3.1. LANGSNAP Corpus

We analyzed data from an open-source longitudinal learner corpus called LANGSNAP (Mitchell et al., 2017). The corpus consists of oral and written data collected over a 21-month period from participants who were United Kingdom-based university students who spent an academic year abroad (~9 months) in a French- or Spanish-speaking location. Data collection periods included pre-abroad, immediate post-abroad, and delayed post-abroad. All participants were additional language learners of French or Spanish and had various placement types abroad (exchange student, intern, or teaching assistant). For this study, we analyzed three semi-structured interviews from 25 Spanish language learners. Nineteen of whom were women while six were men. Their ages ranged from 20–25 (M = 20.71; SD = 1.46), with one participant who did not identify their age. Their first languages included: English (n = 23), Polish (n = 1), and English and Polish (n = 1)[1]. Participants had studied Spanish in an academic context between 2–14 years (M = 5.6; SD = 3.3). In addition to Spanish, other languages studied included: French (n = 19), German (n = 7), Italian (n = 2), Latin (n = 1), and Portuguese (n = 1)[2]. Three participants had not studied any languages other than Spanish. Sixteen of the participants were in Spain, while nine were in Mexico. While in Spain, nine where exchange students, one was an intern, and six were teaching assistants. While in Mexico, all nine were teaching assistants. Data for this study come from three semi-structured interviews per participant, each lasting approximately

twenty minutes long and conducted by members of the LANGSNAP research team. In these interviews, participants discussed their daily lives and opinions about life in the UK and abroad. For each participant, we manually analyzed first-person singular subject verbal forms with or without *yo* expression. First-person singular subjects present only two variants (null, pronominal). Selecting first-person subjects helps minimize the range of conditioning factors constraining the variation. This method is in line with previous work on Spanish subject pronoun variation in monolingual (Travis & Torres Cacoullos, 2012), bilingual (Torres Cacoullos & Travis, 2018), and SLA research (K. Geeslin & Gudmestad, 2016; Gudmestad & Edmonds, 2023). All tokens of first-person subjects spoken by the learners (N = 5138) were extracted from the following interviews: (a) pre-SA (about 3 months prior to their departure), (b) immediate post-SA (at the end of their academic year abroad, approximately 12 months after the pre-study abroad data collection period), and (c) delayed post-SA (approximately 21 months after the pre-study abroad data collection period). These are labeled in this work as pre-SA, post-SA1, and post-SA2 respectively. Of the 5138 total tokens, we analyze a subset of 3518 tokens which we explain and justify in the following sections below.

3.2. Data Coding and Analysis

The acquisition of variable SPP expression in the Spanish of additional language learners has been widely researched (K. Geeslin et al., 2013, 2015; K. Geeslin & Gudmestad, 2016; B. Linford et al., 2018; Denbaum, 2020; B. Linford & Geeslin, 2022; K. Geeslin et al., 2023b; Gudmestad & Edmonds, 2023). Linguistic factors that condition the variation for additional language learners coincide with those identified for monolingual and bilingual speakers of Spanish. Additionally, characteristics specific to learners and the type of language input have been shown to constrain patterns of acquisition of SPP variation. Thus, we follow previous research and manually code each of the first-person finite verbs for numerous predictors described below.

As mentioned previously, a recurring conditioning factor constraining Spanish SPP expression is switch reference. For each target token in our data, therefore, we code for whether the target subject was different from (switch) or identical to (no switch) the subject of the preceding finite verb, regardless of the semantic and pragmatic features of the preceding subject. An example of a switch in reference for a target verb (*hablo* 'I speak/I talk') can be seen in example (1). The subject of the bolded target *hablo* (first-person singular *yo*) differs from the subject of the previous, underlined finite verb *es* (third-person singular 'is'). In example (2), there is discourse continuity in that the target *hablo* has the same subject as the previous finite verb *tengo* (I have).

