UNIVERSITY OF CALIFORNIA,
IRVINE

"*La Jaula de Oro*:"

An examination of Latinx bilingual adolescents' language attitudes, their translingual practices and language outcomes.

DISSERTATION

submitted in partial satisfaction of the requirements

for the degree of

DOCTOR OF PHILOSOPHY

in Education

by

Cecilia Del Carmen Perez

Dissertation Committee:
Professor Elizabeth Peña, Co-Chair
Professor Sandra Simpkins, Co-Chair
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DEDICATION

Para

Mi mami y papi, Elvira Jordan y Luis Perez for your endless efforts in making sure we learned the power and importance of words, language, communication and our culture- *esto de palabras, lenguaje, y enseñanzas corre en mis venas*. *Este trabajo se lo dedico con todo mi corazón a mis antepasados; a Papá Chano, que con el conocimiento que tenía, bajo un árbol le compartió a su comunidad, La Ermita, Chiquimula, Guatemala, el regalo de aprender a leer.* To my partner, Richard Warriner, who deserves an honorary doctorate for riding the waves of this pursuit with me. To my community in Whittier, Boyle Heights and Santa Ana, because you have taught me about the power of relating, of the collective and of working in community, with the community, for the community. To all my students, past, present and current and to all the "*No Sabo, Kinda Sabo and Si Se*" children who brilliantly language across different contexts and make sense of the world as racialized individuals; this is for you. Thank you for all that you have taught me.

"I write to record what others erase when I speak, to rewrite the stories others have miswritten about me, about you. To become more intimate with me and you." -Gloria Anzaldúa

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ABSTRACT OF THE DISSERTATION

"*La Jaula de Oro*:"

An examination of Latinx bilingual adolescents' language attitudes, their translingual practices, and language outcomes.

by

Cecilia Del Carmen Perez

Doctor of Philosophy in Education

University of California, Irvine, 2024

Professor Elizabeth Peña, Co-Chair

Professor Sandra Simpkins, Co-Chair

Purpose. Situated within a complex social-political and developmental context marked by racialization and identity formation, this research aims to illuminate the nuanced ways Latinx youth navigate their bilingual experience amidst varying educational models and linguistic environments.

The overarching goal of this dissertation is to investigate the language experiences and practices of Latinx bilingual adolescents through three exploratory studies. These studies focus on their perceptions of bilingualism, motivations to learn Spanish, and the interplay between language attitudes, exposure, and outcomes.

Methods. *The first study* explores Latinx adolescents' (n = 51) perceptions of bilingualism and their motivations to learn their heritage language, comparing experiences across language additive (dual immersion) and subtractive (English only) educational models. It examines how language perceptions and exposure influence motivational attitudes toward learning Spanish. *The second study* delves into the adolescents' (n = 50) use of critical thinking language and language complexity across Spanish, English, and translanguaging conditions, employing culturally relevant narratives (*Corridos*) as prompts to elicit linguistic expressions. This aims to uncover how bilinguals use critical thinking and produce language in different linguistic

conditions and highlights the impact of open language environments on linguistic outcomes. Finally, *the third study* (n = 50) links the first two findings to assess how attitudes towards bilingualism and motivations to learn Spanish correlate with critical thinking language use and language complexity and productivity in bilingual Latinx adolescents. Across these studies, participants included Latinx adolescents aged 10-17 from dual immersion and English-only schools in southern California, engaging in surveys and language sampling in various linguistic conditions.

Results. Results from *study one* indicates no significant difference in bilingual perceptions or Spanish learning motivations between participants from the two different educational models, suggesting that multilingual community environments may bolster language learning motivations. Regarding linguistic outcomes, translanguaging and culturally relevant materials like Corridos facilitate higher metacognitive language use and linguistic complexity levels, indicating the benefits of open language conditions and cultural relevance in educational contexts. Furthermore, positive attitudes towards bilingualism and motivation for learning Spanish are linked to enhanced language productivity and complexity in Spanish, though these factors less significantly affect English language outcomes.

Conclusion. This dissertation highlights the importance of positive language attitudes, motivation, and the supportive role of family, educators, and community in fostering bilingual development among Latinx adolescents. It demonstrates the value of translanguaging and culturally relevant narratives in promoting critical thinking, linguistic complexity, diversity, and productivity, advocating for educational practices that recognize bilingualism as an asset. The findings underscore the need for educational environments that embrace the linguistic diversity of Latinx students, leveraging the bilingual capabilities that they bring to the classroom as this enriches their learning experiences and supports their identity and academic achievement.

POSITIONALITY STATEMENT

Cecilia Del Carmen Perez is a Chicana and a Chapina, bilingual Speech and Language therapist. She was born and raised in the city of Santa Ana, California; the city where her parents immigrated to from their respective home countries. En la casa *"siempre se usa el Español, porque yo no entiendo Ingles:*" this was her mother's frequent demand, that in the home, she needed to speak Spanish and the reason that today she has the privilege of speaking her home language. Starting as early as middle school, Cecy is a first-generation scholar, and has had the privilege of attending multiple universities and earning various degrees. Throughout her academic and professional formation, she has experienced first-hand the language violence that racialized and minoritized individuals experience. As a speech therapist to many young Latinx adolescents she has also witnessed the brilliance that these students hold and the many ways that the educational system positions them as linguistically deficient. Her line of work seeks to shift the narratives that educators hold about their racialized Latinx adolescents.

Structure of Dissertation

Each study within this dissertation will be presented as a separate manuscript. The three studies have study-specific literature reviews, research questions, methods, discussions, and conclusions. I will end the dissertation with an overarching conclusion summarizing the studies and findings and including the three studies' significance and their implications for education and clinical practice.

INTRODUCTION

In California, 33% of children ages 5-17 speak Spanish (Migration Policy Institute, 2022). Although bilinguals exist in all age groups and language continues to develop throughout the lifespan, research on bilingual language development is more robust for early childhood and adulthood (Bedore & Leonard, 2001, 2005; Restrepo, 1998; Simon-Cereijido & Gutiérrez-Clellen, 2007). Latinx bilingual adolescents' language practices are highly complex but have been largely ignored and misunderstood as deficient (Montrul, 2018).

In adolescence, individuals evolve in various cognitive and psychosocial domains, which are at least in part affected by their social context. In California, the proximity to the Mexican border creates a unique context in which Latinx, Spanish/ English bilingual adolescents are 1st generation immigrants and second (+) generation children of immigrants. For these adolescents, exposure to their heritage language(s) may not guarantee the acquisition or maintenance of their heritage language(s) (Perez et al., 2023). That could be because adolescents are sensitive to the strong effects of globalization and language hegemony, which is evident through research that has shown that children as young as 3 and 4 years of age internalize racialization and prefer attributes of whiteness, including those aligned with English-only language practices (Escayg, 2019). At this developmental stage adolescents may be particularly vulnerable to the language ideologies that position them as linguistically and culturally deficient which may increase the pressure to assimilate to the status quo (Zhang, & Slaughter-Defoe, 2009) and can have lasting implications on their language attitudes and thus practices.

The risk of Latinx children losing their heritage language is worrisome because their heritage language serves as a medium of connection to their families, their homes, cultures, histories, and communities. The risk is exacerbated by forced assimilation via educational policies prioritizing rapid English language acquisition. In traditional U.S. education, these students are primarily taught in English-

only classrooms, subtractive language contexts where students are pressured to suppress their other language (s) (García & Torres-Guevara, 2021). Subtractive language education models dismiss the linguistic richness of bilingual minds because success is defined by how well you perform "academic language," that is, standardized English (Love-Nichols, 2018). Minoritized students are thus positioned at specific risk of experiencing ethno-racial language-based stereotyping, marginalization, and low academic expectations, which can have downstream effects on educational and professional attainment (Kiramba et al., 2020).

In recent years, in places like California, there has been a renewed interest in supporting bilingual acquisition and exploring less restrictive language models in schools. However, while multilingualism is celebrated, non-standard English practices are still not recognized as acceptable for intellectual participation and academic or professional use (Love-Nichols, 2018). Educators might encourage students to learn their home language(s) and, on the same note, not accept a term paper where the student uses Chicano-Spanglish to satisfy the assignment requirements for "formality." Through this pedagogical practice, adolescents might infer that their home and community languages are subordinate to standard American English. Educators do not recognize and credit the complexity of Latinx bilingual adolescents' language practices because we have accepted the narrative that standard American English is superior to the language practices of marginalized communities. Thus, we continue to perpetuate and impose deficit narratives on Latinx bilingual adolescents. Deficit narratives are further compounded by the available body of work on adolescent language, which is based mainly on monolingual, English-speaking adolescents (Nippold et al., 2014, 2017, 2020). Unfortunately, a body of work delineating a more accurate representation of their comprehensive language skills and practices does not exist for Latinx bilingual adolescents. We need to understand more about this demographic's adopted language attitudes. As an act of resistance to deficit narratives, we must document how Latinx adolescents flexibly use their language range to express critical thought in complex and productive ways

despite having distributed skills across each of their language (s) (Bedore et al., 2012) and not using English by the delineated boundaries of standardization. Understanding their language attitudes and language practices is necessary if educators intend to support, credit, and uplift Latinx adolescents' languaging skills. Therein lies the overall motivation for the following studies.

In the following three studies of this dissertation, we seek to examine those mentioned above. In study one, we will review the theoretical underpinnings of how language perceptions and language learning motivation are developed, examine the language perceptions of Latinx adolescents and the motivation that may support their language development; we will report our scientific process and the results of having surveyed Latinx bilingual adolescents about their perceptions of bilingualism and their motivation to learn Spanish. In the second study, we will consider the differences in bilingual Latinx adolescents' language practices that emerge because of the language condition that they are participating in. Specifically, we will look at how the language of critical thinking, language complexity, and production present when adolescents are engaged in "closed language conditions" (a.k.a. restricted to Spanish or English) or in "open language conditions" (a.k.a. additive language, translanguaging). Finally, in the third study, we will explore the contributions of language attitudes and language exposure to how adolescents use the language of critical thinking, language complexity, and production. In conducting these three studies, we seek to add to the body of literature that represents, in part, the language experiences of some Latinx bilingual adolescents.

STUDY 1:

Bilingual Latinx Adolescent Perceptions of Bilingualism and Motivation to Learn Spanish

Abstract

Purpose: This study explores the perceptions of bilingualism and motivation to learn Spanish among bilingual Latinx adolescents in the United States. Amidst a societal backdrop that predominantly values monolingualism in English, this research aims to document the bilingual views and learning motivations of Latinx adolescents, offering insights into how language attitudes are shaped by their socio-political and developmental contexts.

Method: The study employed two pre-validated surveys adapted to assess the language perceptions and learning motivations of 51 Spanish-English bilingual adolescents from Southern California. Participants were recruited from a (Spanish/ English) dual immersion school, English-only instruction schools, and social media. The surveys measured aspects of bilingualism perception, language motivation, and detailed language exposure at home and school settings. Statistical analyses were utilized to examine the influence of educational models (additive vs. subtractive language models) and language exposure on students' bilingualism perceptions and motivation.

Results: The findings revealed no significant difference in the perceptions of bilingualism and motivation to learn Spanish between adolescents attending dual immersion and English-only schools. Both groups displayed positive attitudes towards bilingualism and a motivation to learn Spanish. Regression analysis indicated that perceptions of bilingualism, current language exposure, and age of first English/Spanish exposure significantly predicted the motivation to learn Spanish, whereas the school language model did not. This suggests that while educational settings play a role, they are not the sole determinant of

language learning motivations among Latinx adolescents; home and community language exposure may be playing a protective role for this demographic.

Conclusion: The study concludes that Latinx adolescents, regardless of their school's language model, hold favorable views towards bilingualism and are motivated to learn their heritage language. These attitudes are primarily influenced by their language exposure and early experiences with bilingualism. The findings underscore the importance of community and family language environments in fostering positive bilingual perceptions and motivation to learn Spanish. Educators and policymakers are encouraged to recognize and leverage these factors, promoting culturally and linguistically inclusive education that reflects and supports the identities and aspirations of bilingual Latinx students.

Introduction

Our understanding of how Latinx bilingual adolescents perceive bilingualism in the U.S. and the extent of their motivation to learn and use Spanish could be more precise. The language perceptions of Latinx adolescents are developed under unique contexts in which they are experiencing naturally occurring bio-developmental changes that are simultaneously coming into contact with their current socio-political climates, histories, and environments (Bandura, 2006), most of which have been ideologically oriented in favor of characteristics of whiteness (Escayg, 2019), including the monolingual English principle (Cummins, 2007). The monolingual English principle refers to a bias that places higher value on English practices that do not demonstrate interference with heritage languages (Cummins, 2007; Howatt, 1984). With Latinx youth in the U.S. being a growing demographic, there is much more focus on learning two languages in places with large bilingual populations (like California). Understanding their perceptions of bilingualism and their motivation for learning Spanish can help inform educators on how to engage students with their community languages and, more broadly, uplift their cultural-linguistic connection. This study aims to document how Latinx adolescents perceive

bilingualism and the extent of their motivation to learn Spanish even when they are developing in a larger social-political climate that values a monolingual-English principle (Cummins, 2007; Howatt, 1984).

Adolescent Developmental & Language Perceptions in Context

Latinx adolescents hold complicated perceptions about bilingualism and motivations to learn Spanish. These may differ from that of younger school-age children and adults, which is the focus of most bilingualism research. For Latinx adolescents, perceptions about bilingualism and motivation to learn their heritage language may align with that of the majority group or be unstable during this developmental phase (Caldas, 2002; Escayg, 2019). Adolescence is a unique developmental stage when adolescents seek individualization and "de-identification" from their parents (Laursen & Veenstra, 2021). "De-identification" is the process by which adolescents seek to realize their unique identities through behavioral and attitudinal differences that set them apart from their parents (Koepke & Denissen, 2012; Youniss & Smollar, 1987). As part of this process, they also place more value on peer perceptions to form social alliances and avoid social exclusion (Laursen & Veenstra, 2021). For Latinx bilingual adolescents, the "de-identification" process may also impact their perceptions about bilingualism and their motivation to learn and use their home languages (Caldas, 2002). In a socio-linguistic context where languages other than English are devalued, adolescents may begin to reject or move away from the non-English language practices of their adult family members out of concerns of exclusion and ostracization (Becker, 1967). They may be dissuaded from using non-English language practices because they might fear experiencing language evaluation by their peers, where they are excluded for using a subjugated language or for using it incorrectly or not in standardized ways (Bosmans, 2024).

Extant research supports the notion that the attitudes held within adolescents' social context inform their linguistic perceptions (Caldas, 2002, 2008; Oh & Fuligni, 2010). To study this, Caldas (2002)

created a "bilingual preference survey" to measure the influence of school and community on adolescent bilingual preference. Results indicated that even when communication partners shared similar bilingual backgrounds, their language preference aligned with what was deemed the language of power (Caldas, 2002). This phenomenon was also observed in other studies examining students from additive-language school models (i.e., dual-immersion programs), where, generally, adolescents felt optimistic about bilingualism and recognized the social and cognitive advantages of speaking multiple languages. However, they still tended to prefer the language of power (Lindholm-Leary, 2016). This was documented in a study surveying the language perceptions of fifth- through eighth-grade students (n = 645) who matriculated in Spanish-English, additive-language programs. Although students rated themselves as "very bilingual" and reported positive attitudes toward the languages and perceived cognitive and social benefits of being bilingual, approximately half of the participants reported not being comfortable speaking Spanish in public (Lindholm-Leary, 2016). Other studies also found that even in additive-language programs, students prefer speaking English during peer interactions and in the classroom (Feinauer & Howard, 2014). These findings show that the perceived language of power in a social-educational context impacts students' overall perceptions of bilingualism and language practices.

For bilingual Latinx adolescents in subtractive-language environments (e.g., English-only school model), language perceptions and heritage language learning motivations are complicated by both sentiments of appreciation and feelings of acculturation stress. For instance, in a qualitative study investigating the language perceptions of youth living in emerging Latinx communities (defined as one that is beginning to see this demographic grow within the neighborhood but is otherwise predominantly non-Latinx) (Booth et al., 2020), participants living in said communities were asked to draw pictures, engage in follow-up dialogue, and fill out surveys. Overall, adolescents indicated that language was a crucial identity marker for them and that, at times, bilingualism was a stressor, especially in academic contexts where English was the language of power. They expressed shared enjoyment with family when

participating in Spanish-centered activities, and generally, they perceived being bilingual as a gift from their family and a contributor to their success. Regarding socialization with peers, they felt a special connection to those with similar language backgrounds. This was especially true when using Spanish terms, which there are none of in English. Participants appreciated being able to switch languages with those who understood that there are sometimes specific translations to English that capture what they were trying to say in Spanish. While participants demonstrated positive sentiments about bilingualism, they expressed that the language switch between the school and home languages is a stressor. Other participants expressed a sense of responsibility in learning English and "becoming educated" because of their parents' sacrifices (migration, hard hours of labor, etc.) to ensure their success. Finally, they reported stressors related to being bilingual and how that is negatively perceived by their local community, which was predominantly white.

Evolving Language Perceptions Throughout Various stages of adolescence

Language perceptions and motivations appear to evolve at various stages of adolescence. This was observed in a longitudinal, mixed-methodology study exploring the evolution of the bilingual perceptions of three children (identical twins and their older brother) from early adolescence to early adulthood (Caldas, 2002, 2008). The participants were French/English bilinguals who spent the summers in French-speaking Quebec but primarily lived in Louisiana with their French/English bilingual parents. At time 1, participants were between 10:10 and 12:10, respectively. They completed two author-constructed instruments designed to gauge their perceptions about the duality of their language and culture at three different time points (time two at five years post-time one and time three at eight years post-time 1). Paired sample t-tests and correlations were used to compare how their perceptions evolved across time, and ethnographic artifacts were used to interpret the results. The results revealed that the participants valued their biculturalism and bilingualism more as they aged. This early adolescent

value resulted from what appeared to be a desire to conform to social perceptions and the fact that bilingualism was not perceived as capital in the context in which they were developing. Together, we take this to mean that adolescent perceptions of bilingualism and motivations to learn their heritage language are complex and influenced by various factors and experiences that could inform their language practices and outcomes. More importantly, these longitudinal studies demonstrate that language perceptions begin to take form early in life and that adolescence plays an integral role in how they perceive and engage in language practices in their adult lives.

Generational Characteristics of Current Adolescents: Gen *Z*

People born between 1996 and 2012 form part of the Generation *Z* (Gen *Z*) demographic and have been described in the literature as having completely different ways of understanding their cultural-linguistic context (Astanina & Kuznetsov, 2020). Generally, they are concerned with their own culture(s), associating themselves more closely to their racial-ethnic identities, including their language practices. This generation of adolescents is aware of and challenges hierarchical structures within their socio-political contexts; thus, they respect other cultures and honor diversity. This is different from historical accounts of generations of adolescents who have opted for assimilation as a social survival strategy in a context where minoritized groups and their languages have been othered (Block, 2011; Matute-Bianchi, 1991) and during the 1990s to early 2000s Latinx adolescents demonstrated attempts to assimilate and approximate standardized English practices more closely (Block, 2011; Matute-Bianchi, 1991). Adolescent narratives from previous generations also count various examples of antagonism among English-dominant Latinx adolescents toward the more Spanish-dominant groups, indicating their attempts to distance themselves from cultural-linguistic markers of being Latinx (Matute-Bianchi, 1991). Gen *Z*'s characteristics may give way to positive attitudes towards bilingualism and motivation to learn

their heritage language; however, the interplay of Generation *Z*'s values and their language attitudes has yet to be documented.

Adolescent Language Exposure

Language exposure appears to play an instrumental role in the development of the language perceptions of adolescents. Language exposure refers to the languages an individual hears and uses throughout their day in school, home, work, and social milieu (Bedore et al., 2012; Bedore et al., 2016). A meta-analysis exploring the relationship of language exposure to the language perceptions of plurilingual adolescents from Spain found that language models in school systems and language(s) practices in adolescents' homes predict language perceptions (Lasagabaster, 2014). In Spain, there are four official languages. *Castellano* is the more precise name for Spanish, and it is spoken throughout Spain. It is also the country's official language. However, Castellano, Gallego, Catalán, and Vasco have co-official language status in their respective regions: Galicia, Cataluña, and Pais Vasco. These languages have a significant presence in the press, books, and media (Ideal Education Group S.L., 2024). However, forty years of dictatorship gave way to educational language models where Galicia, Cataluña, and Vasco were officiated as the prominent languages of instruction in compulsory education and in their respective areas where these languages are spoken (Vila et al., 2017). In the early 2000s, an increase in migration from Latin America and Northern Africa disrupted monolingual classroom ideologies because student bodies comprised plurilingual individuals with varying levels of Spanish and Catalan proficiency; thus, a demand for plurilingual education commenced. As a result, various models of bilingual education have been adopted in the educational system of Spain, creating the ideal context in which to explore the relationship of language exposure to language attitudes. Here, the review of the research found that adolescent attitudes towards Spanish (Castellano) in Spain are generally positive; however, reluctant attitudes toward Spanish have been found in Catalonia and the Basque Country, where Catalan and

Vasco are the prominent languages. Immigrant students from Latin America harbor positive attitudes towards Spanish but are not so favorable towards the co-official languages. The attitudes expressed by the adolescents in the various studies leaned favorably toward the languages reflected in their school and home environments; that is, language exposure in the school and home predicted how adolescents perceived the official languages of their country.

Overview of Research Approach

Extant research indicates that in adolescence, children shift from being self-focused to becoming more aware of others (Laursen & Veenstra, 2021). Additionally, they go from being motivated by parental and adult validation to prioritizing peer validation, opinions, and perceptions. In this developmental process, they seek individualization or to "de-identify" from their parents to attain autonomy and gain a sense of self. All these works to achieve group inclusion in adolescence, which they strive for (Laursen & Veenstra, 2021). For Latinx adolescents whose ethnic identities and language practices are minoritized, it is unclear how these typical developmental changes and language exposure affect their language perceptions and motivations toward learning Spanish. Two pre-validated surveys were adapted to explore the language perceptions and language learning motivations of Latinx, Spanish-English bilingual adolescents.

Conceptual Framework

This study is situated at the intersection of socio-linguistic (Labov, 1966) and socio-psychological theories (Masgoret & Gardner, 2003). The premise of the socio-linguistic theory is simple: language attitudes are multidimensional because languaging is a social action, and social context influences language attitudes and perceptions (Dörnyei, 2003; Hudley, 2013). Specifically, we draw from Freire's (1983) socio-linguistic theory, the "Theory of the Liberatory Power of Literacy," which illustrates how, as socio-cultural beings, our linguistic attitudes and perceptions are shaped by and within our communities

and how our social world influences what we think about various language practices. In his "Theory of the Liberatory Power of Literacy," Freir posits that "reading the world precedes reading the word. And the subsequent reading of the word cannot dispense with continually reading the world. Language and reality are dynamically intertwined" (Freire's, 1983, p.1). Here, Freire demonstrates that as social beings, we first begin to "read" what "the world" thinks about our "word" (i.e., language) and, through this, make attitudinal decisions about language practices before we learn to "read the word" (i.e., use language) Reciprocally, our experiences in "reading the word" also alter how we "read the world."

Conversely, Socio-psychological theories focus more on the individual, and their theoretical definition of attitudes and perceptions generally center on cognitive (knowledge), affective (emotion), and behavioral dimensions (Giles & Ryan, 1982). Socio-psychological theory speaks to the role that motivation takes in heritage language learning. The Expectancy Value theory (EVT) (Eccles et al.,1983) posits that motivation is a function of one's expectations of success and the value one assigns to achieving the target task. An individual's motivation to achieve a target task is determined by their belief in whether they can accomplish it and how valuable they perceive it to be. The value one places on a task is mediated by the cost that one would infer to make gains toward the target task. In EVT, perceived effort (how much effort is needed to achieve the target task), loss of alternative values (engaging in one activity might prevent them from missing out on an alternative activity of value), and psychological cost of failure (anxiety-related to failure) influence the interpretation of cost. Through these mediums, the cost can impact the value and, thus, motivation to achieve.

In combining and applying the "Theory of the Liberatory Power of Literacy" and the EVT lens to language perceptions and heritage language learning, a child's language motivations may be influenced by how they "Read the world," thus altering their expectations of how effectively they can communicate in Spanish and the value they place on the maintenance of their heritage language. Perhaps, for bilingual

Latinx adolescents, expectancy and value can be affected by the social cost they may be inferred by being speakers of a language that is subjugated. Under these pretenses, real-life implications of how adolescents "read the world" could mean social isolation, intellectual questioning, and academic challenges in an environment where they are told their heritage language is less than. These social costs are heavy, and the cost might be too high for adolescents who are impressionable to peer opinions and social inclusion.

Hypothesized Results

These theories could suggest that the language perceptions and the Spanish learning motivations of Latinx bilingual adolescents from a language additive school model might differ from those of a language subtractive school model. Latinx bilingual adolescents from a language additive school model might be different from those of a language subtractive school model because the language perceptions (i.e., the way the "world/word" is "read") might be from opposing ideological standpoints on language diversity. That is, participants from the language additive group will view bilingualism and learning Spanish more positively than students from a language subtractive school setting, which could be due to the respective socio-linguistic culture promoted by the school setting. Additionally, it is hypothesized that perceptions of bilingualism will be related to motivation to learn Spanish. Theory tells us that bilingual language outcomes are a product of the interaction between an individual and their environment(s). Thus, exploring Latinx bilingual adolescents' perceptions and motivation toward their languages complements the efforts toward better understanding the Latinx adolescent bilingual experience.

Study 1 Questions:

Q1. How do the perceptions of bilingualism of Spanish/ English bilingual adolescents from a language additive school model differ from the perceptions of students from a subtractive language school model?

Q2. How do the Spanish learning motivations of bilingual adolescents from a language additive school model differ from the motivations of students from a subtractive language school model?

Q3. To what extent do adolescent perceptions of bilingualism, language exposure, and school language models influence motivation to learn Spanish?

Method

Participants

Spanish-English bilingual adolescent participants (n = 51) were recruited from dual immersion and English-only instruction schools across Southern California. Dual immersion schools were characterized as schools that offered Spanish in at least 20% of instruction and where children were not free to opt in or out of instruction delivered in Spanish. English-only instruction schools were defined as schools that delivered instruction in English 90% of the day and only offered Spanish as an elective course that children could opt in or out of. Participants were recruited through various avenues: 1) at schools and 2) via social media.

Participants were recruited from a dual immersion charter school (K-8th), a local school district (K-8th), and social media via Instagram. The researcher provided families with forms that described the study and consent/ assent forms in English and Spanish. Parents provided informed consent and permission for their child's participation, and adolescents gave assent. All research procedures were approved by the Institutional Review Board at the University of California, Irvine, at the time of the start of the study. Flyers were distributed through afterschool and summer school programs. Participants recruited from the dual immersion school

represented (n=17); participants from the English-only school accounted for (n=10) participants; and (n=24) participants were recruited through social media. Adolescents and families who responded to social media announcements and were interested in participating emailed the researcher. A Zoom or in-person meeting was arranged if the parents/ adolescents consented to participate. These participants, ages 10-17 (n = 24), attended various schools in Southern California; some attended dual immersion schools (n = 7), and others did not (n = 17).

For the participants recruited from the schools, both the dual immersion school and the traditional school are geographically situated in largely Latinx communities and comprised mainly of a Latinx student body. The students recruited from these school settings were between 10 and 14 years old. Recruitment did not exclude students from special education. Typically, developing bilinguals and bilinguals with Individual Education Plans for special education services were allowed to participate in the survey. That is, anyone who was interested in participating in the survey was not turned away based on disability, as it is essential to consider the language attitudes of racialized adolescents with and without disability. However, based on IRB allowances, we could not ask the participants or the school about their educational placement (e.g., general education or special education). The educational placement could only be verified through voluntary parent reports. None of the students in these schools were reported to be in special education, not because they did not participate but because we could not reach parents for an interview.

In this group of participants, (n=4) identified as first generation, (n=33) identified as second generation, and (n=14) identified as third (+) generation. Participants from dual immersion programs used Spanish approximately 37% of the time (SD = 17.55). Those who attended English-only schools were exposed to Spanish 23% of the time (SD = 15.22). This difference was statistically significant t (49) = 2.92, p = .005. Participants received popular snacks and $5.00 Amazon gift cards for their participation.

All research procedures were approved by the Institutional Review Board at the University of California, Irvine, at the time of the start of the study.

Measures

Background Information

Demographic information, such as age/grade, self-identified gender, language background, and the surveys, were collected via Qualtrics during Zoom meetings, summer school, or afterschool programming.

Language Experience Measures

The Bilingual Input-Output Survey (BIOS; Peña et al., 2018)**.** Adolescent participants and some parents completed an adapted version of the BIOS (Peña et al., 2018) to quantify adolescent language exposure and use of English and Spanish. The adaptation increased the age range to include adolescent years up to 17. Instead of only interviewing parents, adolescent participants self-reported year-by-year exposure and current daily exposure to Spanish and English. The original BIOS is a parent questionnaire about language use that constitutes part of the Bilingual English Spanish Assessment (BESA) (Peña et al., 2018). The BIOS describes when and in what context each child's two languages are used. The questionnaire has two parts: the BIOS-Home and the BIOS-School. The BIOS-Home is a survey in which parents report what language the child hears (input) and uses (output) (e.g., Spanish, English, or both Spanish and English) on an hour-by-hour basis during a typical weekday and weekend day, including who they are communicating with and what activity they are engaged in. In addition, the BIOS-Home asks parents to report when their child was first exposed to English and the nature of their language input and output from birth to the present. For this study, we only used the BIOS-Home (as reported by adolescent participants).

The age of first English exposure was calculated as the year the adolescent indicated that they were first exposed to English in their input. Current English and Spanish input and output were calculated using adolescent responses to determine how much English and Spanish they hear and use. They are asked to report this information on an hour-by-hour basis for a typical week and a typical weekend. Although this measure has not been validated for this age group, these questionnaires are commonly used to understand bilingual context across the lifespan (Kašćelan et al., 2022; Paradis, 2010). We specifically asked adolescents to respond to the language exposure questionnaire because adolescents are shifting away from spending as much time with parents and thus are more likely to report the distribution of their language experiences more accurately (Comajoan-Colomé et al., 2023).

Language Attitude Questionnaires

The Perceptions of Bilingualism Scale (PoBs; Luk & Surrain, 2019) is a validated tool used to explore the attitudes one holds about bilingualism in the context of society. It is a 10-question survey in which each item is presented with a 6-point Likert scale, 1 (strongly disagree/muy en desacuerdo) to 6 (strongly agree/muy de acuerdo). This scale interrogates one's perceptions about whether bilingualism is valuable and whether it incurs personal benefits. A total scale score is derived by taking the mean of all the items; thus, an overall score of 4 would imply, on average, that a respondent "somewhat agrees" with the statements about the worth of bilingualism in the United States. The internal reliability of the PoBs is ($\boldsymbol{\alpha}$ = .86), which is considered reliable (Luk & Surrain, 2019; Taber, 2017). See Appendix B for the survey questions.

The coefficient alpha estimated the reliability of the POB survey by the adolescent participant sample group, which reflects the questionnaire's internal consistency. Cronbach's alpha coefficient of the 10-item questionnaire was .79, indicating good internal reliability (Hair et al., 2010).

Expectancy Value Theory: Language Motivation Survey (EVT: L.M.s; Nagles, 2021) is a survey from Nagles (2021) adapted for the current study. Confirmatory factor analysis (Nagles, 2021) with college students demonstrated five EVT constructs: expectancy of success, attainment value, intrinsic value, utility value, and effort cost with good fit. The root mean square error of approximation (RMSEA) was 0.052, and the comparative fit index (CFI) was 0.979, both of which met the criteria of RMSEA < 0.06 and CFI > 0.95 cut-offs proposed by Brown (2006). The reliability of the survey was assessed via Cronbach's alpha of the EVT construct, L2 learning experience, and classroom Willingness to Communicate scales. See Appendix C for the survey items. Reliability coefficients were reported to be in the acceptable to good range ($\alpha > .70$).

For the adapted questionnaire, 6 of the 22 questions were changed to reflect the nature of the monolingual education learning environment of some of the participants. That is, three questions were made conditional under the "Expectations of Success" construct. For example, the original questionnaire asked, "I am certain that I can master the content in the Spanish course I am taking this semester." and the adapted questionnaire asked, "If I was taking a Spanish class, I am certain that I could master the content in the Spanish course." Under the construct of "L2 Learning Experience," three more questions were adapted to reflect a home learning experience versus an in-classroom learning experience. For example, the question "I like the atmosphere of my Spanish class" was adapted to "I like the atmosphere where I learn Spanish." For a complete review of the adapted questions, see Appendix C. Additionally, the responses corresponding to the questions were also changed from "strongly disagree-strongly agree" to parallel the question's line of inquiry. For example, the question that asks, "I like the atmosphere of where I learn Spanish," has a corresponding 6-point Likert scale of "really dislike - really like." A total scale score will be derived by taking the mean of all the items; thus, an overall score of 4 would imply, on average, that a respondent is "somewhat motivated" to continue to learn Spanish.

The reliability of the EVT: L.M. survey for the adolescent participant group was estimated by the coefficient alpha, which reflects the internal consistency of the questionnaire. Cronbach's alpha coefficient of the 22-item questionnaire was .90, indicating excellent internal reliability (Hair et al., 2010).

Procedures

Participants who provided parent consent and assent to partake in the study were given a Qualtrics link to respond to the questionnaire. If participants were seen in person, they were also loaned a Google Chrome book to respond to the questionnaire. The PoBs, the EVT: L.M.s and the demographic questionnaire were uploaded to Qualtrics. Participants were asked what language they preferred to complete the surveys in, and they were delivered in English unless otherwise requested by participants. All participants preferred an English questionnaire.

Analytical Plan

For study 1, we first determined the factors scores and established the internal reliability of each survey we adapted for adolescents. Then, for the first and second aim, we described and compared the perceptions of bilingualism and motivation to learn Spanish of two groups: adolescents who attended dual immersion schools (language additive academic programming) and adolescents who attended traditional English-only schools (language subtractive academic programming). Finally, for the third aim, we ran a hierarchical regression model to examine the roles of perceptions of bilingualism, current exposure to English, cumulative exposure to English (i.e., age of first exposure to English), and school type on Latinx adolescents' motivation to learn Spanish.

Data Analysis

Computing Factor Score on the POBs with the Adolescent Group Sample

The factor score of the 10-item questionnaire was computed using Principal Components Analysis (PCA). Bartlett's sphericity test was significant, $\chi 2 = 133.156$, $p < .001$, indicating that there was sufficient common variance in the intercorrelation matrix for the analysis; the Kaiser-Meyer-Olkin value was .77, indicating adequate sampling for a factorable matrix (Kaiser, 1958). One factor was extracted, explaining 37.25% of the total variance. Table 1.1 summarizes the item loading results of the factor score.

Computing Factor Score on the EVT: L.M.s with the Adolescent Group Sample

The factor score of the 22-item questionnaire was computed using Principal Components Analysis (PCA). Bartlett's sphericity test was significant, $\chi 2 = 677.72$, $p < .001$, indicating that there was sufficient common variance in the intercorrelation matrix for the analysis; the Kaiser-Meyer-Olkin value was .74, indicating adequate sampling for a factorable matrix (Kaiser, 1958). One factor was extracted, explaining 37.30% of the total variance. Table 1.2 summarizes the item loading results of the principal component analysis.

Results

Q1: Group Differences in Perceptions of Bilingualism

For the first aim of this study, we were interested in whether adolescents who matriculated at a school with a subtractive language model or adolescents who attended schools with additive language school models differed in their perceptions of bilingualism. T-tests were used to compare group differences. There were no differences in adolescents' perceptions of bilingualism by group, t (49) = -.02, p = .984. Participants' attitudes of bilingualism for adolescents in language subtractive schools (M = 4.69, S.D. = .73) had similar positive attitudes compared to those in an additive language school model (M = 4.7, S.D. = .61) (see Table 1.3).

Q2: Group Differences in Motivation to Learn Spanish

Similarly, in the second aim of this study, we wanted to know if adolescents who matriculated at a school with a subtractive language model or adolescents who attended schools with additive language school models differed in their motivation to learn Spanish. T-tests were used to compare group differences. There were no differences in adolescents' motivation by group, t (49) = -1.61, p = .115). On average, adolescents from a language subtractive school model (M = 4.55, S.D. = .65) and students from an additive language school model (M = 4.81, S.D. = .51) indicated that they felt somewhat-motivated-to-motivated to learn Spanish (see Table 1.3 and figure 1.0).

Q3: Predicting Motivation to Learn Spanish

For the third aim of this study, we sought to understand the extent to which adolescent perceptions of bilingualism predict motivation toward Spanish language learning using regression. We controlled for variation in students' linguistic backgrounds and home language environments by including the following covariates: current exposure to English/ Spanish, age of first exposure to English/Spanish, and school language. Current exposure was conceptualized using two metrics: current English input (as measured by adolescents' reports of how much English and Spanish they hear in a typical week) and current English output (as measured by adolescents' reports of how much English and Spanish they produce in a typical week). Because in this calculation, English input is the inverse of Spanish input, and English output is the inverse of Spanish output (Bedore et al., 2012; Perez et al., 2023), English exposure and use above 50% indicates more experience in English than Spanish, and exposure and use below 50% indicates more experience in Spanish. Using a hierarchical linear regression model, the EVT: L.M.s (survey on the motivation to learn Spanish) was the dependent variable, and Perceptions of Bilingualism survey, current exposure to English/Spanish, age of first exposure to English/Spanish, and school language model were all used as predictor variables. The model used is as

follows: where *i* represents each student. Table 1.3 features the results of a hierarchical linear regression model. At block one, POBs was entered into the model to control for effects of the perceptions of bilingualism. PoBs accounted for 21% of the variance in motivation to learn Spanish and was significant, R^2 = .21 (adjusted ΔR^2 = .19), F (1, 49) = 12.84, p = <.001. At block two, their current exposure to English/Spanish accounted for 21% of additional variability in Spanish learning motivation, signifying a significant addition of variance accounted for (adjusted ΔR^2 = .19), F (1, 48) = 16.12, p < .001. At block three, Age of First Exposure to English significantly accounted for 6% additional variance (adjusted ΔR^2 = .05), F (1, 47) = 4.31, p = <.05. At block four, school language did not significantly account for any additional variance (adjusted ΔR^2 = .01), F (1, 46) = 0.03, p =.863. The resulting model with four independent variables was significant and accounted for approximately 46% of variability overall (adjusted ΔR^2 = .410, p = <.001) in adolescents' motivation to learn Spanish, with all but the school language model retaining significance. Thus, Latinx adolescents' motivation to learn Spanish was associated with their perceptions of bilingualism, their current exposure to bilingualism, and their age of first exposure to English.

Discussion

This study attempted to answer three research questions regarding the language perceptions of bilingual Latinx adolescents and their motivation to learn Spanish. Specifically, it examined the perceptions and motivations of adolescents who were enrolled in two differing school language models: additive language schools (i.e., dual immersion) and subtractive language schools (i.e., restricted—English only).

The first research question sought to understand how the language perceptions of Spanish/ English bilingual adolescents from a language additive school model differ from those of students from a subtractive language school model. The results of this question demonstrated that adolescents from

language additive schools did not differ significantly from those at language subtractive schools in their perceptions of bilingualism within the context of the United States. Adolescents from both groups generally indicated that they "somewhat agreed to agree" with statements that positively framed bilingualism. These results differ from the literature that documents differences in attitudes toward bilingualism held by adolescents in language additive programs compared to those in language subtractive programs from demographic regions in California (Block, 2011; Matute-Bianchi, 1991). In previous work, Latinx adolescents from additive language programs reported significantly more positive perceptions of bilingualism than those from language subtractive programs (Block, 2011; Matute-Bianchi, 1991). A generational demarcation could affect the outcomes of the current study, which differ from those of previous literature (Demir & Sönmez, 2021; Seemiller & Grace, 2017). During the 1990's to early 2000's Latinx adolescents more closely attempted to assimilate and approximate standardized English practices (Block, 2011; Matute-Bianchi, 1991). In the current study, participants are all considered part of *Generation Z* (aka “Gen-Z”) and have been notorious for understanding their cultural-linguistic context differently than previous generations. Generally, they are concerned with their own culture(s); they associate themselves more closely with their racial-ethnic identities, including their language practices. This generation of adolescents is aware of hierarchical structures within their socio-political contexts. They are notorious for courageously subverting these structures, thereby demonstrating more respect for other cultures and honoring diversity (Astanina & Kuznetsov, 2020). Latinx adolescents from the current study may be demonstrating a generational value system that they apply to their perceptions of bilingualism; that is, despite differences in school language models, they value bilingualism and approximation to their own cultural-linguistic backgrounds.

The second question asked if there are differences in the motivation to learn Spanish for Latinx adolescents who attend a language additive school model versus students who attend a subtractive language school model. The results indicated no significant differences in the motivation to learn

Spanish between adolescents in language subtractive and language additive groups. That is, based on the constructs delineated in the Expectancy Value Theory (i.e., expectation, attainment, intrinsic motivation, utility, and effort-cost), adolescents from both groups generally indicated that they were "somewhat motivated to motivated" to learn (or continue learning) Spanish. Other studies looking at Arabic learning (Temples, 2010) adolescents and German (Noels, 2005) adult heritage and foreign language learners identify differences in their motivation to learn the languages. In both studies, heritage learners reported significantly higher motivation to learn than foreign language learners. They reported that motivation was driven by intrinsic and extrinsic factors, such as learning the language as an essential aspect of their self-concept and desire for community involvement. While these are not parallel to the design and results of the current study, they offer us insight into the results. Latinx bilingual adolescents might not demonstrate significant differences in motivation to learn Spanish because all are heritage language learners. They might be intrinsically motivated to attain their heritage language as it offers utility (communication with family and community) and does not accrue cost within the safety of their communities.