(1) pero uh mi tío es um es(pañol) [//] de España. Y uh sí. **Hablo** con ellos en español. [speaker 170, Pre-SA]
'but my uncle is from Spain. And yes. I speak Spanish with them'

(2) Tengo amigos mmm con quien **hablo** en Facebook [speaker 163, Post-SA1]
'I have friends I speak to on Facebook'

In addition to switch reference, previous studies (e.g., Abreu, 2012; E. L. Brown & Rivas, 2011; Cameron & Flores-Ferrán, 2004; Travis, 2007; Torres Cacoullos & Travis, 2018) demonstrate a priming effect, whereby an expressed pronominal subject in the previous context may trigger an overt *yo* on the target verb. Example three (3) illustrates a case in which the verb preceding the target (in this case *tengo* 'I have') is an overt *yo* (*yo creo 'I believe'*). Example (4), conversely, illustrates an example in which the subject of the verb (*sé* '(I) know') preceding the target (*podría* 'I could') is null. To capture this perseverative effect, we code each target verb for the expression and type of subject of the immediately

preceding finite verb; lexical, pronominal, null. We predicted that an expressed subject could favor an overt *yo* in the target context.

(3) y yo creo que yo tengo un nivel bastante bueno [speaker 175, Post-SA1]
'and I believe I have a pretty good level'

(4) sé que las podría haber conocido [speaker 166, Post-SA1]
'I know that I could have met them'

Lexical frequency can account for patterns of morphosyntactic variation (Bybee & Thompson, 1997; Krug, 2003). Although for Spanish subject pronoun expression predictions are not straightforward regarding the direction of effect of lexical frequency—that is, whether frequency would favor an increase or a decrease in rates of SPP expression, Erker and Guy (2012) find that for Spanish SPP expression, lexical frequency interacts with linguistic predictors to constrain SPP variation. Each of the target verbs included in our statistical models is coded for lexical frequency per million using the Oral section of the *Corpus del español*[3] (Davies, 2002) to determine whether the verb's token frequency constrains variation in the learner data (either in interaction with other factors or as a main effect).

To examine whether a verb's likelihood of use in a switch-reference context (independent of the production context) plays a role in the patterns of SPP variation in this data, we measured the FRC, or each verb's ratio of occurrence in a switch- (vs. same-) reference context. This is a measure of the likelihood of a specific discourse context (switch reference) for each verb type. Some verbs are commonly found in a switch reference context (a discourse context favoring overt subject pronouns), and others are more commonly found in same-reference contexts (a discourse context disfavoring overt pronouns). For example, a verb in our data that occurs frequently in a switch- (vs. same-) reference context is *imagino* ('I imagine'). In the oral section of the Davies' (2002) corpus, out of 200 uses, the subject of the previous finite verb is different (i.e., switch) in 182 cases and is the same referent in 18 cases. In other words, in 91% of the uses, the verb *imagino* occurs in a switch reference context. A verb like *salí* ('I left/went out') on the other hand, in this same corpus, out of 200 uses occurs in a switch reference context in just 50% of the instances. The estimate, thus, attempts to capture any potential long-term effect of such disparate usage patterns across time in a speaker's experiences with Spanish. In this way, to create this probability measure, the FRC is calculated as each verb form's occurrences in switch-reference contexts out of the verb form's total appearances, capped at 200 occurrences for frequent verbs (# Verb in switch reference/# Verb in corpus = FRC).[4] The log of this value is used in the statistical modeling.

As a separate measure, we also explored any potential effect for the likelihood of expressed subject pronoun for each verb type in the Davies (2002) corpus. This factor measures co-occurrence patterns of verb forms (e.g., *digo* 'I say') and the verb's corresponding subject pronoun (*yo*) embedded in instances of language use. Subjects in Spanish may appear pre- and post-verbally *(yo digo* or *digo yo* respectively). Additionally, subjects need not appear immediately adjacent to the verb (*yo siempre digo* 'I always say'). For each verb type, we calculated the percentage of expressed (vs. null) subject pronouns in the external corpus (*Corpus del español*). We extracted each instance of use (again capping frequent verbs at 200) and calculated a percentage of subject expression including pre- and post-verbal subjects as well as adjacent and non-adjacent tokens of *yo* (# tokens with expressed subject pronoun/# tokens of the verb overall). For example, in nearly half of the occurrences (91/200), a verb like *pensé* ('I thought/believed') is expressed with an overt *yo.* The log of percentage is used in the regression models.