Finally, the last question explored how adolescent perceptions of bilingualism, language exposure, and school language model inform their motivation to learn Spanish. To answer this question, our model depicted motivation to learn Spanish as the dependent variable and Perceptions of Bilingualism survey, current exposure to English/Spanish, age of first exposure to English/Spanish, and school language model as predictor variables. Here, the results revealed that more positive perceptions of bilingualism partly drove increased motivation to learn Spanish; the more favorably they perceived bilingualism, the more motivated they were to learn Spanish. Motivation to learn Spanish increased as current Spanish exposure increased. Finally, the older individuals were when they were first exposed to English; the longer they were exposed to Spanish before they were exposed to English, the more motivated they were to learn Spanish. These results are consistent with recent literature that indicates

that as adolescents move towards more positive attitudes toward minoritized languages, they are more likely to experience motivation to learn and use their cultural-linguistic multiplicity (Lasagabaster, 2017). Little has been written examining the interplay between language exposure (current and cumulative) and language learning motivation. These findings contribute to the literature on adolescent heritage language learning motivation as predicted by current and cumulative exposure.

Finally, the school language model, whether students attended dual immersion (i.e., language additive) or English-only schools (language subtractive), did not significantly account for any additional variance in adolescents' motivation to learn Spanish. Here again, we can draw on three previous points: 1) The adolescents in this study are developing in largely bilingual and Latinx communities, 2) generationally, *Gen Z* adolescents have adopted favorable cultural-linguistic ideological values, and 3) they are heritage language learners. With this specific contextual combination, Latinx adolescents may be prone to positive language attitudes, which speak to their *values* in the EVT model. They also experience greater and more prolonged exposure to Spanish, generating some level of compensation and protection for students who attend subtractive language learning environments. This also speaks to their expectancy to learn Spanish because even outside of school and within their larger communities, they have ample and variable opportunities to practice Spanish, creating higher expectancy for learning the language. Latinx adolescents' motivation to learn Spanish was associated with their perceptions of bilingualism, their current exposure to English/Spanish, and their age of first exposure to English/ Spanish.

Conclusion

In this study, we found that Latinx bilingual adolescents from predominantly Latinx communities positively perceive bilingualism and are motivated to learn their heritage language similarly despite having contrasting school language environments. Also, results demonstrated that their

motivation to learn Spanish was related to their perceptions of bilingualism and language exposure (current and cumulative) but not their school language model. Theoretically, adolescents who are in social-academic environments where languages other than English are subordinate might experience shame or negative associations with their heritage languages, thus potentially having poorer perceptions of bilingualism and inferring too much social cost to be motivated to learn Spanish (Becker, 1967; Caldas, 2002; Escayg, 2019). Here, however, it is essential to return attention to the demographics of the two participant groups in this study because although half of the participants were recruited from an English-only school model, all participants lived in language-diverse communities where Spanish, English, and other languages were spoken or in communities that were largely Latinx. Additionally, all homes were also heritage bilingual homes. That could mean that the most robust difference in exposure to Spanish might be whether adolescents matriculated at an English-only school or a dual immersion. This is of note because adolescents who do not have Spanish academic programming but are exposed to Spanish in their homes, extracurriculars, and communities still positively view multilingualism and report motivation to learn and integrate their home languages into their lives. In this case, the community appears to be protective and functions as an antidote against negative language attitudes (Cargile et al., 1994; Giles et al., 2006). For this group of Latinx adolescents, language perceptions in their home and community spaces might compensate for the absence of dual immersion education for adolescents who attend English-only schools. Broadly, the equity-oriented values of Gen Z adolescents may also be a factor to consider when comparing these two groups, and it may also be marking a positive shift in socio-linguistic attitudes held by young people in more recent history. In terms of the Theory of the Liberatory Power of Literacy (Freire, 1983, p.1), this study's results align with the notion that adolescents' linguistic attitudes and perceptions are shaped by their reading of the way "the world reads their word." Their environments in and outside of school promote language diversity, and thus, their "read of the word," or in this case, motivation to learn Spanish, reflects their "read of the world."

Regarding the Expectancy Value Theory of motivation, the adolescents who participated in this study expressed agreeable sentiments about their expectations of their ability to learn Spanish; they were sure they could master content in Spanish courses. They also reported to place attainment, intrinsic and utility value in learning Spanish; meaning that attaining Spanish skills is intrinsically meaningful and essential to them and who they are. These adolescents also recognize its utility for practical communication within the community and for future professional attainment. Social cost in their contexts was not likely to be a concern because of their socio-linguistic environment, where they are surrounded by ideological, cultural, and linguistic kin; thus, ostracization or exclusion for using a non-English language was not a concern.

Latinx adolescents internalize the language attitudes of their social environments (Cargile et al., 1994; Giles et al., 2006). This study revealed that positive language attitudes can be fostered outside of school when the right environmental context is in place. Literature addressing language attitudes has proposed that community spaces like churches, youth, family recreation centers, civic organizations, etc., function as sites that shape, change, or maintain language perceptions (Giles et al., 2006; Lee & Wright, 2014). Multilingual/ cultural research encourages educators to use the "funds of knowledge" that students bring from their communities, cultures, and linguistic backgrounds to promote learning (Rodriguez, 2013), thus cultivating positive perceptions of bilingualism and motivation to learn Spanish, educators (especially those in English only models) should intentionally build collaboration with families and community spaces to curate additive language learning environments beyond the classroom space (García & Uysal, 2024). This becomes especially important for Latinx adolescents who do not have immediate access to a largely bilingual and culturally kin community. If adolescents' communication and language skills are to reflect the multilingual context in which they live, educators must capitalize on their positive attitudes toward bilingualism and motivation toward learning Spanish. Note that the

educational recommendation here is to move towards linguistically additive environments and not away from them.

Additionally, for minoritized adolescents, language is closely associated with identity formation (Oh & Fuligni, 2010), and adolescence is described as a period of identity formation (Erikson, 1968). As part of their social identities, Latinx adolescents are likely to develop a sense of membership in an ethnic group or an ethnic identity, and that is often mediated through language (Phinney & Chavira, 1992; Phinney et al., 2001). Although this study did not explore identity formation directly, language is considered an instrumental learning tool to negotiate who we are, where we are from (group affiliation), and what we want to become (Kim & Chao, 2009). Early formation of positive perceptions towards heritage language and fostering motivation to learn it can then affect the ways Latinx adolescents take up their community language practices and thus develop their identities. While academic development is a focus of traditional U.S. education, schools are responsible for developing the whole child and play an important role in adolescent identity formation (Eckert, 2004). The study results could provide schools and educators with insights into how to support adolescents' cultural-linguistic identity development. The attitudinal leanings of Latinx adolescents deserve attention because they could help to make curricular decisions that capitalize on their perceptions and motivation to integrate cultural-linguistic identity formation, yet another point in advocating to make adolescent social-educational environments linguistically additive and diverse.

Limitations

In light of the important findings of this study, it is important to identify its limitations. Primarily, this study comprises a small pool of participants that could not represent the vast linguistic and cultural diversity among Latinx adolescents. A larger participant group from across the U.S. would offer more generalizable findings. Additionally, the PoBs and the EVT: L.M.s have not been used on

adolescents. The PoBs (Luk & Surrain, 2019) was a survey drafted with an adult demographic in mind, and the EVT: L.M.s was adapted from a survey for college students taking Spanish courses (Nagles, 2021). Interpretive caution is especially necessary since the questions for the second language learning experience were adapted to reflect what a heritage language learning experience is. In this study, there is a potential for nestedness within the study groups based on the varying generational status in the U.S. represented in the participant groups. For instance, newcomers might demonstrate language perceptions and heritage language motivations more positively skewed than second or third-generation status. This was controlled by using a proxy to generational status, the age of first exposure to Spanish/ English. Finally, survey questions typically reach a ceiling in their ability to capture more profound and nuanced accounts of language perceptions. Future research should take a closer look via qualitative examination to help paint a clearer picture of how Latinx adolescents build their language perceptions and what drives their motivation toward learning their heritage language.

STUDY 2:

Use of Interpretive Narratives (*Corridos*) in Translanguaging Contexts to Elicit Language of Critical Thinking and Complex Language Production in Bilingual Latinx Adolescents

Abstract

Purpose: Deficit ideologies are often projected onto the language practices of Latinx adolescents. The ability to use "academic language" has been typically reserved for speakers who use standardized codes associated with White, middle-class English (Souto-Manning et al., 2021). Latinx adolescents who use features associated with "home" languages are discredited as unsophisticated languagers; thus, perpetuating deficit ideologies (Alim & Paris, 2017). This study uses translanguaging and *Corridos* to challenge the deficit narratives about Latinx adolescents' languaging by highlighting their use of critical thinking language, language complexity, and productivity when they are given opportunities to use their complete linguistic repertoire and when they are discussing culturally relevant narratives. *Corridos*, such as "La Jaula de Oro" by Los Tigres del Norte, are traditional Mexican ballads embedded with historical, social-political, and personal narratives, usually about oppression and justice. They are imbued with cultural morals and values widely held in various Latinx communities. In these ways, *Corridos,* represent a unique tool where Latinx adolescents' sophisticated and dynamic languaging can be observed and complex discussions about social justice can be explored (de Los Ríos et al., 2021; de Los Ríos, 2022).

Method: Fifty bilingual Latinx adolescents from Southern California, recruited from dual immersion, English-only instruction schools, and social media, participated in this study. Participants listened to and discussed pre-selected Spanish *corridos* and English ballads in three different languaging conditions: Spanish-only, English-only, and translanguaging conditions. Responses were audio recorded, transcribed, and coded for indices of critical thinking language (i.e., total metacognitive terms; the number of different metacognitive terms), language complexity (i.e., mean length of utterance-word,

clausal density), and language productivity (i.e., the total number of words, number of different words). These were then analyzed to assess participants' use of critical thinking language, language complexity, and productivity in the different language conditions.

Results: The findings reveal a significant main effect of language and age. Differences in the use of critical thinking language, language complexity, and productivity emerged due to the language condition and age. For critical thinking language, differences were not evident in the translanguaging compared to the English conditions, but differences were observed when compared to the Spanish condition. Adolescents demonstrated greater language complexity and productivity in the translanguaging condition than in Spanish and English conditions. Older participants outperformed younger participants on some measures of language complexity and productivity.

Conclusion: This study underscores the value of allowing adolescents to employ their entire linguistic repertoire. Adolescents used critical thinking language similarly in translanguaging to English conditions, possibly related to English critical thinking words being more salient in their languageing repertoire (MacWhinney, 2005). Translanguaging enables opportunities to practice various features of "home" languages and positively affirms Latinx adolescents' cultural-linguistic identities and practices. Translanguaging allows them to create meaning and discuss nuanced reflections on culturally significant narratives about oppression and justice. The findings advocate for approaches that leverage translanguaging and culturally relevant content to bolster and highlight Latinx adolescents' language and critical analytical abilities, emphasizing the importance of recognizing and nurturing the linguistic assets that Latinx bilingual adolescents possess.

Introduction

The language practices of bilingual Latinx adolescents in Southern California are dynamic, fluid, and evolving because they are developing under a multifaceted backdrop rich with exposure to various

cultures, language diversity, and their motivation to come into their own identity(s). Driven by developmental changes occurring in this stage of life, adolescents are acquiring and expanding new ways of speaking about complex matters. Additionally, their language practices are influenced by their cultural-linguistic backgrounds and the linguistically diverse environments in which they are immersed, one that emerges because of being geographically proximal to the Mexican border, where migrants from around Latin America and other countries frequently enter the state. Latinx bilingual adolescents are linguistic innovators and are some of the creatives behind many colloquialisms of the day (Eckert, 1988, 2004). Amongst many other conditions, this sort of environmental background surfaces unique language practices that, especially for bilingual adolescents, function together very dynamically and, much like in an "all-terrain vehicle" where "the wheels (languages) turn, extend, contract, and make up for each other" (García, 2009, p. 143).

In monolingual "closed" conditions, such as those observed in traditional U.S. education environments, Latinx adolescents are forced to suppress their flexible language knowledge in favor of reinforcing the "academic English language" (Cummins, 2007; Howatt, 1984). Even more, the language practices of bilingual Latinx adolescents are viewed more simplistically and instead reductively. Instead of an "all-terrain vehicle," bilingual adolescent language practices are perceived more like a "bicycle with two or more identical wheels (i.e., two or more individual languages)," when in reality, interference from their various language skills are organically occurring in all of their communicative engagements (García, 2009, p. 143).

In subscribing to and promoting a monolingual principle, educators miss out on the observation of a wealth of cultural-linguistic knowledge and critical thinking language that Latinx adolescents possess and express nimbly when they are given the opportunities to communicate authentically and in more "open" language conditions; that is when they are given the freedom to use the entirety of their

linguistic repertoire. *Translanguaging* is the "act performed by bilinguals of accessing different linguistic features or various modes of what are described as autonomous languages in order to maximize communicative potential," as defined by García (2009, p. 140). Put more simply, translanguaging allows an individual to call in the entirety of their meaning-making resources to create meaning and make sense of their world. Thus, translanguaging offers an alternative and more linguistically open framework under which bilingual Latinx adolescents can employ their entire linguistic and semiotic system to create meaning and communicate. Adopting a translanguaging framework offers bilinguals a more flexible way to communicate because it does not restrict the meaning-making tools. This has been observed with younger bilinguals, who were asked to discuss complex and straightforward events. Young bilinguals recruited more words from their entire linguistic repertoire than when discussing a more straightforward event. However, they could convey complex ideas by recruiting from all their multilingual resources (Fiestas & Peña, 2004).

Using culturally familiar pedagogical tools enhances the opportunity for translanguaging because adolescents can activate prior knowledge (Anderson & Pearson, 2002; Förster & Liberman, 2007), and it permits them to show up with all their knowledge. Proverbial narratives such as fables have been used to examine adolescent language skills (Nippold et al., 2017, 2019). These forms of narratives elicit critical thinking and complex language production when discussing the "lesson" that is embedded within each narrative, making them well-suited for adolescents because they allow them to display more complex language that is appropriate for their developmental level (Nippold et al., 2017, 2019). *Corridos* are musical narratives that take the form of traditional Spanish ballads and are embedded with depictions of cultural values, historical events, and personal lessons. *Corridos* are culturally familiar narratives that offer bilingual Latinx adolescents opportunities to translanguage and showcase the expansive nature of their multilingual, meaning-making skills (de Los Ríos, 2022; de los Ríos et al., 2021).

In this study, we explore how language complexity, productivity, and critical thinking present because of the language conditions that adolescents are afforded: closed (monolingual: Spanish, English) or open (translanguaged) language environments and the opportunity to engage with culturally familiar narratives.

Use of Interpretive Narratives to Elicit Critical Thought and Language Productivity

Narrative language sampling has long been established as an ecologically valid method of assessing critical thinking language, language productivity, and complexity. Literature in monolingual adolescent populations suggests using interpretive narratives as assessment tools because they elicit critical thinking and complex language production to interpret the morals or values expressed in the narrative (Nippold, 2014, 2020). Critical thinking is a metacognitive act that refers to the ability to independently arrive at a belief about a particular topic, using objective analysis of the relevant information, reasoning, and consideration of multiple viewpoints (Santrock, 1996). It can also involve reflection on how one's opinion may differ from that of another person (Nippold et al., 2020).

Critical thought is indicated using metacognitive terms (MC) (Nippold et al., 2020). MCs are words that refer to "mental events or activities of the mind" (e.g., know, think, and believe) (Nippold et al., 2020). Metacognitive language can also be derived from or expressed through figurative language (Bashmakova & Shcherbakova, 2018; Ebert, 2015; Manca & Delfino, 2007). When individuals use MCs to talk about other people's mental events, they are demonstrating an awareness that others have thoughts, feelings, and beliefs (Astington & Olson, 1990; Nippold et al., 2020). Also, MCs can refer to either self or others, reflecting theory of mind or the awareness that other people have thoughts that may differ from one's own (Nippold et al., 2020). Extant research demonstrates that the use of MCs is associated with critical thinking ($r = .55$, $p < .001$) because adolescents often use MCs when they are

critically thinking about the thoughts, feelings, and perspectives of characters in interpretive narratives (Astington & Olson, 1990; Nippold et al., 2020).

Adolescents understand and engage with critical thinking tasks derived from interpretive narratives such as fables (Nippold et al., 2014, 2015, 2020; Nippold & Marr, 2022). Fables are short narratives (i.e., "The Lion and the Mouse") that intend to transmit a moral lesson about life via proverbial and figurative language (Knopf, 1992). Nippold et al. (2017a) assessed adolescents' ability to decipher and apply a moral lesson from four different fables with typically developing adolescents (N= 30, M_{age} = 14 years). In talking about the fables, adolescents identified the lesson and described why they agreed/ disagreed with it, which required employing critical thinking skills. Their responses produced greater evidence of critical thinking and complex language production than conversational tasks. Altogether, this work demonstrates that interpretive narratives can elicit rich narrative discourse from adolescents and engage them in critical thinking and the use of complex language, especially when prompting adolescents to engage in reflection about the deeper meanings behind said narratives (Nippold et al., 2014, 2015, 2020, 2017a, 2017b, 2017c).

Adolescent Cognitive and Language Development

Complex language and critical thinking advance during the adolescent years. Cognitive advances enable adolescents to think critically and more complexly than in childhood (Nippold, 2007; Santrock, 1996; Schickedanz, 2001). For instance, at this developmental stage, they begin to think more abstractly, use logic deductive reasoning, and speak hypothetically. Although mostly from idealistic standpoints, adolescents demonstrate an emerging aptitude for discussing social, political, or religious topics. They also hold more sophisticated moral evaluations (Nippold, 2007). This is due to the shift they experience from focusing primarily on the self to being more socially focused (Lerner & Castellino, 2002; Santrock, 1996; Schickedanz, 2001). Fueled by an intrinsic desire to formulate their ideas and opinions, they

demonstrate an increased propensity to challenge the beliefs and perspectives of others (Lerner & Castellino, 2002; Nippold, 2014; Santrock, 1996; Schickedanz, 2001).

Cognitive advances also give adolescents an advantage in using and understanding increasingly complex language (Nippold, 2007). This is evidenced by their ability to define abstract nouns with clarity and precision and more efficiently express their thoughts using complex sentences embedded with more subordinate clauses (Nippold, 2000; Nippold et al., 2005, 2008, 2009). Wallis et al., (2021) compared younger and older adolescents on measures of verbal productivity (total number of utterances, total number of words), syntactic complexity (mean utterance length), and critical thinking (utterances reflecting remembering/ understanding/ evaluating/ creating) when discussing moral dilemmas. Older adolescents outperformed younger adolescents in lexical skills and critical thinking. There were no differences by age regarding verbal productivity or syntactic complexity measures. However, the older group outperformed the younger group regarding the number of different words. The older group demonstrated more advanced critical thinking skills than the younger group, as indicated by the type of utterances they produced. Younger adolescents produced more utterances reflecting remembering and understanding, while older adolescents produced more utterances with evaluation and creation.

Nippold et al. (2020) compared children's language productivity (MLU-C, total number of c-units, total number of words, and clausal density) and critical thinking (use of metacognitive verbs, use of different metacognitive verbs, rubric scoring system based on Kuhn's (1999) developmental model critical thinking) in two groups of adolescents. Using a fable elicitation task, they found that older children (mean age 16 years) used more total C-Units, number of words, metacognitive verbs, and different metacognitive verbs than younger children (mean age 13). The older adolescents provided

longer explanations that contained a greater number and variety of MCVs, adding to the evidence that developmental advances in critical thinking and language production occur as a function of age.

Corridos as Interpretive narratives for Latinx Bilingual Adolescents

Latinx bilingual youth are multicultural navigators who hold tightly to their cultural backgrounds and possess various forms of cultural-linguistic knowledge and capital (Kiramba et al., 2020). Because of this, interpretive narratives, such as *corridos*, could be used as an alternative to fables to stimulate complex thought and elicit complex language production in Latinx bilingual adolescents. *Corridos* are Spanish language ballads, lyrically composed using narration (e.g., "Somos Mas Americanos" by Los Tigres del Norte). They utilize figurative language and themes with cultural values and messages about morals and justice. Latinx communities famously recognize them as musical interpretations of life's struggles related to poverty, migration, family, and community dynamics and values (de Los Ríos, 2022; de los Ríos et al., 2021). Theoretically, *corridos* should elicit similar discussion and stimulate critical thought and complex language in more ways than fables do because of how the youth may culturally relate to the lyrics. Culturally, *corridos* are listened to across various Latinx communities during routine housekeeping activities, family and community gatherings, and significant media events. Many Latinx adolescents grow up with substantial exposure to *corridos*; thus, for Latinx youth, *corridos* are a more culturally familiar and relevant narration medium than fables.

Making sense of a *corrido* requires critical thinking, rich language skills, cultural intuition, and knowing (de los Ríos et al., 2021; de los Ríos, 2022). Similar to the series of studies using fables to assess adolescent critical thinking and language production (Nippold et al., 2014, 2015, 2020, 2017a, 2017b, 2017c), *corridos* can provide opportunities for bilingual adolescents to describe the narrative, moral lesson, and discuss their agreement/disagreement with the message. Adolescents must employ critical thinking and complex language production, drawing from their entire meaning-making system. Using

corridos to examine the critical thinking skills and language production outcomes of bilinguals presents an excellent opportunity to expand on the understanding of the linguistic assets that non-white communities have.