Additionally, we code each target verb for whether it is sampled from the pre-SA interviews, the immediate post-SA interviews (post-SA1), or the delayed post-SA interviews (post-SA2).

For the quantitative analysis, we use a generalized linear mixed-effects model using *lme4* in R (R Core Team, 2019). We include the speaker and the verb as random effects. Section 4 summarizes the results of our analyses.

4. Results

To understand the patterns of SPP variation evident in the learner data, we base our analyses upon all the first-person singular verb forms extracted from the LANGSNAP corpus (n = 3518). We explored the extent to which learners' SPP expression changed prior to and after a stay abroad. Additionally, we tested whether learners acquired usage-based patterns of variation.

4.1. Rates of SPP Expression and SA

The rate of SPP expression in the learner data is strikingly low, similar to what is true of L1 acquisition (Shin, 2012). There are important differences across speakers with regard to their SPP usage. Rates of SPP expression vary from 0% to 25%. Overall, in just 8.3% of the 3518 instances of first-person singular verb forms is the *yo* pronoun expressed in these data. A summary of rates of SPP expression is presented in Table 1.

Table 1. Rates of SPP expression by SA timing.

	n	**% SPP Expression**
Pre-SA	1323	7.2
Post-SA1	1078	9.6
Post-SA2	1117	8.0
Total	3518	8.3

Prior to the SA experience (pre-SA), the rate of *yo* expression is 7.2% (with just 95 instances of overt *yo* expression across the 25 speakers). Rates of *yo* expression are at their highest in the data collected immediately after the SA experience (post-SA1). In post-SA1, speakers use overt SPP at a rate of 9.6%. The rates of SPP expression are lower in post-SA2 (8.0%). A Friedman's test[5] shows that SA timing does not have a significant effect on SPP expression χ^2 (2) = 0.989, p = 0.610. According to pairwise comparisons, SPP expression is not significantly different between each time point. Given that rates of expression do not reveal the underlying constraints on variation (or control for factors operative in the production contexts that probabilistically predict SPP production), we conduct statistical analyses to understand the role of SA on the acquisition of this sociolinguistic variation, the possible retention of any gains, and the effects of usage-based factors in the acquisition process.

4.2. Acquisition of SPP Expression and Usage-Based Factors

A primary goal of this project was to determine whether certain usage-based factors constrain the variation of the additional language learners of Spanish. Specifically, building upon previous research that report L1 acquisition of FRC effects, we sought to test whether additional language learners, likewise, given enough experience with the target language, might also acquire this variation. An additional factor of the input we tested was whether a verb's prior probability of being expressed with an overt (vs. null) *yo* could condition variation in learner data. Initially, we had a total of 5138 tokens. We imported values of FRCs and the Likelihood of SPP expression from previous work for 2575 of those tokens

(E. Brown, 2020; E. L. Brown & Shin, 2022), and then, working in descending order of verb token frequency in our corpus, we generated by hand these measures for an additional 943 tokens that were not calculated in previous studies. Time constraints leave data coding for the remaining 1620 ongoing. The following analyses, thus, do not reflect the entirety of the dataset and are conducted upon first-person singular tokens for which we have FRC and percent SPP expression values (n = 3518; pre- n = 1323; immediate post-SA1 n = 1078; delayed post-SA2 n = 1117). However, we have no indications or reason to believe that further coding would alter the central findings of our study (the effect of SA, the persistence of the effects, and the lack of an FRC effect in SLA learner data).

To explore the role of any usage-based factors and whether the acquisition of SPP variation is impacted by SA, we conducted linear regression models in which we considered the factors described in the methodology section: previous reference, perseveration, log FRC, log verb frequency, and log Likelihood of SPP expression. First, the fixed effects factors included in this study were tested for pre-SA and immediate post-SA1 (see Table 2). We considered the effect of the factors independently and in interaction with timing (pre-SA, post-SA1). When considered without an interaction, an examination of the dataset as a whole (see Appendix A) does not permit us to identify a potential effect of usage-based factors in a SA experience. It does, however, provide us with insights into the potential individual effects of our usage-based factors (lexical frequency, FRC, Likelihood of SPP). Neither frequency nor FRC is selected as significantly predicting SPP, and Likelihood of SPP has a marginally significant effect. When we consider the pairwise interactions of each usage-based factor and timing, or pairwise interactions one at a time, the model does not converge except for the model including Likelihood of SPP. We report the results in Table 2.

Table 2. Mixed effects linear regression predicting *yo* expression in Pre- vs. Immediate Post-SA1 datasets (*N* = 2401).

Random Effect	**Variance**	**Std. Dev.**			
Verb (intercept)	0.5236	0.7236			
Speaker (intercept)	1.0106	1.0053			
Fixed effects	*N*	% overt	Estimate coef.	Std. error	*p*-value
(Intercept)			−2.3314	1.2801	
Switch-reference (switch)	1018	11.5	0.778	0.163	<0.001
Switch-reference (no switch)	1383	5.9	--	--	
Timing (Pre-SA)	1323	7.2	−1.860	0.567	0.001
Immediate Post-SA1	1078	9.6	--	--	
Priming (previous expressed)	548	11.3	0.673	0.293	0.022
(previous null)	1853	7.4	--	--	
Log Likelihood SPP expression	--	--	3.214	1.123	0.004
Log Verb Frequency	--	--	0.369	0.257	0.151
Log FRC_switch	--	--	2.181	2.560	0.394
Log Likelihood SPP expression X Timing (pre-SA)	--	--	−2.903	0.945	0.002

AIC = 1211.7, random effects: speaker (*N* = 25), Verb (*n* = 61). Positive coefficients are associated with *yo* expression.

Table 2 summarizes the results of the linear mixed effect model predicting overt SPP expression. There are three factors that significantly constrain variation in the learners' speech. Unsurprisingly, in line with previous findings across varieties of Spanish, discourse continuity is selected as significant. When a first-person singular verb form is used in a switch-reference context, *yo* expression is more likely than when there is continuity of reference. In a switch-reference context, expression is 11.5% whereas in a same-reference context, rates are 5.9%.

The results of this analysis in Table 2 also reveal a significant effect of priming on likelihood of an overt SPP in these data. When the subject of a preceding verb is an overt subject, the target verb subject pronoun expression is more likely, revealing higher rates of expression (11.3%) in these cases compared to targets lacking such priming (7.4%). This result aligns with previous research (e.g., Gudmestad & Edmonds, 2023).

The results in Table 2 also reveal an effect of timing on the SPP expression of these speakers. The rate of expressed subject pronouns is significantly higher in post-SA than in pre-SA (7.2% to 9.6%, respectively). Neither lexical frequency nor FRC are selected as significantly constraining SPP variation. Our additional usage-based factor, however, Likelihood of SPP expression significantly constrains SPP variation as a main effect and in interaction with timing. As a verb's likelihood of use with an overt pronoun increases, so does the likelihood of overt pronoun usage in our learner data. Verbs that have a higher rate of pronoun expression generally in Spanish [as estimated in the Davies (2002) corpus] have a greater likelihood of overt *yo* expression in these data. Additionally, the significant interaction with timing reveals that after studying abroad, learner's use of subject pronoun is more acutely predicted by this usage-based factor (Likelihood of SPP expression). The effects are enhanced in the post-SA1 data. This interaction is represented in Figure 1.