Overview of Study Approach

Conceptual Framework

The goal of adopting a "monolingual principle" is for bilinguals to think in the target language without interference from the heritage language (Howatt, 1984; Cummins, 2007). However, the presupposition that languages do not interfere is not supported by neuro-linguistic research that demonstrates the parallel activation of both languages even when bilinguals intend to use only one (Kroll et al., 2012). In practice, orienting towards a monolingual principle is restrictive because it attempts to cast out language and knowledge that does not conform to the bounds of a single language, usually one that is not socially cast at the apex of linguistic hierarchies.

Translanguaging is a theoretical framework that aligns with the neurolinguistic research that posits that an individual's simultaneous use of multiple languages is normative and a routine aspect of a bilingual's social practices (García & Wei, 2014). Translanguaging, then, is an open language framework that allows for language and communication practices to extend beyond the categorical demarcations of "languages, language varieties, and other semiotic systems" (Wei, 2018, p.9); thus, it is an approach for bilingualism that de-centers socially constructed language(s). Instead, it highlights and credits bilinguals' language practices to make sense of their multilingual worlds in ways free from defined linguistic borders. In Translanguaging, the emphasis is on the "trans" orientation of bilingualism, where it is acknowledged that there is a fluid exchange that occurs when multiple languages encounter each other to create meaning (Wei, 2018). A center-point of translanguaging is also the recognition of an individual's "idiolect." Idiolect refers to "a person's own unique, personal language, the person's mental

grammar that emerges in interaction with other speakers and enables the person's use of that language" (Otheguy et al., 2015, p. 289).

Translanguaging acknowledges the socio-political and historical context from which language(s) practices emerge and provides an alternative understanding of how bilingual students leverage their full linguistic repertoires (Otheguy et al., 2015). Translanguaging acknowledges minoritized students for their "unbounded, dynamic, and fluid" language ability, which includes the "use of multilinguals' entire linguistic repertoire" (García & Kleifgen, 2020, p. 554; Otheguy et al., 2015). In shifting from a restrictive language paradigm, which is often deficit based, to an open language model (i.e., Translanguaging), students can deepen their "*confianza* in performing literacies," (García & Kleifgen, 2020, p. 561) such as critically thinking about and talking about *corridos*. That is because translanguaging activates knowing from lived experiences and engaging in "literacy acts" that are culturally familiar "produce an intensity of emotion, feeling, and meaning that is the spark for imagination, creativity, criticality, and especially freedom" (García & Kleifgen, 2020, p. 567).

Although translanguaging is less well empirically documented, it is central to Latinx bilingual adolescents' experiences (de los Ríos, 2022; García & Wei, 2014). By focusing on this line of research, there is an opportunity to bring to the forefront "the actions by which minoritized bilingual people orchestrate all the features of their communicative repertoire to make meaning" (García & Ortega, 2020, p. 47; Pennycook, 2017). Adopting a translanguaging orientation acknowledges the various influences on an individual's comprehensive linguistic repertoire and highlights how these are always in conversation (Canagarajah, 2013; de los Ríos, 2022). Translanguaging allows bilinguals to engage their translingual practices, and in doing so, this framework disrupts "the dominant understandings about language and bilingualism and incorporates thinking from and being/listening with, racialized/minoritized multilingual bodies" (García & Kleifgen, 2020 p. 557).

For these reasons, this study uses a translanguaging framework to explore the wealth of Latinx bilinguals' language knowledge, which is how they express their critical thoughts. In this study, Latinx bilingual adolescents interpret alternative narratives in restrictive and open language conditions to shed light on the linguistic robustness that emerges when bilinguals are not forcibly suppressing their meaning-making tool: language.

Study 2 Aims

A1. Describe bilinguals' use of critical thinking language via metacognitive language (MC, MCd-different number of MC) in language-restrictive conditions (i.e., Spanish or English) and open language conditions (i.e., translanguaging).

A2. Describe bilinguals' language productivity (clausal density, MLU-w, Total number of words, total number of different words, grammaticality) in language-restrictive conditions (i.e., Spanish or English) and open language conditions (i.e., translanguaging).

A3. Describe the similarities and differences that emerge in critical thinking skills and language production outcomes when adolescents talk about *corridos* in language-restrictive conditions (i.e., Spanish or English) or open language conditions (i.e., translanguaging).

Based on the literature that supports the use of interpretive narratives to explore adolescent language, it is hypothesized that the participants in this study will demonstrate responses rich with evidence of critical thought about the song lyrics. Moreover, participants will show this while using complex language production (Nippold et al., 2017c). Based on the research that embraces translanguaging, the work using *corridos* as interpretive literacies, and extant research supporting parallel language activation in bilinguals, it is hypothesized that the participants will demonstrate more robust productions in the open language context than in the other two restrictive language contexts

because they will be allowed to engage their comprehensive linguistic repertoire (de los Ríos, 2022; García & Ortega, 2020; Otheguy et al., 2015; Pennycook, 2017).

Method

Participants

Spanish-English bilingual adolescent participants (n = 50) between the ages of 10 and 17 were recruited from dual immersion schools (n = 23) and English-only instruction schools (n = 27) across Southern California. English-only instruction schools were defined as schools that delivered instruction in English only 90% of the day and only offered Spanish as an elective course that children could opt in or out of. Dual immersion schools were characterized as schools that offered Spanish in at least 20% of instruction and where children were not free to opt in or out of instruction delivered in Spanish. Participants were recruited through various avenues: 1) at schools and 2) via social media.

Participants were recruited through a dual immersion charter school (K-8th), a local school district (K-8th), and social media. The two schools allowed the researcher to distribute flyers and recruit participants during after-school and summer school programming. The dual immersion school and the school district are geographically situated in largely Latinx communities and mainly comprised of a Latinx student body. Adolescents and families reached by social media interested in participating emailed the researcher. A Zoom or in-person meeting was arranged if the families/ adolescents consented to participate. Participants were not excluded on the basis of disability.

Collectively, the participants varied in their generational statuses. In this study, first-generation was defined as an individual born in and migrated from another country to the US. Second generation was defined as a person whose parents were born in another country and migrated to the US. Third (+) generation was defined as individuals whose grandparents were born outside of and migrated to the US.

In this group of participants, (n=2) identified as first generation, (n=34) identified as second generation, and (n=14) identified as third (+) generation.

The researcher provided families with forms that described the study and consent/ assent forms in English and Spanish. Parents provided informed consent and permission for their child's participation, and adolescents provided assent. All research procedures were approved by the Institutional Review Board at the University of California, Irvine, at the time of the start of the study. Participants who completed the study received popular snacks and $5.00 gift cards to Amazon).

Measures

Language Measures

Corridos, according to Merriam-Webster. (n.d.) are traditional Spanish ballads, lyrically and instrumentally composed in traditional Mexican style, and typically have lyrics that narrate a historical event about the struggle against oppression and injustice. Culturally, *corridos* are listened to across various Latinx communities during routine housekeeping activities, family, and community gatherings, and in more significant media events. Many Latinx adolescents grow up with substantial exposure to *corridos*; thus, familiarity is likely. We selected Spanish *corridos* and English ballads from famous artists for this study.

To ensure that the *corrido's* readability level was parallel across song lyrics, we counterbalanced the lyrical readability using the Flesch- Kincaid Readability measure (Flesch, 1948) and the Fernández-Huerta readability formula (Fernández-Huerta, 1959). Both readability tools are commonly used in assessing the readability of public health outreach publications and in school-age library science to select books adequate for each grade level (Gorrepati & Smith, 2021). Both tools measure and indicate how difficult a passage is to understand and what grade level of reading one needs to have to

comprehend it. The Flesch-Kincaid Readability measure is specific to English readability. It looks at the number of words per sentence and number of syllables per word to determine reading difficulty levels using the formula: Readability = 206.835 − 1.015 (Total words/total sentences) − 84.6 (Total syllables/total words). However, the last metric (number of syllables per word) is especially problematic in Spanish because it is not as strong of an indicator of Spanish readability. Thus, to measure the readability of the Spanish corrido, we employed the Fernández-Huerta readability formula (Fernández-Huerta, 1959). Fernández-Huerta created this formula to measure text readability in Spanish based on the Flesch-Kincaid Readability measure. The corrected Spanish formula for this measure is: *readability= 206.84 − (0.6 × Total number of syllables) − (1.02 × Total number of words).* Results for both measures can be interpreted using the Appendix E table, which details the scores corresponding to the grade level required to read the text. All the *corridos* and ballads generated readability scores within the 90-100 range, corresponding with a 5th-grade reading level. Thus, the tasks are well within the reading ability of typically developing adolescents in the 5th-8th grades. Theoretically, using these tools ensures that differences in results are not about the differing readability levels of *corridos* but rather differences external to the song, for example, the language condition in which the language sample was elicited (Spanish, English, translanguaging). See Appendix F for a list of each *corrido/* ballad, the order in which they were delivered, their corresponding readability scores, and the line of narrative.

The Bilingual Input-Output Survey (BIOS). Adolescent participants and some parents completed an adapted version of the BIOS (Peña et al., 2018) to quantify adolescent language exposure and use of English and Spanish. The adaptation increased the age range to include adolescents up to 17. Instead of only interviewing parents, adolescent participants self-reported year-by-year exposure and current daily exposure to Spanish and English. The original BIOS is a parent questionnaire about language use that constitutes part of the Bilingual English Spanish Assessment (BESA) (Peña et al., 2018). The BIOS describes when and in what context each of the child's two languages are used. The questionnaire has

two parts: the BIOS-Home and the BIOS-School. The BIOS-Home is a survey in which parents report what language the child hears (input) and uses (output) (e.g., Spanish, English, or both Spanish and English) on an hour-by-hour basis during a typical weekday and weekend day, including who they are communicating with and what activity they are engaged in. In addition, the BIOS-Home asks parents to report when their child was first exposed to English and the nature of their language input and output from birth to the present. For this study, we only used the BIOS-Home (as reported by adolescent participants).

The age of first English exposure was calculated as the year the adolescent indicated that they were first exposed to English in their input. Current English and Spanish input and output were calculated using adolescent responses to determine how much English and Spanish they hear and use. They are asked to report this information on an hour-by-hour basis for a typical week and a typical weekend. Although this measure has not been validated for this age group, these questionnaires are commonly used to understand bilingual context across the lifespan (Kašćelan et al., 2022; Paradis, 2010). We specifically asked adolescents to respond to the language exposure questionnaire because adolescents are shifting away from spending as much time with parents and thus are more likely to report the distribution of their language experiences more accurately (Comajoan-Colomé et al., 2023).

Procedures

Adolescents completed demographic questionnaires on Qualtrics about their home language, community environment(s) language and cumulative and current exposure to English/Spanish.

For the *corridos* portion, all adolescents participated at their homes, over Zoom, or in person during after-school or summer school programming. A bilingual researcher provided participants with an introductory statement explaining the purpose of the study. Then, a brief activity description was provided in the language corresponding to the elicited language condition.

The Spanish *corrido* task was administered first: the Spanish practice corrido followed by the Spanish test *corrido*. The English ballad task followed: practice ballad followed by test ballad. The translanguaging condition was the last narrative task: translanguaging (practice) and two translanguaging tests. Note that the translanguaging test condition used one Spanish corrido and one English ballad.

For all three conditions (Spanish, English, translanguaging), in both the practice and testing activities, each song and its lyrics were played using the YouTube "karaoke version." The participant was also provided with the lyrics printed on a paper. They were asked to follow along in the printed script or the YouTube lyrics as the song played. To ensure comprehension of the basic narrative, participants were asked to retell, in their own words, the narrative in the song and to respond to a set of comprehension questions. If they did not provide a response or responded incorrectly to 1 of the three questions, the researcher retold the story to them in the language condition that was being elicited. The following comprehension questions were asked for each song and each language condition:

1. Who is this song talking about?
2. What is the main idea/message of this song?
3. What concern or problem is the singer singing about?

Once participants provided complete responses to the questions, they were asked to respond to three prompts designed to elicit critical thinking language and language complexity. The first prompt provided a summary statement of the narrative within the *corrido,* followed by an incomplete "contingency" statement ("If the singer/ character had/had not… then…"). Based on Nippold et al., (2020), participants were asked to complete the contingency statement in a way that made sense with

the narrative in the *corrido*. This prompt focused the participant's attention on the gist of the story, which provided context for the moral message or value statement.

For the second prompt, participants were asked if they agree with the moral message of each *corrido* and to indicate their answer: "yes," "no," or "unsure." After responding, the third prompt asked participants to explain their response to each moral message/ value statement: Why did they agree/disagree/ or were unsure? For each moral message, they were also asked, "Can you think of a situation in real life where the moral would apply?" and "Can you tell me anything else about the moral or the situation?" Participants were allowed as much time as necessary to complete the entire task; each language task took no more than 20 minutes. Adolescents completed the activities in Spanish first (practice item, then test item), then in English (practice item, then test item), and finally, they were allowed to translanguage as they felt comfortable with the practice item and then the test items. This order was strictly followed because, in prior experiences, engaging children in restrictive Spanish conditions proved difficult once children were asked to use English.

They were presented with a Spanish corrido and an English ballad for the translanguaging condition. Each language condition was prompted in the respective languages: the Spanish test condition had Spanish prompts, the English condition had English prompts, and the Translanguage condition had prompts with a mix of both English and Spanish, as done in de los Ríos (2022). See Appendix F for the order in which each language condition was delivered, and the prompts/questions for each corrido/ ballad can be found in Appendix G.

Transcription and Coding

Participants' responses to the critical thinking prompts were audio-recorded, transcribed verbatim, and coded for the target indices described below. The audio-recorded language samples were transcribed using Python Speech-to-Text and Google Cloud speech-to-text V1. Then, transcripts were

reviewed by trained research assistants to ensure reliability. After the audio was transcribed, the language samples were segmented using the C-UNIT rules and conventions described in the SALT manual (SALT; Miller, 2016).

To measure the use of critical thinking language (words and phrases) in the responses, meta-cognitive language/terms (MC) were identified and coded. A count of the different types of meta-cognitive terms (MCd) was also obtained, as done by Nippold et al., (2017c; 2020). MCs are words that describe the internal state, such as thoughts, feelings, and perceptions that the participants or others possess. Here, however, we chose to code not just individual verbs but also included adjectives and figurative language because in Spanish, *dichos* or idioms are often used to express thoughts, feelings, and perceptions, and they "reveal the world view or psychology of people" (Zuñiga, 1992). An adaptation of Nippold et al., (2017c) criteria was used to code MCs for this part of the study. The adapted rules are as follows:

Nippold et al., (2017c)	Adaptation
1. The verb must refer to an act of communicating, thinking, feeling, or perceiving (in the psychological sense) performed by a living or personified being. For example, to code the verb “saw” as an MCV, it must be used in a psychological sense (“I saw what he meant”) rather than a perceptual sense (“I saw the trees”).	The verb must refer to an adjective or act of communicating, thinking, feeling, or perceiving (in the psychological sense) performed by a living or personified being. For example, to code the verb “saw” as an MC, it must be used in a psychological sense (“I saw what he meant”) rather than a perceptual sense (“I saw the trees”).

2. The act must be performed directly by the living or personified being. For example, in "The cat terrified the mice," terrified is not an MCV because it is being done to the mice rather than referring directly to their experience.	**The act or adjective must be about or done directly by the living or personified being.**
3. The verb must stand as metacognitive on its own. For example, "came to mind" is not an MCV because it is part of an idiom and requires the phrase "to mind" to indicate a mental event.	**The adjective or verb DOES NOT HAVE TO stand as a metacognitive term on its own.** For example, "came to mind" **WILL BE CODED AS an MC, EVEN IF i**t is part of an idiom and requires the phrase "to mind" to indicate a mental event.

To measure adolescents' language complexity, we used various indexes, including clausal density (subordination index) and mean length of Utterance in Words (MLU-w), number of total words (NTW), and number of different words (NDW) (Nippold et al., 2020; Rezzonico et al., 2016). Clausal density (CD) is defined by the total number of main and subordinate clauses divided by the total number of C-units produced in the sample (Nippold et al., 2015; Nippold et al., 2020). Maze behaviors (i.e., false starts, repetitions, and fillers "like" and "uh") and abandoned utterances were segmented via parenthesis and excluded from formal analysis. SALT also counts and reports the total number of C-units produced in the sample. SALT automatically calculates and reports each sample's MLU-w, NTW, and NDW. Clausal density and metacognitive terms were hand-coded.

In the translanguaging samples, credit was given to MCs in whichever language the participant chose to use. However, for the language closed conditions, where adolescents were asked to only use Spanish or English, any use of the alternative language was excluded from the analysis.

Reliability

Research assistants from a speech and language therapy graduate program were trained to transcribe using the SALT conventions and to code language transcriptions using the codes mentioned above. Transcription and coding were conducted in stages to achieve reliability. In the first stage, we used a speech-to-text tool similar to that described in Albudoor and Peña (2022). Python Speech-to-Text was used to develop transcription scripts (1 per language condition) using Google Cloud speech-to-text V1. The script was written to achieve the following: a) Convert audio files from m4a to wav; b) Conduct speech recognition of wav files; c) Convert recognized speech to text d) Save conversion to one .txt file per audio file. To account for code-switching between conditions, Python was asked to conduct English and Spanish speech-to-text conversion for all audio files from all three conditions (English, Spanish, Translanguage); therefore, there were two .txt files generated per audio file, an English conversion, and a Spanish conversion.

In the second phase, the research assistants were asked to independently 1) listen to the audio wav file while reading the Google Cloud speech-to-text V1 generated .txt file and 2) select the .txt file that Google Cloud speech-to-text V1 most accurately transcribed. 3) make transcription error edits directly to the .txt transcription file.

In the third phase, research assistants completed agreement checks for 100% of the files. They then paired up and checked each other's transcription edits from phase 2. They listened to audio files and added comments if there were disagreements. Disagreements in transcription were reviewed and resolved in a conference.

In the 4th phase, the language samples were segmented and coded independently by the primary investigator. In the 5th phase, the trained research assistants responded to agreement checks on 100% of the transcripts. Again, the research assistants added comments if they disagreed with the

code(s). Then, discrepancies in codes were reviewed together and resolved to achieve agreement and accuracy.

Analytical Plan

For Aims 1 and 2, we reported means and standard deviations for using critical thinking language and indices of language productivity and complexity in Spanish English and translanguaging conditions. For Aim 3, we conducted a with-in and between-subjects design, repeated measure MANOVA to assess differences in each narrative measure according to the language condition, and between-subjects for the age groups. For this analysis, the independent variables included the language condition under which the language samples were collected (i.e., Spanish, English, translanguaging), and the dependent variables included the parameters of the language of critical thinking, language productivity, and complexity.

Results

Aim 1: Use of Critical Thinking Language

Our first research aim was to describe bilingual adolescents' use of critical thinking language to discuss narratives in Spanish, English, and translanguaging conditions**.** Participants' use of critical thinking language is displayed in Table 2.1, complete with the means and standard deviations of each index (i.e., MC, MCd). A visual depiction of the results is available; see Figure 2.0.

In Spanish, adolescents used metacognitive words and phrases (MC), generating an *M* = 20.92 and SD = 12.54, while their use of metacognitive words and phrases in English generated an *M* = 41.14 and SD = 26.40. Finally, in the translanguaging conditions, adolescents used metacognitive words and phrases, yielding an *M* = 43.38 and SD = 21.63.

In Spanish, adolescents used different metacognitive words and phrases (MCd), generating an *M* = 15.58 and SD = 9.37, while their use of MCd in English generated an *M* = 26.94 and SD = 16.31. Finally, in the translanguaging conditions, adolescents used MCd, yielding an *M* = 28.32 and SD = 12.73.

Note that all measures of metacognitive words and phrases fell within -2 and 2 for skewness and -7 to 7 for kurtosis values, indicating a normal distribution (Hair et al., 2010). Examination of histograms and QQ plots provided further evidence that the data demonstrated only small departures from normality, which indicates that we should continue with parametric statistical methods.

Aim 2: Language Complexity

Our second research aim was to describe bilingual adolescents' language complexity and productivity when discussing narratives in Spanish, English, and translanguaging conditions**.** Participants' performance on all indices of language complexity is displayed in Table 2.1, complete with the means and standard deviations of each index (i.e., CD, MLU-w, NTW, NDW). A visual depiction of the results is available; see Figures 2.1 and 2.2.

In Spanish, adolescents' language complexity index CD generated an *M* = 1.28 and SD = .25, while their CD in English generated an *M* = 1.40 and SD = .18. Finally, in the translanguaging conditions, adolescents' CD yielded an *M* = 1.5 and SD = .26.

In Spanish, adolescents' language complexity index MLU-w generated an *M* = 5.52 and SD = 2.82, while their MLU-w in English generated an *M* = 7.09 and SD = 1.62. Finally, in the translanguaging conditions, adolescents' MLU-w yielded an *M* = 7.84 and SD = 1.88.

In Spanish, adolescents' language productivity index NTW generated an *M* = 192.10 and SD = 146.95, while their NTW in English generated an *M* = 333.02 and SD = 197.92. Finally, in the translanguaging conditions, adolescents' NTW yielded an *M* = 462.98 and SD = 184.30.