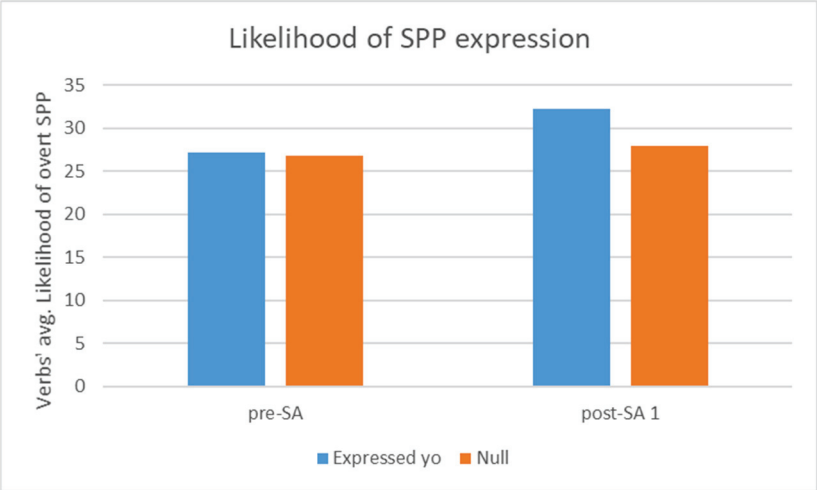

Figure 1. Average Likelihood of SPP expression for *yo* vs. null in learner data.

The data summarized in Figure 1 reveal that, prior to SA, overt *yo* tokens have only a slightly higher average Likelihood of SPP expression (27.1%) compared to the instances in which learners did not express *yo* (26.8%). After SA (post-SA1), the instances of overt *yo* expression in the learner data are on verbs that, on average, have a higher Likelihood of SPP expression (32.2%) compared to the null tokens in our data (27.9%). The significant effect on patterns of SPP usage of the previously untested role of verbs' Likelihood of SPP suggests that these speakers have accumulated in memory the probability of *yo* expression with individual verb forms. These usage-based patterns shape SPP expression more clearly after living abroad.

Although previous research examined SPP expression in pre- versus immediate post-SA data, this work sought to understand whether there is evidence of persistence of acquisition effects across time post-SA. As made evident in Table 1, there are no significant changes in overall rates of SPP across time after the SA experiences (post-SA1 vs. post-SA2), but there was acquisition of a linguistic constraint on variation (Likelihood of SPP expression) as seen in Table 2. We ask whether the acquisition of this pattern of variation that was evident post-SA persists.

Table 3 presents the results of a linear regression prediction of *yo* expression in post-SA1 compared to post-SA2. Following the same modeling procedure as the pre-SA and post-SA1 model, we conduct a mixed effect linear regression model predicting *yo* expression in the data post-SA. Both Verb and Speaker are included as random intercepts.

Table 3. Mixed effects linear regression predicting *yo* expression in immediate post-SA1 vs. delayed post-SA2 datasets (*n* = 2195).

Random Effect	**Variance**	**Std. Dev.**			
Verb (intercept)	0.3142	0.5606			
Speaker (intercept)	1.2982	1.1394			
Fixed effects	*n*	% overt	Estimate coef.	Std. error	*p*-value
(Intercept)			−2.0275	0.595	
Switch-reference (switch)	882	11.1	0.701	0.168	<0.001
Switch-reference (no switch)	1313	7.2	--	--	
Timing (Delayed Post-SA2)	1117	8.0	0.071	0.566	0.901
Immediate Post-SA1	1078	9.7	--	--	
Priming (previous expressed)	109	19.3	0.448	0.288	0.112
(previous null)	2086	8.3	--	--	
Log Likelihood SPP expression	--	--	2.273	0.997	0.023
Log Likelihood SPP expression X Timing (delayed-SA)	--	--	0.234	1.002	0.815

AIC = 1119.8 random effects: speaker (*N* = 25), verb (*n* = 61). Positive coefficients are associated with *yo* expression.

In these data, there is a significant effect of verb's Likelihood of SPP expression on the likelihood of learners expressing *yo*. The significant positive correlation suggests that as a verb's Likelihood of SPP expression increases, the more probable it is that a speaker expresses an overt *yo.* When we examine whether the effect of verb's Likelihood of SPP persists or wanes across time (via the interaction of Timing and usage-based factors), it is apparent that there is no significant interaction between the distinct data collection times. The significant effect of verb's Likelihood of SPP expression apparent in post-SA1 (illustrated in Figure 1), persists in post-SA2.

5. Discussion

This project analyzed variable first-person SPP expression in the speech of additional language learners of Spanish before and after an SA experience. We examined speech immediately after students' return from abroad and at a delayed time interval. We sought to understand what role SA played in acquisition of this widely studied sociolinguistic variable in Spanish (SPP expression). Additionally, we tested whether cumulative usage factors (contextual, non-contextual) constrained the variation.