In Spanish, adolescents' language productivity index NDW generated an *M* = 78.20 and SD = 51.02, while their NDW in English generated an *M* = 129.32 and SD = 49.96. Finally, in the translanguaging conditions, adolescents' NDW yielded an *M* = 172.48 and SD = 51.59.

All measures of language complexity and productivity also fell within -2 and 2 for skewness and -7 to 7 for kurtosis values, indicating normal distribution (Hair et al., 2010). Assessment of histograms and QQ plots provided further evidence that the data had only small departures from normality, which allows for continuing with parametric statistical methods.

Aim 3: Differences in Use of Critical Thinking Language and Complexity Based on Language Conditions

To address the third aim of this study, a repeated measures MANOVA (RMA) was used to examine the effects of the languaging conditions (i.e., restricted languaging conditions -Spanish or English, versus open languaging conditions - translanguaging) under which adolescents talked about narratives, on indexes of critical thinking language (MC, MCd) and language complexity (MLU-w, CD, NTW, NDW). The within-subject factors for the RMA were Spanish, English, and Translanguage. Sphericity assumptions were examined using Maulchy's test for the within subject's effects. The multivariate test statistic indicated a violation of the assumption of sphericity, as assessed by Mauchly's test ($p < .05$), and degrees of freedom were corrected using Greenhouse-Geisser estimates. See Table 2.2 for the statistical test description of each measure.

The repeated measures MANOVA within-subjects analysis revealed a significant main effect for language condition, Wilks Lambda = .084, F (12, 31) = 27.99, $p < .001$, $\eta_p^2 = .92$ with a large effect size indicating that bilingual adolescents use critical thinking, language productivity, and complexity differently between language conditions (i.e., translanguaging, Spanish, and English). The between-subjects results revealed that age significantly influenced outcomes on the various indices of language, Wilks Lambda = .20, F (42, 177) = 1.74, $p < .01$, $\eta_p^2 = .24$ having a large effect size and indicating that

bilingual adolescents use critical thinking, language productivity, and complexity differently according to age. There were no significant interaction effects of language condition and age, Wilks Lambda = .094, F (84, 198) = 1.11, p = .281.

Post hoc tests were conducted to explore pairwise differences between the three experimental conditions following a significant overall effect of condition in the repeated measures ANOVA. Bonferroni correction was applied to adjust for multiple comparisons.

For the measure of critical thinking language, total metacognitive words/phrases (MC) results revealed that Translanguaging (mean difference = -24.39, SE = 3.11, p <.001) and English (mean difference = -20.01, SE = 4.06, p <.001) performance was significantly higher than Spanish. Translanguaging was not significantly higher than English (mean difference = 4.37, SE = 3.19, p = .53). These results indicate that the total number of metacognitive terms that adolescents used in the translanguaging condition, and the English-only condition were not significantly different. However, these were different from the total number of metacognitive terms they used in the Spanish-only condition.

For the measure of critical thinking language, the number of *different* metacognitive words/phrases (MCd) results revealed that Translanguaging (mean difference = -13.25, SE = 1.79, p <.001) and English (mean difference = -11.56, SE = 2.47, p <.001) performance was significantly higher from Spanish. Translanguaging was not significantly higher than in English (mean difference = 1.69, SE = 2.12, p = 1.00). These results indicate that the number of *different* metacognitive terms that adolescents used in the translanguaging, and English conditions were not significantly different. However, these were different from the number of *different* metacognitive terms adolescents used in the Spanish condition.

For the measure of language complexity, MLU-w, results revealed that Translanguaging (mean difference = -2.53, *SE* = .33, *p* <.001) and English (mean difference = -1.81, *SE* = 0.38, *p* <.001) performance was significantly higher than Spa Spanish. Translanguaging was significantly higher than in English (mean difference = 0.72, *SE* = 0.23, *p* <.01). These results indicate that adolescents' mean length of utterance (word) was significantly larger in the open condition (translanguaging) than in the closed conditions (Spanish or English).

For the measure of language complexity, CD, results revealed that Translanguaging (mean difference = -.23, *SE* = 0.041, *p* <.001) and English (mean difference = -.15, *SE* = 0.041, *p* < .01) performance was significantly higher from Spanish. Translanguaging was not significantly higher than in English (mean difference = 0.08, *SE* = 0.04, *p* = .104). These results indicate that adolescents' clausal density was significantly larger in the open condition (translanguaging) and the English closed conditions than in the Spanish, only closed condition.

For the measure of language productivity, NTW results revealed that Translanguaging (mean difference = -288.61, *SE* = 28.20, *p* <.001) and English (mean difference = -149.86, *SE* = 31.48, *p* <.001) performance was significantly higher than Spanish. Translanguaging was significantly higher than in English (mean difference = 138.74, *SE* = 22.12, *p* <.001). These results indicate that adolescents use more words when engaging in translanguaging conditions than when engaging in Spanish or English-only conditions.

For the measure of language productivity, NDW, results revealed that Translanguaging (mean difference = -100.48, *SE* = 7.26, *p* <.001) and English (mean difference = -55.16, *SE* = 8.53, *p* <.001) performance was significantly higher than Spanish. Translanguaging was significantly higher than in English (mean difference = 45.32, *SE* = 6.04, *p* <.001). These results indicate that adolescents use more

different words when engaging in translanguaging conditions than when engaging in Spanish or English-only conditions.

Taken together, adolescent use of metacognitive terms and clausal density were higher in an open language activity (translanguaging) and closed-English condition compared to the closed Spanish condition. For MLU-w, NTW, and NDW, the translanguaging open condition yielded higher linguistic productivity than the closed language activity (Spanish or English).

Regarding the effect of age on the between-subjects analysis, post hoc tests were conducted using Bonferroni adjustments. The results broadly indicated that the younger adolescents performed differently than older adolescents on measures of MLU-w and NDW. Pertaining to MLU-w, 11-year-olds performed significantly lower than 16-year-olds (mean difference = -4.11, *SE* = .96, $p < .01$) and 17-year-olds (mean difference = -3.06, *SE* = .86, $p < .05$). Also, 14-year-olds performed significantly lower than 16-year-olds (mean difference = -4.45, *SE* = 1.05, $p < .01$) and 17-year-olds (mean difference = -3.40, *SE* = .96, $p < .05$). Pertaining to NDW, 14-year-olds performed significantly lower than 16-year-olds (mean difference = -98.20, *SE* = 27.12, $p < .05$) and 17-year-olds (mean difference = -84.11, *SE* = 24.92, $p < .05$).

Taken together, adolescents' performance on measures of complexity and productivity was sensitive to age, where older adolescents outperformed younger adolescents on MLU-w and NDW.

Discussion

Specifically, our study is comprised of three aims: First, to describe bilingual adolescents' use of the language of critical thinking in closed conditions (i.e., English and Spanish) and open conditions (i.e., translanguaging); second, to describe Latinx bilingual adolescents' language productivity and complexity under the same conditions; and third, to examine the differences that emerge in both the use of critical thinking language and language productivity and complexity as a result of discussing culturally familiar

narratives in closed conditions (i.e. English and Spanish) and open conditions (i.e. translanguaging). All outcomes were measured in both English and Spanish and translanguaging conditions.

Concerning Aim 1, we found highly variable use of critical thinking language across all three conditions: Spanish, English, and translanguaging. This is evidenced by the wide range of scores and larger standard deviations. As a group, adolescents similarly used the language of critical thinking across translanguaging and English. They used metacognitive language less in the closed-Spanish condition than in the translanguaging and English conditions. This was indicated by their scores on the total number of metacognitive terms and different number of metacognitive terms. Using a translanguaging framework, a possible explanation for this is that while discussing the narratives in these songs, adolescents recruited resources from the "bound language of English'' more often than"Spanish "; however, both were being called in simultaneously to discuss the cultural, personal and the complex.

Regarding Aim 2, we found higher levels of variability in measures of language productivity (i.e., NTW, NDW) and less variability in language complexity (i.e., MLU-w, clausal density) across all three conditions: Spanish, English, and translanguaging. The variability in language productivity measures was made visible via the wide range of scores and larger standard deviations. The opposite was true for measures of language complexity, where the means and standard deviations were far smaller. Although the variability was higher for productivity than complexity, these results still demonstrated that productivity and complexity differed significantly across language conditions. Narratives in which adolescents could freely discuss demonstrated evidence of more productivity and complexity.

Finally, the results of Aim 3 corroborated the results from Aim 1 and 2 and revealed overall differences in the use of critical thinking language, language productivity, and complexity. Regarding the use of critical thinking language, significant mean differences were observed in the translanguaging, and English conditions compared to Spanish; however, translanguaging was not significantly different from

English. Here, it is essential to consider the affordances of translanguaging and theoretical perspectives that account for the role of language in greater exposure. The Usage-based and Competition models are theories that say one acquires features of named languages through exposure; the greater the exposure, the more salient the features become (Tomasello, 2001). The Competition model posits that language learning and use are driven by multiple cues competing for attention, where learners use probabilistic contextual information to make sense of linguistic input and to make output decisions (MacWhinney, 2005). It accounts for 1) how language processing develops and changes with experience and 2) suggests that as individuals learn a language, they become more proficient in using the cues that are most effective in that language. Together, these two theories could explain why adolescents were as good in the English and translanguaging condition on the use of metacognitive terms but for measures of complexity (i.e., MLU-w) and productivity (TNW, NDW) were best in translanguaging open conditions than Spanish and English closed conditions: greater experience with English metacognitive terms. Given their linguistic contexts, where on a macro-social level, adolescents are socialized toward greater use of English, they get more opportunities to hear and use said words, thus making English metacognitive words more salient and readily available for retrieval in communication and meaning-making. Note, however, that the point is not to indicate that adolescents use more of one language than the other for the sake of fragmenting their language skills. Recall that the translanguaging theory deconstructs the notion of bound, nation-state languages acting as separate and individual entities in a bilingual's repertoire. Rather, translanguaging credits bilinguals for how they recruit and use language in unbound, dynamic, and fluid ways. Conceptually, these results highlight that the prevailing ways in which languages have been fragmented occur between home and academic languages. The ability to use "academic language" has been typically reserved for speakers who use more standardized codes that are traditionally associated with White, middle-class English (Souto-Manning et al., 2021); by this account, the "home" language is discredited as unsophisticated and cast as laymen. Thus, the

fragmentation of named languages perpetuates deficit and language gap frameworks that position the language practices of minoritized adolescents at the bottom of social-linguistic hierarchies (Alim & Paris, 2017). Instead, we put the Usage-Based Model, the Competition model, and Translanguaging in conversation to push forth the notion that exposure to home languages increases opportunities to promote their use and practice, thereby affirming the language practices of Latinx bilingual adolescents. It also provides a solid theoretical rationale for adopting a translanguaging framework to promote linguistic equity, especially for adolescents whose language practices have long been ostracized and perceived as deficient.

In interpreting these results through a translanguaging framework, it should be noted that adolescents dissect complicated narratives about body image, migration, gender, and family dynamics with similar sophistication when they are allowed to use their entire meaning-making system as when they are asked to use the language of traditional U.S. academic settings- English. In allowing Latinx bilingual adolescents to use all their resources, the content of their analysis and their use of critical thinking language is preserved. In fact, adolescents expressed ideas related to the narratives, took the singers' perspective, and applied their knowledge to these lyrics with more nuance because they have access to words and terms that better fit the ideas they are attempting to convey.

Regarding language productivity and complexity, translanguaging conditions were significantly higher than closed conditions (i.e., Spanish and English). Adolescents demonstrated more words and wider semantic variety. They produced more complex sentences when they engaged in open-language narrative activities than when asked to restrict their language tools. This is consistent with the translanguaging evidence that demonstrates that when children are allowed to use their entire linguistic repertoire and to engage their home language practices alongside their academic language practices,

they perform better in core academic subjects like math (e.g., Turner & Celedón-Pattichis, 2011) and language arts (e.g., telling fictional narratives) (Przymus & Alvarado, 2019).

Conclusion

The current study contributes to the growing body of work supporting translanguaging, highlighting the linguistic assets of Latinx bilingual adolescents. Taking a translanguaging orientation towards the language practices of Latinx bilingual adolescents allows us to see all their linguistic, semiotic, and multimodal repertoire as an indispensable part of their sense-making process. Translanguaging also supports adolescents in "developing and cultivating their existing genius," as does using interpretive culturally grounded narratives because adolescents can build upon their existing resources that have been historically and culturally accrued (Zoeller, 2024). Since language is a cultural tool that mediates their meaning-making experiences (Nasir & Hand, 2006), lacerating off parts of this tool undermines the linguistic assets that Latinx bilingual adolescents possess and yields towards engaging in thinking about the complex (Yosso, 2005).

Clinically and pedagogically, it offers valuable insights and implications for how speech and language therapists and educators engage the language skills of culturally and linguistically diverse adolescents. In our respective fields, we have been hyper-reliant on pedagogical practices and tools appropriate for English-monolingual adolescents, not Spanish-English bilingual Latinx adolescents. The framework and approaches taken in this study subvert our traditional notions of multilingualism, where each language is compartmentalized and engaged as such. Instead, we consider bilinguals' linguistic practices as a unit that fully participates in meaning and sense-making. In doing so, we allowed Latinx adolescents to engage in their own individualized and authentic ways of languaging, where they demonstrated their knowledge of and discussed the complex politics of the body and its positionality in current and historical geopolitical contexts.

While *corridos* are not appropriate for all culturally and linguistically diverse individuals, adopting the concept of selecting and culturally individualized tools is encouraged. Reproducing the pedagogical approach and situating it in a translanguaging framework could allow similar patterns to emerge in the culturally and linguistically diverse adolescent communities that we serve.

Limitations

Considering the findings of the current study, it is necessary to acknowledge the major limitations of this work. One of the limitations of this study is that *Corridos* have yet to be formally validated tools for language sampling. This makes it difficult to affirm the use of interpretive song lyrics as assessment tools; however, that is different from the intention of this study. Instead, this study highlights the linguistic assets of bilingual Latinx adolescents and how they can be stimulated to use critical thinking skills and complex language productions to discuss these songs. Secondly, this study is also limited in that our pool of participants is small, so generalizability may not be achievable. It is also essential to consider that results have been sensitive to the effects of song familiarity due to gender alignment with musical preferences and generational status as some participants may have been more exposed to traditional Spanish music than others). Practice effects could have also been associated with the findings as participants were first exposed to the Spanish condition and thus may have stimulated their responses towards more use of Spanish in the later conditions. Practice effects could have been mitigated by keeping the order of condition delivery (Spanish, English, translanguaging) constant but varying the order of the songs). Finally, and importantly, we want to acknowledge that the translanguaging framework, as it is operationalized, deconstructs the boundaries of defined languages. It de-centers languages as individual entities and focuses on how individuals use language to make meaning. That is, it is a movement away from the traditional notions of bilingualism and code-switching. Current language sampling methods continue to abide by praxis that measures language practices and

use through the traditional sense: measuring individually named languages as independent of one another (e.g., MLU, NTD, NDW in each language). Although attempting to move away from the traditional praxis by measuring instances of critical thought, in this study, we employed indexes that measure language productivity and complexity. As this work evolves, we look forward to re-imaging more holistic and humanizing ways of examining linguistically diverse adolescent language practices.

STUDY 3:

The Role of Language Attitudes and Language Exposure on the Language Outcomes of Bilingual Latinx Adolescents

Abstract

Purpose: This research investigates the relationships between language attitudes, motivation to learn Spanish, and language exposure on the bilingual language outcomes of Latinx adolescents. This study delves into how these adolescents' experiences and attitudes toward bilingualism shape their language practices in English and Spanish, contributing to the broader discussion on heritage language acquisition, retention, and the socio-political factors affecting bilingual Latinx adolescents in the United States.

Method: The study engaged 50 Spanish-English bilingual adolescents from Southern California, utilizing a combination of surveys and language tasks to assess perceptions of bilingualism, motivation to learn Spanish, and language exposure (cumulative and current). The research employed hierarchical linear regression models to analyze the influence of language attitudes, motivation, and exposure on the participants' language outcomes, measured through critical thinking language, language productivity, and complexity in both English and Spanish.

Results: Findings highlighted a significant variance in language outcomes influenced by participants' language attitudes and motivation to learn Spanish. Perceptions of bilingualism and motivation to learn Spanish were associated with higher language productivity and complexity in Spanish. However, these factors did not significantly impact English language outcomes, suggesting that the dominant language's pervasive influence might mitigate the effects of individual attitudes and motivations. The study also noted developmental trends, with older adolescents demonstrating more sophisticated language outcomes, possibly reflecting greater linguistic maturity.

Conclusion: This study underscores the importance of positive language attitudes and motivation in supporting the bilingual development of Latinx adolescents, particularly in their heritage language. The results advocate for educational practices that validate and cultivate bilingualism as an asset, challenging the prevailing deficit views of bilingual learners. By acknowledging the intrinsic and extrinsic factors that influence bilingual language development, educators and policymakers can better support the linguistic and identity needs of Latinx adolescents, promoting equitable educational opportunities and outcomes.

Introduction

In the United States, Latinx bilingual adolescents transition into young adulthood amidst vast linguistic diversity, where English retains hegemonic power within the larger society. In this ecological system, upward social and professional mobility is often contingent on mastery of standardized American English. In traditional U.S. educational settings, adolescents who are racialized because of their ethnic backgrounds and heritage language practices are often positioned as students with "language deficits." This is evidenced by the ways that educators conflate being bilingual and minoritized (insert ethnic or racial background here) as being an "English Language Learner" (ELL) (Flores, 2020). As a result, Latinx adolescents are often placed in remediation programs that "help them to develop the foundation in academic language that they need to be successful in mainstream classes" (Flores, 2020, p. 23). For Latinx bilingual adolescents growing up in this context, acquisition, and retention of their heritage language(s) may be challenging and compromised by how their language attitudes are shaped by the attitudes of the broader society and how these inform their language experiences and practices.

At an individual and personal level, adolescents undergo unique developmental changes, preparing them to emerge as young adults. During this development season, adolescents explore their identities, attempt to develop a sense of self, and identify their values

and beliefs (Erikson, 1968; Bandura, 2006). Language is essential to self-identity as it has been tied to our origin stories, where and whom we come from, our ancestral histories, and cultural backgrounds (Tse, 1998). Additionally, adolescents seek individuation from their parents, guardians, and other adults and instead opt for peer acceptance and peer group affiliation (Laursen & Veenstra, 2021; Maspul et al., 2023). Given that adolescents are undergoing such a formative stage and are vulnerable to the internalization of peer perceptions, Latinx adolescents' language attitudes and practices may be reinforced by the way they have been conditioned to perceive their cultural-linguistic language practices: English as the superordinate language and Spanish as the subordinate language.

Under these pretenses, Latinx adolescents may alter their language practices to align more closely with language practices that grant them social capital. The input-proficiency-use-cycle theory (Pearson, 2007) posits that language attitudes inform language preferences and, thus, language experience and proficiency. It is unclear how Latinx adolescents' language attitudes inform their language outcomes in English and Spanish.

Language attitudes and outcomes have been explored through various constructs, tools, and measures. Perceptions of bilingualism and language learning motivation are two ways to examine the language attitudes held by individuals (Luk & Surrain, 2019; Nagles, 2021). Language exposure history has been traditionally measured via parent report questionnaires, and they examine cumulative exposure (age of first exposure to English) and current language exposure (Comajoan-Colomé et al., 2023). We can understand the distribution of adolescents' cross-language exposure using these measures. Language outcomes have been measured using various tools and indices like attitudes and exposure. Interpretive or proverbial narratives have been used to measure the language outcomes of monolingual adolescents (Nippold et al., 2017a; Nippold et al., 2017c; Wallis et al., 2021). The current study seeks to understand the interplay between Latinx adolescents' language attitudes, language exposure histories, and

language outcomes. Here, we specifically employ a culturally familiar interpretive narrative, *Corridos (Mexican ballads embedded with historical, cultural, and family values),* to elicit the use of critical thinking language, language productivity, and complexity. In measuring the relationships between perceptions of bilingualism, motivation to learn Spanish, language exposure skills, and language outcomes, we contribute a deeper understanding of the cross-linguistic practices of adolescents who may experience subjugation for using their heritage language.

Adolescent Perceptions of bilingualism and motivation to learn Spanish

Language perceptions and motivations evolve at various stages of adolescence because adolescents appear to value their biculturalism and bilingualism more as they age and mature (Caldas, 2002, 2008). In a longitudinal, mixed-methods study, researchers examined the evolving language perceptions of three bilingual children (identical twins and their older brother) from early adolescence to early adulthood (Caldas, 2002, 2008). The participants were French/English bilinguals who spent the summers in French-speaking Quebec but primarily lived in Louisiana with their French/English bilingual parents. At time 1, participants (ages 10:10 and 12:10, respectively) completed two author-constructed instruments designed to gauge their perceptions about the duality of their language and culture. This tool was used at three different time points (time two at five years post time one and time three at eight years post time 1). The results revealed that participants appeared to value conformity to social perceptions in early adolescence. At that time, bilingualism was not perceived as capital in the context in which they were developing. At the end of the study, when participants were older, they reported valuing and using their cross-language skills more. We take this to mean that language perceptions begin to take form early in life and that adolescence plays an integral role in how they will engage in language practices in their adult lives.