Overall, the analysis of SPP usage revealed strikingly low rates of SPP expression as compared to other L1 studies of the same linguistic variable. Previous research on monolingual adult L1 Spanish suggests that *yo* expression varies from 25% (Lastra & Martínez Butragueño, 2015, p. 43) for the Spanish of Mexico City to 57% in Andalusian Spanish (Ranson, 1991, p. 138). Rates of *yo* expression in contact varieties such as the Spanish of Southeast Texas or Southern Arizona can be as low as 19% (Bessett, 2023, p. 32). Overall, rates of expression in previous L1 Spanish research typically hover at a rate far higher than the 8.3% we report here. L1 child acquisition data, however, do reveal lower levels of expression. Shin (2016, p. 925) reports that the percentage of subject pronoun expression in children ranges from 8% in 6 to 9 year olds to 11% in children 12 or older. These percentages are very similar to ones we find in the L2 learner data we analyze in this study (8%, Table 1). Meanwhile, K. Geeslin and Gudmestad (2016) reported about 20% first-person SPP expression among L2 learners of Spanish. Differences in our L2 findings may be due to task, as our data came from general interviews where there was no explicit

intention on the part of researchers to elicit first-person SPP usage, while K. Geeslin and Gudmestad (2016) employed sociolinguistic interviews which may have affected the type of language produced by participants. Our findings, however, align with Gudmestad and Edmonds (2023), who analyzed a subset of the same learner corpus and found a 7% rate of first-person SPP expression.

We asked whether SA played a role in the SPP usage patterns. Results of the mixed-effects linear regression (Table 2) suggest a significant difference between the speech pre- and post-SA1. Prior to SA, overt *yo* expression is less likely when compared to SPP expression post-SA1. Moreover, in this project, we asked whether additional language learners of Spanish exhibit any evidence of accumulation in memory of acquisition of usage-based factors that constrain SPP variation, and we find a mixed result. We find no evidence of acquisition of the contextually informed measure estimating verbs' likelihood of use in a switch- (vs. same-) reference context (FRC). However, our results suggest that these learners are sensitive to the online conditioning of the switch-reference factor. Expression of an overt *yo* is more likely when the target lacks discourse continuity and omission is more likely when the target subject does not switch from the previous referent. Despite a robust effect of this conditioning factor, there is no evidence to suggest that verbs' patterns of use in conditioning contexts accumulates in memory (no significant FRC effect either independently or in interaction with lexical frequency). Therefore, we conclude that the verb's probability of use in the conditioning context is not lexicalized.

This result confirms, unsurprisingly, that additional language learner results differ from child L1 acquisition data. E. L. Brown and Shin (2022) show that children first acquire the online switch-reference condition. With time and sufficient input, they acquire the lexically specific pattern of verbs' likelihood of use in the conditioning context (e.g., FRC_{switch}). In the child language data, the FRC effect is apparent starting around the age of 8 or 9 years old. It is unlikely that additional language learners, whose primary experience will have been in the classroom, will have been exposed to a similar amount and type of input as that of an 8- or 9-year-old L1 speaker. Unfortunately, for this study, we lack information about the quantity and quality of target language input that our participants received while abroad that would inform this comparison further, but future studies could include this type of data.

Unlike the FRC measurement that is discourse-sensitive (requiring speakers to register and accumulate a verb's likelihood of occurrence in a switch-reference context), our measure of a verb form's prior probability of overt *yo* expression does not share the same level of cognitive demands for the learners. The presence or absence of *yo* expressed with a verb presents a more tangible pattern for learners to attend to compared to the likelihood of the target verb occurring in a switch or a same reference context. The relative perceptual salience, or noticeability of the pattern (Ellis & Collins, 2009), as well as the more immediate proximity of an expressed subject pronoun with a verb (rather than across clauses) and therefore less cognitive processing load (Fedorenko et al., 2013), could account for the acquisition of Likelihood of SPP expression as a conditioning factor over FRC. In L1 acquisition, it has been argued (Shin, 2016) that complex patterns, as could be the case of FRC, may be acquired later than simpler patterns (such as, for example, likelihood of an overt vs. null *yo*).