Adolescent Motivation to Learn Languages

Latinx adolescents' motivation to learn Spanish is complex and may be complicated by the influence of social factors on the individual. The Expectancy-Value theory (EVT) (Eccles et al.,1983) indicates that motivation is a function of one's expectations of success and the value one assigns to achieving the target skill. Intrinsic motivation is determined by an individual's belief as to whether one can accomplish said skill and how valuable the skill is perceived. The value one places on a skill is mediated by the cost that one would infer to make gains toward the target skill and thus impacts motivation to achieve. For bilingual Latinx adolescents, expectancy and value can be affected by the social cost they may be inferred by being speakers of a language that is subjugated. Developmentally, they are at an age where they value the opinions of their peers above that of their parents, and they strive for group inclusion. Thus, speaking a language that is othered might be a source of peer disapproval and group exclusion. For instance, in a qualitative study investigating the language perceptions of youth living in emerging Latinx communities (communities beginning to see this demographic grow within the neighborhood but are otherwise predominantly non-Latinx), adolescents reported sentiments of appreciation and feelings of acculturation stress (Booth et al., 2020). Expressly, adolescents indicated that language was a crucial identity marker for them. They expressed shared enjoyment with family when participating in Spanish-centered activities, and they perceived being bilingual as a gift from their family and a contributor to their success. They also reported feeling a special connection to peers with similar language backgrounds. This was especially true when using Spanish terms, which there are none of in English. Participants appreciated being able to switch languages with those who understood that there are only sometimes specific translations to English that capture what they were trying to say in Spanish. However, bilingualism was sometimes a stressor, especially in academic contexts where English was the language of power. They indicated that switching between the school and home languages was

also stressful. Other participants expressed a sense of responsibility in learning English and "becoming educated" because of their parents' sacrifices (migration, hard hours of labor, etc.) to ensure their success. Finally, they reported stressors related to being bilingual and how that is negatively perceived by their local community, which was predominantly white. Although this study was not intended to measure motivation specifically, we see how various intrinsic and extrinsic factors might complicate Latinx adolescents' motivation in this example. Here, they report a variety of sentiments about the expectations, value, and utility they place on their home language and discuss the social cost they face by using a minoritized language.

The motivation to learn a heritage language might also be affected by the proximity of the language to the adolescent's cultural identity. Temples (2010) compared the motivation to learn Arabic among three adolescent groups: 1) heritage language learners, 2) religious language learners, and 3) foreign language learners. Results revealed that heritage and religious learners reported significantly higher motivation to learn Arabic than foreign language learners. They reported that motivation was driven by intrinsic and extrinsic factors, such as learning the language as an essential aspect of their self-concept and desire for religious and cultural community involvement. Taken together, these results go to show the complex nature of motivation regarding adolescent heritage language learning.

Measuring Adolescent Language with Interpretive Narratives

Fables are a genre of narratives that have been used to assess adolescents' use of critical thinking language, language productivity, and complexity (Nippold et al., 2017a; Nippold et al., 2017c; Nippold et al., 2020). Fables are embedded with proverbial messages, making them ecologically valid tools for eliciting the use of critical thinking language and language complexity. In interpreting and discussing fables, adolescents can be asked to evaluate and discuss the moral lesson.

Counting instances where adolescents used metacognitive language has been used as a parameter that measures adolescents' use of critical thinking language. Metacognitive terms refer to words or phrases that describe the internal state, such as thoughts, feelings, and perceptions that the participants or others possess; thus, critical thought is indicated using metacognitive terms (MC) (Nippold et al., 2017c). Figurative language is also considered metacognitive in that it also denotes critical thinking language, especially when the idioms are used to express thoughts, feelings, and perceptions that reveal "the world view or psychology of people" (Bashmakova & Shcherbakova, 2018; Ebert, 2015; Manca & Delfino, 2007; Zuñiga, 1992). When individuals use MCs to talk about other people's mental events, they are demonstrating an awareness that others have thoughts, feelings, and beliefs (Astington & Olson, 1990; Nippold et al., 2020). Also, MCs can refer to either self or others, reflecting the theory of mind or the awareness that other people have thoughts that may differ from one's own (Nippold et al., 2020). Because adolescents often use MCs when they are critically thinking about the thoughts, feelings, and perspectives of characters in interpretive narratives (Astington & Olson, 1990; Nippold et al., 2020), extant research demonstrates that the use of MCs is associated with critical thinking ($r = .55$, $p < .001$). Together, interpretive narratives can elicit rich narrative discourse from adolescents and engage them in critical thinking and the use of complex language, especially when prompting adolescents to engage in reflection about the deeper meanings behind said narratives.

While fables and proverbs exist in various cultures, other genres of narratives, such as *corridos*, within Latinx culture can also elicit these language skills and might be more familiar to bilingual Latinx adolescents. Corridos are traditional Mexican ballads in Spanish that are imbued with historical narratives or narratives that depict cultural values shared across various Latinx communities (de los Ríos, 2019). Corridos are familiar to Latinx adolescents because of their popularity in mainstream Spanish music and because this genre of music is heard in community

spaces that families frequent and within the home. The ability to interpret and discuss a *corrido* requires critical thinking, rich language skills, cultural intuition, and knowing (de los Ríos et al., 2021; de los Ríos, 2022). Similar to the series of studies using fables to assess adolescent critical thinking and language production (Nippold et al.,2017a; Nippold et al., 2017b; Nippold et al., 2017c), *corridos* can provide opportunities for bilingual adolescents to describe the narrative, moral lesson, and discuss their agreement/disagreement with the message. In doing so, adolescents employ critical thinking and complex language production, drawing from their entire meaning-making system. Theoretically, they are appropriate and function similarly to fables; plus, they are culturally responsive to use with Latinx adolescents.

Adolescent Development of Critical Thinking & Language

During adolescence, individuals make cognitive gains that allow them to engage their abstract thinking abilities and produce complex language (Nippold, 2007; Piaget, 1972; Santrock, 1996). These cognitive linguistic gains are made evident by their increased language productivity, increased use of complex words, understanding of figurative language, comparing meanings between two different things, and using satire, irony, ridicule, and jokes. Adolescents also show increased comprehension of complex narratives, as evidenced by organizing ideas better, using more complex syntax, and speaking in sentences with various dialectal and linguistic variations (Santrock, 1996, 2007). Take, for instance, adolescents' ability to make discerning judgments on moral dilemmas. Wallis et al. (2021) compared the critical thinking skills and language production of younger and older adolescents. Older adolescents (mean age 17.19 years) outperformed younger adolescents (mean age 13.11 years) in lexical skills and critical thinking. Using short stories embedded with moral dilemmas and ethical conflict (e.g., lying, robbery, fighting, etc.), participants were tasked to opine on "what each story made them think about" (Wallis et al., 2021, p.633). Their responses were analyzed for language productivity, syntactic development, lexical development, and critical thinking skills. They

classified each participant's critical thinking levels using Bloom's Taxonomy (Bloom, 1956). Results showed that adolescents did not outperform one another on measures of verbal productivity (total number of utterances, total number of words) or syntactic complexity (mean utterance length). The older group performed better than the younger group and produced a greater number of different words. This reflected developmental change as adolescents matured and demonstrated more advanced word knowledge and critical thinking skills. Using fables as an elicitation tool, Nippold et al. (2017 a) also compared the language production and critical thinking skills of younger (mean age 13 years) and older adolescents (mean age 16 years). Participants listened to fables and their moral lesson(s). Language production and complexity were measured using mean length of C-Units, clausal density, and total number of words. To measure critical thinking, they used three different indices: the total number of metacognitive verbs, the total number of different metacognitive verbs, and a rubric where more points were assigned to an explanation that offered different reasons for the opinion taken or an explanation that provided real-life applications. Results showed that the 16-year-olds outperformed the 13-year-olds across many measures, including total C-Units, total number of words, metacognitive verbs, and number of different metacognitive verbs. The older adolescents provided longer explanations that contained a greater number and variety of metacognitive words, suggesting that developmental advances in critical thinking and language production occur as a function of age.

Adolescent Language Experience

Language experience effectively predicts bilinguals' linguistic skills across languages (Bedore et al., 2012; Bedore et al., 2016). In the U.S., the traditional language of academic instruction alters the patterns of language experience amongst Latinx adolescents. For bilinguals, the increased exposure and use of English through traditional English-only school models represents a shift away from using the home language to favor the use of English

(Kohnert, 2010). By adolescence, children of Latinx families are reported to be more proficient in English than Spanish (Tran, 2010).

The Input-Proficiency-Use-Cycle (Pearson, 2007) predicts that language outcomes result from language attitudes. The Input-Proficiency-Use-Cycle is a model that captures a self-reinforcing cycle. This model posits that language attitudes inform language preferences, which in turn give ways to elicit more input from adults and peers in the preferred language, thus reinforcing greater use and practice. A salient aspect of the Input-Proficiency-Use-Cycle highlights the role of isolation or inclusion in one's linguistic community and how it might affect language perceptions, experience, and practice opportunities, resulting in more-or-less internalized language skills.

Evidence is limited; however, research supports the notion that bilingual adolescents' language experiences relate to their language skills (Perez et al., 2023; Rioux & Thordardottir, 2023; Soto-Corominas et al., 2020). Specifically for English language outcomes, the current use of English with friends predicts variation in lexical and morphological abilities. The context and time spent speaking English in informal social situations contribute significantly to the English language proficiency of first-generation, immigrant, 14- to 19-year-old adolescents (Carhill et al., 2008). This pattern extends where time spent reading in English predicts English morphosyntactic skills. Fifth- through 7th grade, adolescents who read more in English scored higher in measures of English grammar than students who read English less frequently (Huang et al., 2017).

Regarding Spanish language outcomes, current language exposure is modestly necessary regarding narrative language outcomes (Perez et al., 2023). A study of 10–15-year-old bilingual adolescents indicated that current exposure to English and Spanish explained 12% of the variance in narrative microstructure language scores, such as mean length of utterance,

number of total and different words, clausal density, and grammaticality. Current exposure also explained narrative comprehension (10% of the variance) and narrative production (20% of the variance) in Spanish. This study concluded that continued use of Spanish may be necessary for bilinguals' maintenance of the home language during adolescence. However, language experience is insufficient to explain the variability in bilinguals' narrative skills across Spanish and English.

Research Aims

We are beginning to understand better how current experience relates to language outcomes in English. However, these variables have yet to be investigated in conjunction with language attitudes. It is unclear, however, to what extent bilingual adolescents' use of critical thinking language, language productivity, and complexity measures are associated with language attitudes and levels of experience (input-hearing and output-using) in each of their two languages. The present study summarizes adolescents' attitudes towards bilingualism and their motivation to learn Spanish and quantifies language experience using an hour-by-hour survey that measures the percentage of time during a typical week the bilingual hears and uses English versus Spanish. Here, we seek to understand how Latinx bilingual adolescent attitudes, motivation, and experience relate to their use of critical thinking language and language productivity. This study addresses the following aims:

A1. To describe bilingual adolescents' performance using critical thinking language, language complexity, and productivity measures in English and Spanish.

A2. To explore the contribution of perceptions of bilingualism, motivation, and language exposure to critical thinking language in Spanish and English.

A3. To explore the contribution of perceptions of bilingualism, motivation, and language exposure to language complexity and productivity in Spanish and English.

Hypothesized Results

Through the lens of the Input-Proficiency-Use-Cycle (Pearson, 2007) and the Expectancy Value Theory (Eccles et al., 1983), we hypothesize that Latinx bilingual adolescents' language perceptions, their motivation to learn Spanish and language experiences play a role in their use of critical thinking language (i.e. metacognitive words, terms and figurative language) and their language productivity and complexity (i.e. clausal density, number of different words, total number of words, grammaticality, MLU-words).

Method

Participants

Spanish-English bilingual adolescent participants from studies 1 and 2 (n = 50) were recruited from dual immersion and English-only instruction schools across Southern California. Dual immersion schools were characterized as schools that offered Spanish in at least 20% of instruction and where children were not free to opt in or out of instruction delivered in Spanish. English-only instruction schools were defined as schools that delivered instruction in English only 90% of the day and only offered Spanish as an elective course that children could opt in or out of. Participants were recruited through various avenues: 1) at schools and 2) via social media.

Participants were recruited from a dual immersion charter school (K-8th), a local school district (K-8th), and through social media via Instagram. The researcher provided families with forms that described the study and consent/ assent forms in English and Spanish. Parents provided informed consent and permission for their child's participation, and adolescents provided assent. All research procedures were approved by the Institutional Review Board at the University of California, Irvine, at the time of the start of the study. Flyers were distributed through afterschool and summer school programs. Participants recruited from the dual

immersion school represented (n=17); participants from the English-only school accounted for (n=10) participants; and (n=23) participants were recruited through social media. Adolescents and families who responded to social media announcements and were interested in participating emailed the researcher. A Zoom or in-person meeting was arranged if the parents/ adolescents consented to participate. These participants, ages 10-17 (n = 23), attended various schools in Southern California; some attended dual immersion schools (n = 6), and others did not (n = 17).

For the participants recruited from the schools, both the dual immersion school and the traditional school are geographically situated in largely Latinx communities and comprised mainly of a Latinx student body. The students recruited from these school settings were between 10 and 14 years old. Recruitment did not exclude students from special education. Both typically developing bilinguals and bilinguals with Individual Education Plans for special education services were allowed to participate in the survey. That is, anyone who was interested in participating in the survey was not turned away based on disability, as it is essential to consider the language attitudes of racialized adolescents with and without disability. However, based on IRB allowances, we could not ask the participants or the school about their educational placement (e.g., general education or special education). The educational placement could only be verified through voluntary parent reports. None of the students in these schools were reported to be in special education, not because they did not participate but because we could not reach parents for an interview. In this group of participants, (n=4) identified as first generation, (n=32) identified as second generation, and (n=14) identified as third (+) generation. Participants collectively were exposed to Spanish approximately (*M* = 29.32%, *SD* = 17.72) and English 71% of the time; see Table 3.0. Participants received popular snacks and $5.00 Amazon gift cards for their participation. All research procedures were

approved by the Institutional Review Board at the University of California, Irvine, at the time of the start of the study.

Procedures

The research procedures for study 3 were borrowed from studies 1 and 2 and were approved by the Institutional Review Board at the University of California, Irvine. Before meeting with participants, parents provided informed consent for their child's participation. Adolescents provided assent. All adolescents participated at their schools, during summer school, in afterschool programming, or on Zoom with a bilingual researcher familiar with collecting narrative language samples. Demographic information, such as age/grade, self-identified gender, language background, and the surveys were collected via Qualtrics. For this study, adolescents completed surveys about their perceptions of bilingualism and their motivation to learn Spanish, as well as questionnaires about their cumulative (age of first exposure to English) and current exposure to each language. Then, adolescents listened to *corridos* in Spanish and ballads in English, recounted narratives, and responded to application questions about the cultural values depicted in each *corrido* and ballad.

Language samples were collected in English and Spanish during the session. The Spanish *corrido* task was administered first; the Spanish test corrido followed the Spanish practice. The English ballad task followed: practice ballad, then test ballad. For the two conditions (Spanish and English), in both the practice and testing activities, each song and its lyrics were played using YouTube's "karaoke version." The participant was also provided with the lyrics printed on a paper. They were asked to follow along in the printed script or the YouTube lyrics as the song played.

Participants were asked to retell, in their own words, the narrative in the song and to respond to a set of comprehension questions. If they did not provide a response or responded

incorrectly to 1 of the three questions, the researcher retold the story to them in the language condition that was being elicited. The following comprehension questions were asked for each song and each language condition:

Adolescents were asked to recount narratives in the songs with the following questions:

1. Who is this song talking about?
2. What is the main idea/message of this song?
3. What concern or problem is the singer singing about?

Once participants recounted the narratives, three additional prompt questions were delivered. The first prompt provided a summary statement of the narrative within the *corrido,* followed by an incomplete “contingency” statement (“If the singer had/had not done X… then, what could have happened?”). The participant was asked to complete the contingency statement in a way that made sense with the narrative in the *corrido* or ballad. Like in Nippold et al. (2020), this prompt focused the participant's attention on the gist of the story, which provided context for the moral message or value statement.

For the second prompt, participants were asked if they agreed with the moral or value message of each *corrido*/ ballad and to indicate their answer: "yes," "no," or "unsure." After responding, the third prompt asked participants to explain their response to each moral message/ value statement: Why did they agree/disagree/ or were unsure? For each moral or value message, they were also asked, "Can you think of a situation in real life where the moral would apply?" and "Can you tell me anything else about the moral or the situation?"

Participants were allowed as much time as necessary to complete the entire task; each language task took approximately 20 minutes. Adolescents completed the activities in Spanish first, then in English. Each language condition was prompted in the respective language; that is,

the Spanish test condition had Spanish prompts, and the English condition had English prompts. See Appendix F for the order in which each language condition was delivered, and the prompts/questions for each corrido/ ballad can be found in Appendix G. The surveys and language sampling activities were completed within a 3-hour visit.

Measures

Language Experience Measure

The Bilingual Input-Output Survey (BIOS). Adolescent participants and some parents completed an adapted version of the BIOS (Peña et al., 2018) to quantify adolescent language exposure and use of English and Spanish. The adaptation increased the age range to include adolescents up to 17. Instead of only interviewing parents, adolescent participants self-reported year-by-year exposure and current daily exposure to Spanish and English. The original BIOS is a parent questionnaire about language use that constitutes part of the Bilingual English Spanish Assessment (BESA) (Peña et al., 2018). The BIOS describes when and in what context each child's two languages are used. The questionnaire has two parts: the BIOS-Home and the BIOS-School. The BIOS-Home is a survey in which parents report what language the child hears (input) and uses (output) (e.g., Spanish, English, or both Spanish and English) on an hour-by-hour basis during a typical weekday and weekend day, including who they are communicating with and what activity they are engaged in. In addition, the BIOS-Home asks parents to report when their child was first exposed to English and the nature of their language input and output from birth to the present. For this study, we only used the BIOS-Home (as reported by adolescent participants).

The age of first English exposure was calculated as the year the adolescent indicated that they were first exposed to English in their input. Current English and Spanish input and output were calculated using adolescent responses to determine how much English and

Spanish they hear and use. They are asked to report this information on an hour-by-hour basis for a typical week and a typical weekend. Although this measure has not been validated for this age group, these questionnaires are commonly used to understand bilingual context across the lifespan (Kašćelan et al., 2022; Paradis, 2010). We specifically asked adolescents to respond to the language exposure questionnaire because adolescents are shifting away from spending as much time with parents and thus are more likely to report the distribution of their language experiences more accurately (Comajoan-Colomé et al., 2023).

Language Attitude Surveys

The Perceptions of Bilingualism Scale (PoBs; Luk & Surrain, 2019) is a validated tool used to explore adult attitudes about bilingualism in the context of society at large. It is a survey of 10 questions in which each item is presented with a 6-point Likert scale, 1 (strongly disagree/muy en desacuerdo) to 6 (strongly agree/muy de acuerdo). This scale interrogates whether bilingualism is valuable in the context of U.S. society and whether it incurs personal benefits. A total scale score is derived by taking the mean of all the items; thus, an overall score of 4 would imply, on average, that a respondent "somewhat agrees" with the statements about the worth of bilingualism in the United States. The internal reliability of the PoBs in its intended use is (α = .86), which is considered reliable (Luk & Surrain, 2019; Taber, 2017). See Appendix B for the survey questions. Cronbach's alpha was used to measure the internal consistency of this tool with bilingual adolescents and is reported below.

Once the adolescent participant sample group completed the POB survey, its reliability was estimated using the coefficient alpha, reflecting the questionnaire's internal consistency. Regarding the adolescent sample, Cronbach's alpha coefficient of the 10-item questionnaire was .79, indicating good internal reliability (Hair et al., 2010).

Expectancy Value Theory: Language Motivation Survey (EVT: LMs; Nagles, 2021) is a survey that was adapted for the current study. In this survey, Nagles (2021) used the Expectancy Value Theory (EVT) to explore college students' motivation for continuing foreign language education. For this, they used confirmatory factor analysis (CFA), which assured the validity of the EVT model for their sample. The EVT model comprised the five EVT constructs: expectancy of success, attainment value, intrinsic value, utility value, and effort cost. The CFA revealed that the model fit the data well. The root mean square error of approximation (RMSEA) was 0.052, and the comparative fit index (CFI) was 0.979, both of which met the criteria of RMSEA < 0.06 and CFI > 0.95 cut-offs proposed by Brown (2006). The reliability of the survey was assessed via Cronbach's alpha of the EVT construct, L2 learning experience, and classroom Willingness to Communicate scales. See Appendix C for the survey items. Per Nagles, all reliability coefficients were in the acceptable to good range ($\alpha > .70$).

For the adapted questionnaire, 6 of the 22 questions were changed to reflect some participants' monolingual education learning environment. Three questions were made conditional rather than certain under the "Expectations of Success" construct. For example, the original questionnaire asked, "I am certain that I can master the content in the Spanish course I am taking this semester." and the adapted questionnaire asked, "If I was taking a Spanish class, I am certain that I could master the content in the Spanish course." Under the construct of "L2 Learning Experience," three more questions were adapted to reflect a home learning experience versus an in-classroom learning experience. For example, the question "I like the atmosphere of my Spanish class" was adapted to "I like the atmosphere where I learn Spanish." For a complete review of the adapted questions, see Appendix C. Additionally, the responses corresponding to the questions were also changed from "strongly disagree-strongly agree" to mimicking the question's line of inquiry. For example, the question that asks, "I like the atmosphere of where I learn Spanish," has a corresponding 6-point Likert scale of "really dislike

- really like." A total scale score will be derived by taking the mean of all the items; thus, an overall score of 4 would imply, on average, that a respondent is "somewhat motivated" to continue to learn Spanish.

For the EVT: LMs, item 14 responses under the "*Effort Cost*" construct were reverse coded due to negative wording. The reliability of the EVT: LM survey was estimated by the coefficient alpha, which reflects the questionnaire's internal consistency. Regarding the adolescent sample, Cronbach's alpha coefficient of the 22-item questionnaire was .90, indicating excellent internal reliability (Hair et al., 2010).

Language Measures in Spanish and English

All language measures (i.e., critical thinking language and language productivity/ complexity) were obtained from narratives produced by recounting stories and values depicted in *corridos* in Spanish and ballads in English. Using musical lyrics to collect adolescent language samples is an experimental approach like the structure used in using fables to document adolescents' use of the language of critical thinking and language complexity (Nippold et al., 2014; 2017a; 2017b; 2017 c; 2020). Using musical narratives is a unique way to collect language samples in that they can be culturally adapted to an adolescent's background. Additionally, the prompts for narrative language sampling can be tailored to elicit critical thinking language and complex language productions via application and contingency questions. The present study uses the narratives that adolescents heard and discussed after listening to two *corridos* in Spanish and two ballads in English to yield two narrative measures in each language: the language of critical thinking, language productivity, and complexity.

***Corridos* in Spanish and Ballads in English.**

- *Golpes de la Vida -Natanael Cano*
- *El Deportado - Los Terribles del Norte*

- *Feeling Good as Hell - Lizzo*
- *I Love Me -Demi Lovato*

Corridos, according to Merriam-Webster. (n.d.) are traditional Spanish ballads, lyrically and instrumentally composed in traditional Mexican style, and typically have lyrics that narrate a historical event about the struggle against oppression and injustice. Culturally, *corridos* are listened to across various Latinx communities during routine housekeeping activities, family, and community gatherings, and in more significant media events. Many Latinx adolescents grow up with substantial exposure to *corridos*; thus, familiarity is likely. For this study, we selected Spanish *corridos* from famous artists and English ballads.

To ensure their difficulty level was parallel, we counterbalanced the lyrical readability using the Flesch- Kincaid Readability measure (Flesch, 1948) and the Fernández-Huerta readability formula (Fernández-Huerta, 1959). Both readability tools are commonly used in assessing the readability of public health outreach publications and in school-age library science to select books adequate for each grade level (Gorrepati & Smith, 2021). Both tools measure and indicate how difficult a passage is to understand and what grade level of reading one needs to have to comprehend it. The Flesch-Kincaid Readability measure is specific to English readability and looks at the number of words per sentence and number of syllables per word to determine reading difficulty levels using the formula: Readability = 206.835 − 1.015 (Total words/total sentences) − 84.6 (Total syllables/total words). However, the last metric (number of syllables per word) is especially problematic in Spanish because it is not as strong of an indicator of Spanish readability. Thus, to measure the readability of the Spanish corrido, we employed the Fernández-Huerta readability formula (Fernández-Huerta, 1959). Fernández-Huerta created this formula to measure text readability in Spanish based on the Flesch-Kincaid Readability measure. The corrected Spanish formula for this measure is: readability= 206.84 − (0.6 × Total number of syllables) − (1.02 × Total number of words).

Results for both measures can be interpreted using the table, which details the scores corresponding to the grade level required to read the text, found in Appendix E. All the *corridos* and ballads generated readability scores within the 90-100 range, which corresponded with a 5th-grade reading level. Thus, the tasks are well within the reading ability of typically developing adolescents in the 6th-8th grades. Theoretically, using these tools ensures that differences in results are not about the differing readability levels of *corridos* but rather differences within the conditions. See Appendix F for a list of each *corrido/* ballad, the order in which they were delivered, their corresponding readability scores, and the line of narrative.

Transcription and Coding

Language of critical thinking.

To measure the use of critical thinking language in the responses, meta-cognitive language/terms (MC) were identified and coded. A count of the different types of meta-cognitive terms (MCd) was also obtained, as done by Nippold et al., (2017c, 2020). MCVs are verbs that describe the internal state, such as thoughts, feelings, and perceptions that the participants or others possess. Here, however, we chose to code not just individual verbs but also included adjectives and figurative language because in Spanish, *dichos* or idioms are often used to express thoughts, feelings, and perceptions, and they "reveal the world view or psychology of people" (Zuñiga, 1992). An adaptation of Nippold et al., (2017c) criteria was used to code MCs for this part of the study. The adapted rules are as follows:

Nippold et al., (2017c)	Adaptation

1. The verb must refer to an act of communicating, thinking, feeling, or perceiving (in the psychological sense) performed by a living or personified being. For example, to code the verb “saw” as an MCV, it must be used in a psychological sense (“I saw what he meant”) rather than a perceptual sense (“I saw the trees”).	The verb must refer to an adjective or act of communicating, thinking, feeling, or perceiving (in the psychological sense) performed by a living or personified being. For example, to code the verb “saw” as an MC, it must be used in a psychological sense (“I saw what he meant”) rather than a perceptual sense (“I saw the trees”).
2. The act must be performed directly by the living or personified being. For example, in "The cat terrified the mice," terrified is not an MCV because it is done to the mice rather than referring directly to their experience.	**The act or adjective must be about or done directly by the living or personified being.**
3. The verb must stand as metacognitive on its own. For example, "came to mind" is not an MCV because it is part of an idiom and requires the phrase "to mind" to indicate a mental event.	**The adjective or verb DOES NOT HAVE TO stand as a metacognitive term on its own.** For example, "came to mind" **WILL BE CODED AS an MC, EVEN IF i**t is part of an idiom and requires the phrase “to mind” to indicate a mental event.

Language complexity. The narratives adolescents produced using the *corridos* and ballads were analyzed using language sample analysis. These samples provide information about adolescents' productivity and use of complex language. In the present study, two narratives from the lyrics in *corridos* were transcribed for language sample analysis in Spanish (*Golpes de la Vida*- Natanael Cano and *El Deportado*- Los Terribles del Norte), and two narratives from the lyrics in ballads were transcribed for language sample analysis in English (*Good as Hell*- Lizzo and *I Love Me*- Demi Lovato). Narratives and application responses were audio-recorded and

transcribed by trained research staff using Systematic Analysis of Language Transcription (SALT; Miller, 2016) following the modified C-Unit rules and conventions specified in the SALT manual.

In line with previous research on narrative language production (Miller, 2016; Nippold et al., 2020; Pearson, 2022; Wallis et al., 2021), we conceptualized language complexity from participants' language transcripts using the following metrics: two measures of lexical productivity, (1) total number of words (NTW) and (2) number of different words (NDW); three measures of clausal density, (3) mean length of utterance in words (MLU-w) and (4) subordination index; and, finally, a measure of grammaticality, coded as (6) percent grammaticality. SALT software automatically generates counts for NTW, NDW, and MLU-w. Percent grammaticality was derived by dividing the number of total utterances by the number of grammatical utterances. Means and standard deviations for all language productivity and complexity metrics in Spanish and English are reported in Table 3.1. Scores were examined for normality, and all were determined to be normally distributed in each language (although there was borderline positive kurtosis in the Spanish subordination index).

Reliability

Research assistants from a speech and language therapy graduate program were trained to transcribe using the SALT conventions and to code language transcriptions using the codes mentioned above. Transcription and coding were conducted in stages to achieve reliability: In the first stage, Python Speech-to-Text was used to develop transcription scripts (1 per language condition) using Google Cloud speech-to-text V1. The script was written to achieve the following: a) Convert audio files from m4a to wav; b) Conduct speech recognition of wav files; c) Convert recognized speech to text d) Save conversion to one .txt file per audio file. To account for code-switching between conditions, Python was asked to conduct English and

Spanish speech-to-text conversion for all audio files from all three conditions (English, Spanish, Translanguage); therefore, there were two .txt files generated per audio file, an English conversion, and a Spanish conversion.

In the second phase, the research assistants were asked to independently 1) listen to the audio wav file while reading the Google Cloud speech-to-text V1 generated .txt file and 2) select the .txt file that Google Cloud speech-to-text V1 most accurately transcribed. 3) make transcription error edits directly to the .txt transcription file. In the third phase, research assistants completed agreement checks for 100% of the files. The research assistants paired up and checked each other's transcription edits from phase 2. They listened to audio files and added comments if there were disagreements. Disagreements in transcription were reviewed and resolved in conference. In the 4th phase, the primary investigator segmented and coded the language samples independently. In the 5th phase, the trained research assistants responded to agreement checks on 100% of the transcripts. Again, the research assistants added comments if they disagreed with the code(s). Then, code discrepancies were reviewed and resolved in a conference to achieve agreement and accuracy.

Analytical Plan

For Aim 1, we reported means and standard deviations for the parameters of the use of critical thinking language and for indices of language productivity and complexity in Spanish and English, see Table 3.1. We conducted a paired-sample *t*-test to evaluate cross-linguistic performance on all dependent variables, see Table 3.1. Additionally, we conducted zero-order correlations to explore the bivariate relationships among perceptions of bilingualism, motivation to learn Spanish, age cumulative exposure to English, current language experience, and narrative scores in both languages, see Table 3.2. For Aim 2 and 3, hierarchical linear regressions were conducted to assess the unique contribution of perceptions of bilingualism,

motivation to learn Spanish, age, cumulative exposure to English, and current English exposure on each language measure. For each regression analysis, age was entered into the model at block 1 (to control for developmental effects); Perceptions of bilingualism survey scores were entered into the model at block 2; The EVT motivation to learn Spanish survey scores were entered at block 3; cumulative English exposure was entered into the model at block 4; and current English exposure was entered into the model at block 5, see table 3.3, 3.4 and 3.5. Between each block, the model's goodness-of-fit was noted by evaluating the change in R-squared. A significant change in R-squared signaled that adding the independent variable at that block significantly improved the percentage of variance explained. No variables were removed from the analyses if the R-squared change statistic was insignificant, as we were interested in the variance explained by our independent variables collectively.

Results

Data Analysis

Computing Factor Score on the POBs with the Adolescent Group Sample

The factor score of the 10-item questionnaire was computed using Principal Components Analysis (PCA). Bartlett's sphericity test was significant, $\chi 2 = 133.156$, $p < .001$, indicating that there was sufficient common variance in the intercorrelation matrix for the analysis; the Kaiser-Meyer-Olkin value was .77, indicating adequate sampling for a factorable matrix (Kaiser, 1958). One factor was extracted, explaining 37.25% of the total variance. Table 1.1 summarizes the item loading results of the factor score.

Computing Factor Score on the EVT: LMs with the Adolescent Group Sample

The factor score of the 22-item questionnaire was computed using Principal Components Analysis (PCA). Bartlett's sphericity test was significant, $\chi 2 = 677.72$, $p < .001$,

indicating that there was sufficient common variance in the intercorrelation matrix for the analysis; the Kaiser-Meyer-Olkin value was .74, indicating adequate sampling for a factorable matrix (Kaiser, 1958). One factor was extracted, explaining 37.30% of the total variance. Table 1.2 summarizes the item loading results of the principal component analysis.

Aim 1: Describing adolescents' use of critical thinking language, language complexity, and productivity performance in Spanish and English

For our first aim, we sought to describe bilingual adolescents' performance in terms of the use of critical thinking language, language complexity, and productivity in Spanish and English**.** Performance on each parameter for the language of critical thinking (total metacognitive words and a number of different metacognitive words), language complexity (MLU-w and clausal density), language productivity (NTW, NDW) and percent grammaticality are graphed in Figures 3.0, 3.1, 3.2, and 3.3, respectively, with English performance plotted along the y-axis and Spanish performance plotted along the x-axis. Means and standard deviations for all narrative measures in Spanish and English are displayed in Table 3.1. Cross-linguistic performance on all dependent variables was evaluated using a paired-sample *t*-test. Significant cross-linguistic differences were found on all measures. Participants used an average of 20 more total metacognitive terms (SD = 26.40) in English than in Spanish (t (49) = -6.18, $p < .001$) and an average of 11 more different metacognitive terms (SD = 16.31) in English than Spanish (t (49) = -5.70, $p < .001$). Participants produced an average of 1.57 higher MLU-w (SD = 7.09) in English than Spanish (t (49) = -4.44, $p < .001$) and an average of .12 more dense clauses (SD = 16.31) in English than Spanish on clausal density (t (49) = -3.32, $p < .01$). Participants produces an average of 141 more words (SD = 197.92) in English than Spanish on number of total words (t (49) = -5.24, $p < .001$) and an average of 51 more words (SD = 16.31) in English than Spanish on number of different words (t (49) = -6.70, $p < .001$). Participants performed an average of 34.55% better (SD = 7.19) in English than in Spanish percent

grammaticality (t (49) = -8.52, p < .001). Visual inspection of Figures 3.0, 3.1, 3.2, and 3.3 illustrates that participants in our sample performed significantly better in English than in Spanish on these measures.

Bivariate correlations are displayed in Table 3.2, and significant relationships are flagged. Note that age, language attitudes, and exposure measures were significantly related to performance in Spanish, but only age and perceptions of bilingualism were significantly and positively related to English. For Spanish, age was positively and significantly related to performance in the number of different metacognitive words (r = .30, p < .05). Perceptions of bilingualism were positively and significantly correlated with percent grammaticality in Spanish (r = .28, p <.01). Motivation to learn Spanish was positively and significantly correlated with MLU-words (r = .41, p < .01), number of total words (r = .29, p < .05), number of different words (r = .37, p < .01) and percent grammaticality (r = .44, p < .01). Age of first exposure to English was significantly and positively correlated with the number of different metacognitive words (r = .30, p < .05), number of different words (r = .35, p < .05) and percent grammaticality (r = .40, p < .01) in Spanish. Finally, current exposure to English was negatively and significantly correlated with MLU-words (r = -.56, p < .01), clausal density (r = -.39, p < .01), number of total words (r = -.46, p < .01), number of different words (r = -.58, p < .01), and percentage of grammaticality (r = -.56, p < .01) in Spanish.

In English, age is significantly and positively related to the number of different metacognitive words (r = .29, p < .05), MLU-words (r = .35, p < .05), clausal density (r = .30, p < .05). Perceptions of bilingualism were significantly and positively correlated with MLU-words (r = .39, p < .01), clausal density (r = .28, p < .05) in English.

Aim 2: Predicting the use of critical thinking language in Spanish and English

Spanish critical thinking language

For the first aim of this study, we sought to explore how the perceptions of bilingualism, motivation to learn Spanish, and language experience relate to bilingual Latinx adolescents' use of critical thinking language (measured by the use of total metacognitive terms) in Spanish and English. Before initiating analyses, the central tendencies of all variables and adherence to assumptions for hierarchical linear regression were examined. All parameters for critical thinking language fell within normal limits for skewness and kurtosis, indicating normal distribution (Hair et al., 2010). Examination of histograms and QQ plots provided further evidence that our data had only minor departures from normality, which should not prevent us from continuing with parametric statistical methods. See Table 3.1 for a complete summary of the participant's performances regarding means and standard deviations of Spanish and English critical thinking parameters.

Age was controlled for consistency in all analyses, even when not significant in bivariate analysis. Language experience was conceptualized across two metrics: 1) cumulative English exposure or better understood as the age of first exposure to English, and 2) Current English exposure, which took English input (as measured by adolescents' reports of how much English and Spanish they hear in a typical week) and English output (as measured by adolescents' report of how much English and Spanish the child produces in a typical week) and averaged them. Recall that English input is the inverse of Spanish input, and English output is the inverse of Spanish output. This means that any report greater than 50% indicates more experience in English versus Spanish, and a number less than 50% indicates more experience in Spanish than in English. Table 3.3 features the results of a hierarchical linear regression model with the Spanish measures of critical thinking language as the dependent variable.

Regarding the use of total metacognitive terms in Spanish as predicted by language attitudes and language exposure, at block one, we entered age into the model to control for developmental effects. However, it did not account for any variance in Spanish total number of

metacognitive terms and was not significant, R^2 = .07 (adjusted R^2 = .05), *F* (1, 48) = 3.58, *p* = .064. At block two, we entered the Perceptions of bilingualism survey scores which accounted for 15% of additional variance in the prediction of total number of metacognitive terms signifying a significant addition of variance accounted for (adjusted R^2 = .11), *F* (1, 47) = 4.09, *p* < .05. At block three, we entered the EVT motivation to learn Spanish survey scores which did not account for any variance in Spanish total number of metacognitive terms, and was not significant, (adjusted R^2 = .13), *F* (1, 46) = 3.48, *p* = .157. At block four, we added cumulative English exposure to the model, which did not account for any variance in Spanish total number of metacognitive terms, and was not significant, (adjusted R^2 = .12), *F* (1, 45) = 2.67, *p* = .54. Finally, at block five we added current exposure to English to the model, which did not account for any variance in Spanish total number of metacognitive terms, and was not significant, R^2 = .19 (adjusted R^2 = .10), *F* (1, 44) = 2.11, *p* = .75. The resulting model with five independent variables was significant and accounted for approximately 15% of variability overall (adjusted R^2 = .11, *p* < .05) in adolescents' use of Spanish critical thinking language, with perceptions of bilingualism retaining individual significance. Thus, the more positive adolescent perceptions of bilingualism, the greater their use of metacognitive terms in Spanish.

Pertaining to the use of number of different metacognitive terms as predicted by language attitudes and language exposure, at block one, we entered age into the model to control for developmental effects, which accounted for approximately 9% of the variance in Spanish number of different metacognitive terms, indicating significant addition of variance, R^2 = .09 (adjusted R^2 = .07), *F* (1, 48) = 4.63, *p* < .05. At block two, we entered the Perceptions of bilingualism survey scores which did not account for additional variance in the prediction of the number of different metacognitive terms and was non-significant R^2 = .14 (adjusted ΔR^2 = .05), *F* (1, 47) = 3.84, *p* = .10. At block three, we entered the EVT motivation to learn Spanish survey scores which accounted for 9% of the variance in Spanish total number of metacognitive terms,

was significant, R^2 = .23 (adjusted Δ R^2 = .09), *F* (1, 46) = 4.54, *p* < .05. At block four we added cumulative English exposure to the model, which did not account for any variance in Spanish total number of metacognitive terms, and was not significant, R^2 = .26 (adjusted ΔR^2 = .03), *F* (1, 45) = 3.94, *p* = .18. Finally, at block 5 we added current exposure to English to the model, which did not account for any variance in Spanish number of different metacognitive terms, and was not significant, R^2 = .26 (adjusted R^2 = .001), *F* (1, 44) = 3.10, *p* = .78. The resulting model with five independent variables was significant and accounted for approximately 26% of variability overall (adjusted R^2 = .18, *p* < .05) in adolescents' use of diversified Spanish critical thinking language, with age and motivation to learn Spanish retaining individual significance. Thus, the older adolescents were, and the higher their reported motivation was, the greater their use of diverse metacognitive terms in Spanish.

English critical thinking language

The results of a hierarchical linear regression model with the English measures of critical thinking language as the dependent variable are featured in Table 3.3. Regarding the use of total metacognitive terms in English as predicted by language attitudes and language exposure, at block one, age did not significantly account for any variance R^2 = .05 (adjusted R^2 = .03), *F* (1, 48) = 2.32, *p* = .134. At block two, we entered the Perceptions of bilingualism survey scores which did not account for additional variance in the prediction of the total metacognitive terms in English and was non-significant R^2 = .05 (adjusted ΔR^2 = .01), *F* (1, 47) = 1.32, *p* = .56. At block three, we entered the EVT motivation to learn Spanish survey scores which did not account for additional variance in the prediction of the number of total metacognitive terms and was non-significant, R^2 = .06 (adjusted Δ R^2 = .01), *F* (1, 46) = 1.00, *p* = .28. At block four we added cumulative English exposure to the model, which did not account for any variance in English total number of metacognitive terms, and was not significant, R^2 = .11 (adjusted ΔR^2 = .04), *F* (1, 45) = 1.32, *p* = .40. Finally, at block 5 we added current exposure to English to the model,

which did not account for any variance in English total number of metacognitive terms, and was not significant, R^2 = .11 (adjusted R^2 = .00), *F* (1, 44) = 1.04, *p* = .28. The final model explained no significant variability in English total number of meta cognitive terms (adjusted R^2 = .00, *p* = .41). Thus, the language attitudes, cumulative exposure to English or proportion of time an adolescent spent hearing or using English (versus Spanish) was not significantly related to their total use of critical thinking language in English.