This study also set out to examine whether any SA effects persisted over time subsequent to returning to the home country or whether effects waned. We examined data extracted from interviews immediately after the SA (post-SA1) as well as after a time delay (post-SA2). We focused upon one variable of interest: the acquisition of Likelihood of SPP expression. This variable aligns only slightly with first-person SPP variation in pre-SA data, but a significant effect is evident particularly after time abroad (Table 2) suggesting

that SA may play a role in learners' development of SPP expression. Meanwhile, the average Likelihood of SPP expression between immediate post-SA1 and delayed post-SA2 is a stable correlate of expressed tokens. While rate of SPP expression decreases between immediate (8.1%) and delayed post-test (7.1%), the pattern of first-person SPP use persists in that the difference in average Likelihood of SPP expression is higher for expressed tokens compared to null tokens for both immediate post-SA1 and delayed post-SA2 while there is almost no difference between expressed and null in the pre-SA (Figure 1). This suggests that usage-based effects acquired during a year abroad linger even after having been home in the UK for nine months (delayed post-SA2).

Nonetheless, these findings must be interpreted with caution as it is unclear whether simply more experience with exemplars, either at home or abroad, may have produced stronger associations. This study does not employ an at-home comparison group. Yet, even if we did, a comparison between SA and at-home would also be subject to confounding factors, such as individual differences and varying input. Students who choose to study abroad are qualitatively different from those who do not and so a direct comparison between such groups would also have its limitations (Sanz, 2016).

Looking ahead, future directions may include the examination of other extralinguistic factors such as English-language use while abroad, placement type, or prior years of Spanish study, as well as how participant experiences may have varied due to placement type. One possibility is to examine qualitatively the participant interviews, which Gudmestad and Edmonds (2023) also suggest, to better understand students' access to Spanish speakers and their varying use of Spanish while abroad. This can paint a better picture of the type of input they received as it relates to SPP expression as measured here. Ongoing challenges of usage-based SLA research is documenting the input that learners receive and their linguistic experiences, since research suggests that additional language learners may be exposed to more formal language even when studying abroad (K. Geeslin et al., 2023a). In sum, this study adds to the growing, albeit still limited, research on variationist SLA and usage-based linguistics by incorporating the effect of usage-based factors in sociolinguistic variation.

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Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Table A1. Mixed effects linear regression predicting *yo* expression in pre- vs. immediate post-SA1 datasets (n = 2401).

Random Effect	**Variance**	**Std. Dev.**			
Verb (intercept)	0.4923	0.7017			
Speaker (intercept)	0.9715	0.9857			
Fixed effects	N	% overt	Estimate coef.	Std. error	p-value
(Intercept)			−3.011	1.256	*
Switch-reference (switch)	1018	11.5	0.782	0.162	***
Switch-reference (no switch)	1383	5.9	--	--	
Timing (Pre-SA)	1323	7.2	−0.190	0.165	**
Immediate Post-SA1	1078	9.6	--	--	
Priming (previous expressed)	548	11.3	0.696	0.290	*
(previous null)	1853	7.4	--	--	
Log Likelihood SPP expression	--	--	1.847	1.007	.
Log Verb Frequency	--	--	0.366	0.256	n.s.
Log FRC_switch	--	--	2.473	2.527	n.s.

AIC = 1219.2, Random effects: Speaker (N = 25), Verb (n = 61). Positive coefficients are associated with *yo* expression. Significance codes: p-value *** < 0.001, ** < 0.01, * < 0.05, . < 0.1, 1 > n.s.

Notes

1 We did the runs we report without the Polish and English/Polish participants. The model selected the same factors as significant as well as the same directions of effects in the non-significant factors. We therefore choose to keep the data obtained from these speakers in the final version.

2 None of these speaker characteristics significantly predict subject pronoun variation in these data.

3 Although this corpus also provides abundant written data, both from the twentieth century and for earlier stages of the language, for our calculations we rely exclusively on the oral section, which contains approximately 5 million words of spoken Spanish from different varieties of Latin America and Spain.

4 For more details, see E. L. Brown and Shin (2022).

5 The Friedman Test is a non-parametric test used for non-normally distributed data and is an alternative to the one-way ANOVA.

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