Pertaining to the use of number of different metacognitive terms in English as predicted by language attitudes and language exposure, at block one, age significantly accounted for 8% of the variance R^2 = .08 (adjusted R^2 = .06), *F* (1, 48) = 4.36, *p* <.05. At block two, we entered the Perceptions of bilingualism survey scores which did not account for additional variance in the prediction of the number of different metacognitive terms in English and was non-significant R^2 = .09 (adjusted ΔR^2 = .01), *F* (1, 47) = 2.36, *p* = .11. At block three, we entered the EVT motivation to learn Spanish survey scores which did not account for additional variance in the prediction of the number of different metacognitive terms and was non-significant, R^2 = .11 (adjusted ΔR^2 = .02), *F* (1, 46) = 1.98, *p* = .13. At block four we added cumulative English exposure to the model, which did not account for any variance in English number of different metacognitive terms, and was not significant, R^2 = .16 (adjusted ΔR^2 = .04), *F* (1, 45) = 2.13 *p* = .09. Finally, at block 5 we added current exposure to English to the model, which did not account for any variance in English number of different metacognitive terms, and was not significant, R^2 = .16 (adjusted ΔR^2 = .00), *F* (1, 44) = 1.66, *p* = .16. The final model explained 16% of the variability in English in the number of different meta cognitive terms (adjusted R^2 = .06, *p* = .16) with age holding individual significance. Thus, the language attitudes, cumulative exposure to English, or proportion of time an adolescent spent hearing or using English (versus Spanish) was not significantly related to their use of diversified critical thinking language.

However, age was significantly related to their use of diversified critical thinking language in English; the older adolescents were more likely to use more different metacognitive terms.

Aim 3: Predicting language complexity and productivity in Spanish and English

Spanish complexity and productivity

In this study's second aim, we examined the contributions of their perceptions of bilingualism, motivation to learn Spanish, and language experience to bilingual Latinx adolescents' language productivity and complexity in Spanish and English. Before executing any form of analysis, the central tendencies of all variables and adherence to assumptions for hierarchical linear regression were reviewed. All indices for language productivity and complexity fell within normal limits for skewness and kurtosis, indicating normal distribution (Bryne, 2010; Hair et al., 2010). Examination of histograms and QQ plots provided further evidence that our data had only small departures from normality, which should not prevent us from continuing with parametric statistical methods. See Table 3.1 for a complete summary of the participant's performances in terms of means and standard deviations of the parameters of Spanish and English complexity and productivity.

Regarding the adolescents' MLU-w in Spanish, as predicted by language attitudes and exposure, we entered age into the model to control for developmental effects at block one. However, it did not account for any variance in Spanish total number of metacognitive terms and was not significant, $R^2 = .07$ (adjusted $R^2 = .05$), F (1, 48) = 3.78, $p = .058$. At block two, we entered the Perceptions of bilingualism survey scores which did not account for any variance and were not significant, $R^2 = .12$ (adjusted $R^2 = .08$), F (1, 47) = 3.07, $p = .14$. At block three, we entered the EVT motivation to learn Spanish survey scores which accounted for 18% of the variance and was significant in predicting the total number of metacognitive terms in Spanish, $R^2 = .30$ (adjusted $R^2 = .25$), F (1, 46) = 6.49, $p < .001$. At block four, we added cumulative

English exposure to the model, which did not account for any variance and was not significant, R^2 = .33 (adjusted R^2 = .27), *F* (1, 45) = 5.47, *p* = .17. Finally, at block five we added current exposure to English to the model, which significantly accounted for 10% of the variance in predicting the total number of metacognitive terms in Spanish, R^2 = .42 (adjusted R^2 = .36), *F* (1, 44) = 6.44, *p* <.01 The resulting model with five independent variables was significant and accounted for approximately 42% of variability overall (adjusted R^2 = .36, *p* < .01) in adolescents' MLU-word in Spanish. Here, motivation to learn Spanish and current exposure retained significance. Thus, the motivation to learn Spanish and the current distribution of Spanish/English exposure predicted MLU-word in Spanish; the more Spanish they were exposed to during their day, the more extended utterances adolescents used in Spanish.

Pertaining to clausal density being predicted by language attitudes and language exposure, at block one, we entered age into the model to control for developmental effects, which did not significantly account any of the variance in predicting clausal density in Spanish, R^2 = .03 (adjusted R^2 = .01), *F* (1, 48) = 1.65, *p* = .20. At block two, we entered the Perceptions of bilingualism survey scores which also did not significantly account for additional variance in the prediction of Spanish clausal density R^2 = .06 (adjusted ΔR^2 = .03), *F* (1, 47) = 1.41, *p* = .28. At block three, we entered the EVT motivation to learn Spanish survey scores. This did not significantly contribute to the model, R^2 = .12 (adjusted ΔR^2 = .06), *F* (1, 46) = 2.11, *p* < .07. At block four we added cumulative English exposure to the model, which did not significantly account for any variance in Spanish clausal density R^2 = .14 (adjusted ΔR^2 = .02), *F* (1, 45) = 1.86, *p* = .30. Finally, at block five we added current exposure to English to the model, and it did not significantly account for any variance in the model, R^2 = .19 (adjusted R^2 = .05), *F* (1, 44) = 2.11, *p* = .10. The resulting model with five independent variables was not significant (adjusted R^2 = .10, *p* = .10) in adolescents' production of Spanish clausal density. Thus, language

attitudes and exposure do not appear to be related to the clausal density in adolescents' Spanish oral language.

To understand if the number of total Spanish words is predicted by language attitudes and language exposure, at block one, we entered age into the model, which did not significantly account for any variance in the model, R^2 = .02 (adjusted R^2 = .002), F (1, 48) = 1.11, p = .298. At block two, we entered the Perceptions of bilingualism survey scores also, which did not account for additional variance in the prediction of the number of total metacognitive terms and was non-significant R^2 = .02 (adjusted ΔR^2 = .000), F (1, 47) = .55, p = .910. At block three, we entered the EVT motivation to learn Spanish survey scores which significantly accounted for 14% of the variance in the Spanish total number of metacognitive terms, R^2 = .16 (adjusted ΔR^2 = .14), F (1, 46) = 2.94, p < .01. At block four we added cumulative English exposure to the model, which did not account for any variance in Spanish total number of metacognitive terms, and was not significant, R^2 = .20 (adjusted ΔR^2 = .04), F (1, 45) = 2.80, p = .147. Finally, at block five, we added current exposure to English to the model, which did not account for any variance in Spanish total number of metacognitive terms, and was not significant, R^2 = .26 (adjusted ΔR^2 = .06), F (1, 44) = 3.15, p = .059. The resulting model with five independent variables was significant and accounted for approximately 16% of variability overall (adjusted R^2 = .11, p < .01) in adolescents' use of the number of total words in Spanish and with motivation to learn Spanish retaining individual significance. Thus, the higher their reported motivation was, the greater their productivity of words in Spanish.

Pertaining to the use of a number of different words used in Spanish as predicted by language attitudes and language exposure, at block one, we entered age into the model to control for developmental effects, which did not significantly account for any variance in the model, R^2 = .03 (adjusted R^2 = .01), F (1, 48) = 1.68, p = .201. At block two, we entered the Perceptions of bilingualism survey scores, which also did not account for additional variance in

the prediction of the number of different words and was non-significant R^2 = .035 (adjusted ΔR^2 = .001), *F* (1, 47) = .852, *p* = .818. At block three, we entered motivation to learn Spanish, which significantly accounted for 22% of the variance in the use of the number of different words in Spanish, R^2 = .26 (adjusted Δ R^2 = .22), *F* (1, 46) = 5.26, *p* < .001. At block four, we added cumulative English exposure to the model, which significantly accounted for an additional 7% of variance in the use of the number of different words in Spanish, R^2 = .33 (adjusted ΔR^2 = .07), *F* (1, 45) = 5.45, *p* < .05. Finally, at block five we added current exposure to English to the model, which also significantly accounted for variance in the model, R^2 = .41 (adjusted ΔR^2 = .09), *F* (1, 44) = 6.18, *p* <.05 The resulting model with five independent variables was significant and accounted for approximately 41% of variability overall (adjusted R^2 = .35, *p* = .015) in adolescents' use of a number of different words in Spanish, with motivation to learn Spanish, cumulative, and current language exposure retaining significance. Thus, this indicates that motivation to learn Spanish and language exposure are directly related to using different Spanish words.

Pertaining to overall grammaticality in Spanish as predicted by language attitudes and language exposure, at block one, we entered age into the model to control for developmental effects, which did not significantly account for any variance in the model, R^2 = .02 (adjusted R^2 = -.005), *F* (1, 48) = .745, *p* = .392. At block two, we entered the Perceptions of bilingualism survey scores, which did not significantly account for additional variance in the prediction of overall grammaticality R^2 = .08 (adjusted ΔR^2 = .07), *F* (1, 47) = 2.11, *p* = .07. At block three, we entered motivation to learn Spanish which significantly accounted for 15% of the variance in the overall grammaticality in Spanish, R^2 = .24 (adjusted Δ R^2 = .15), *F* (1, 46) = 4.73, *p* < .01. At block four we added cumulative English exposure to the model, which significantly accounted for an additional 13% of variance in Spanish grammaticality, R^2 = .36 (adjusted ΔR^2 = .13), *F* (1, 45) = 6.43, *p* < .01. Finally, at block five we added current exposure to English to the model,

which did not significantly account for additional variance in the model, R^2 = .40 (adjusted ΔR^2 = .04), *F* (1, 44) = 5.89, *p* =.10 The resulting model with five independent variables was significant and accounted for approximately 40% of variability overall (adjusted R^2 = .33, *p* < .01) in adolescents' overall grammaticality in Spanish, with motivation to learn Spanish and cumulative language exposure retaining significance. Thus, this indicates that motivation to learn Spanish and cumulative language exposure are directly related to the adolescent's overall grammaticality in Spanish.

English productivity and complexity

The results of a hierarchical linear regression model with the English measures of language productivity and complexity as the dependent variables are featured in Tables 3.4 and 3.5. Regarding MLU-words in English being predicted by language attitudes and language exposure, at block one, we entered age into the model to control for developmental effects, which significantly accounted for 12% of the variance R^2 = .12 (adjusted R^2 = .10), *F* (1, 48) = 6.52, *p* <.05. At block two, we entered the Perceptions of bilingualism survey scores which also accounted for an additional 10% of the variance in the prediction of MLU-w in English and was significant R^2 = .22 (adjusted ΔR^2 = .10), *F* (1, 47) = 6.59, *p* < .05. At block three, we entered motivation to learn Spanish which did not account for additional variance in the prediction MLU-word in English and was non-significant, R^2 = .22 (adjusted Δ R^2 = .001), *F* (1, 46) = 4.32, *p* = .837. At block four, we added cumulative English exposure to the model, which did not account for any variance in English MLU-w, and was not significant, R^2 = .24 (adjusted ΔR^2 = .02), *F* (1, 45) = 3.54, *p* = .285. Finally, at block five, we added current exposure to English to the model, which did not account for any variance in English total number of metacognitive terms, and was not significant, R^2 = .25 (adjusted R^2 = .01), *F* (1, 44) = 2.94, *p* = .242. The final model was significant for explaining 22% of the variability in English MLU words (adjusted R^2 = .19, *p* <

.05). Thus, chronological age and perceptions of bilingualism are positively and significantly related to bilingual adolescents' MLU words in English.

Pertaining to clausal density in English, as predicted by language attitudes and language exposure, at block one, age significantly accounted for 9% of the variance R^2 = .09 (adjusted R^2 = .07), *F* (1, 48) = 4.81, *p* <.05. At block two, we entered the Perceptions of bilingualism survey scores which did not account for additional variance in the prediction of clausal density in English and was non-significant R^2 = .14 (adjusted ΔR^2 = .05), *F* (1, 47) = 3.70, *p* = .125. At block three, we entered motivation to learn Spanish, which did not account for additional variance in the prediction of the number of different metacognitive terms and was non-significant, R^2 = .116 (adjusted ΔR^2 = .02), *F* (1, 46) = 2.82, *p* = .311. At block four, we added cumulative English exposure to the model, which did not account for any variance in English clausal density, and was not significant, R^2 = .17 (adjusted ΔR^2 = .01), *F* (1, 45) = 2.25 *p* = .434. Finally, at block five, we added current exposure to English to the model, which also did not account for any variance in English clausal density, and was not significant, R^2 = .19 (adjusted ΔR^2 = .02), *F* (1, 44) = 2.07, *p* = .262. The final model explained 9% of the variability in English in clausal density (adjusted R^2 = .07, *p* <.05), with age holding individual significance. Thus, the language attitudes, cumulative exposure to English, or current language exposure were not significantly related to clausal density in English. However, age was significantly related to clausal density; older adolescents were more likely to produce more clauses in English.

Pertaining to the use of a number of total words in English as predicted by language attitudes and language exposure, at block one, age did not significantly account for any of the variance R^2 = .03 (adjusted R^2 = .01), *F* (1, 48) = 1.71, *p* = .197. At block two, we entered the Perceptions of bilingualism survey scores, which also did not account for additional variance in the prediction of the number of total words in English and was non-significant R^2 = .03 (adjusted ΔR^2 = .00), *F* (1, 47) = .839, *p* = .999. At block three, we entered the motivation to learn

Spanish, which also did not account for additional variance in the prediction of the number of total words and was non-significant, R^2 = .05 (adjusted Δ R^2 = .02), *F* (1, 46) = .797, *p* = .399. At block four, we added cumulative English exposure to the model, which did not account for any variance and was not significant, R^2 = .09 (adjusted ΔR^2 = .04), *F* (1, 45) = 1.09 *p* = .171. Finally, at block five, we added current exposure to English to the model, and it was not significant, R^2 = .09 (adjusted ΔR^2 = .00), *F* (1, 44) = .894, *p* = .680. The final model did not explain any of the variability in English in the number of total words (adjusted R^2 = -.01, *p* = .680). Thus, the language attitudes and exposure were not significantly related to their use of the number of total words in English.

Pertaining to the use of a number of different words in English as predicted by language attitudes and language exposure, at block one, age did not significantly account for any of the variance R^2 = .06 (adjusted R^2 = .04), *F* (1, 48) = 3.06, *p* = .086. At block two, we entered the Perceptions of bilingualism survey scores, which also did not account for additional variance in the prediction of the number of different words in English and was non-significant R^2 = .06 (adjusted ΔR^2 = .00), *F* (1, 47) = 1.50, *p* = .951. At block three, we entered the motivation to learn Spanish, which also did not account for additional variance in the prediction of the number of different words and was non-significant, R^2 = .08 (adjusted Δ R^2 = .02), *F* (1, 46) = 1.34, *p* = .320. At block four, we added cumulative English exposure to the model, which did not account for any variance and was not significant, R^2 = .11 (adjusted ΔR^2 = .03), *F* (1, 45) = 1.36 *p* = .243. Finally, at block five, we added current exposure to English to the model, and it was not significant, R^2 = .11 (adjusted ΔR^2 = .00), *F* (1, 44) = 1.08, *p* = .762. The final model did not explain any of the variability in English in the number of different words (adjusted R^2 = .11, *p* = .762). Thus, the language attitudes and exposure were not significantly related to their use of the number of different words in English.

Regarding overall English grammaticality, as predicted by language attitudes and language exposure, at block one, age did not significantly account for any of the variance R^2 = .03 (adjusted R^2 = .01), F (1, 48) = 1.40, p = .243. At block two, we entered the Perceptions of bilingualism survey scores, which also did not account for additional variance in the prediction of overall English grammaticality and was non-significant R^2 = .03 (adjusted ΔR^2 = .00), F (1, 47) = .750, p = .722. At block three, we entered the motivation to learn Spanish, which also did not account for additional variance in the prediction of overall English grammaticality and was non-significant, R^2 = .04 (adjusted Δ R^2 = .01), F (1, 46) = .607, p = .562. At block four, we added cumulative English exposure to the model, which did not account for any variance and was not significant, R^2 = .07 (adjusted ΔR^2 = .03), F (1, 45) = .795, p = .252. Finally, at block five we added current exposure to English to the model and was not significant, R^2 = .12 (adjusted ΔR^2 = .06), F (1, 44) = .123, p = .100. The final model did not explain any of the variability in overall English grammaticality (adjusted R^2 = .02, p = .100); that is, language attitudes and language exposure were not significantly related to the overall English grammaticality in the oral language of Latinx bilingual adolescents.

Discussion

In the U.S., Latinx adolescents negotiate their language choices within a sociolinguistic context where standardized American English is valued above their home languages (García, 2009). Both cross-sectional (Kohnert, 2010) and longitudinal studies (Oppenheim et al., 2020) have documented that there is a shift from greater home language skills to greater English language skills for school-age bilinguals. A recent cross-sectional study examined how bilingual adolescents' language experience impacted their narrative language outcomes in Spanish and English and described experiential sources of variation in bilingual adolescents' performance in Spanish and English; here, too, the results demonstrated the same shift from greater home language skills to greater English skills. (Perez et al., 2023). Additionally, this study found that

adolescents' current language experience accounted for a small amount of the variance in narrative language outcomes (micro and macrostructure) in Spanish, but most of the variance was unexplained. One hypothesis was that language attitudes and motivation to learn Spanish may contribute to language outcomes. However, how and why this shift occurs for Latinx bilingual adolescents' language remains unclear. Thus, the current study seeks to explore other sources of variance that explain Spanish and English language outcomes for Latinx bilingual adolescents further and to understand better how bilingual adolescents' language attitudes and language experience contribute to their language outcomes in Spanish and English.

This current study is comprised of three aims: First, to describe bilingual adolescents' use of critical thinking language, language complexity, and productivity in English and Spanish; Second to examine how the perception of bilingualism, motivation to learn Spanish, and language experience relate to bilingual adolescents' use of critical thinking language; and third, to examine how the perception of bilingualism, motivation to learn Spanish and language experience relate to bilingual adolescents' language productivity and complexity. All outcomes were measured in both English and Spanish**.**

Concerning Aim 1, we found highly variable scores across English and Spanish. This is evidenced by the wide range of scores and large standard deviations. As a group, adolescents used more and different terms of critical thinking. The complexity and productivity index scores indicated they were more complex and productive in English than in Spanish. This pattern could indicate that using critical language in the telling and discussing of a story was more demanding in Spanish than in English, even though participants generated complete and productive sentences in both languages. The clustering of data at the top of Figures 3.0-3.3 shows that most adolescents scored better in English than Spanish in all measures of language used for this study. These results are consistent with prior work on bilingualism that has reported a shift

towards English language use as bilinguals enter school and as they continue English-centered academic instruction (Kohnert, 2010), they show a cross-over to English language proficiency in adolescence (Gámez, 2015; Perez et al., 2023; Tran, 2010).

Regarding Aim 2, we found highly variable use of critical thinking language across both English and Spanish, as indicated by the wide range of scores and large standard deviations. Our measurement of language attitudes and experience was limited in that the tools were all originally intended for other age groups and adapted for use with adolescents. Despite this limitation, our results yielded some preliminary findings that suggest a possible relationship between age, language attitudes, and the use of critical thinking language in Spanish. We found that age and perceptions of bilingualism (i.e., how adolescents feel about being bilingual in the context of the U.S.) explained approximately 11-15% of the variability in the total use of critical thinking language. As Latinx adolescents age and report having more positive perceptions of bilingualism, their use of critical thinking language in Spanish increases. Age, their perceptions of bilingualism, and their motivation to learn Spanish explained 18-26% of variability regarding the diversity of their critical thinking language. That is, as adolescents get older, they report more positive perceptions of bilingualism and report having greater motivation to learn Spanish; the diversity of the type of critical thinking language also increases. When we examined a parallel relationship in critical thinking language in English, we did not see a similar association between language attitudes and critical thinking language scores. When predicting total critical thinking language in English, neither age, language attitudes, nor experience were related to outcome scores. Regarding their diversified use of critical thinking language in English, only age was significantly related to adolescents' diversity of critical thinking language in English.

Language attitudes and experience may be less necessary for English language performance as bilinguals get older because of their hegemonic status in the U.S. context. After many years of academic instruction and American socialization, Latinx bilingual adolescents

may have already been indoctrinated into associating English with social and professional status. Thus, attitudes toward language reinforce its practice and use, just as indicated by the Input-Proficiency-Cycle theory (Pearson, 2007). The results here align with prior work demonstrating that experience is highly linked to performance in young bilinguals; however, as children approach the 3rd grade, experience predicts less variance in language performance (Bedore et al., 2012). Our results also support prior findings showing that Spanish language outcomes are more closely associated with current language experience than English outcomes, particularly in school-age (Bedore et al., 2012; Bedore et al., 2016) and adolescent bilinguals (Perez et al., 2023) in the U.S. context.

Similarly, in Aim 3, we observed that when we explored the contribution of language attitudes and language experience on language productivity and complexity, English parameters of language complexity (clausal density, grammaticality) and productivity (i.e., NTW, NDW) were unrelated to the experiential variables reported by adolescents. For English, only chronological age and perceptions of bilingualism appeared to be positively correlated with MLU-w and accounted for 19% of the variability in the model. For clausal density, only age is positively related to the increase in clauses per utterance and accounted for 7-9% of the overall variance in the model.

Other findings from Aim 2 indicated that Spanish measures of language productivity and complexity, age, language attitudes, and language exposure all appeared to relate differently per index. That is, for Spanish parameters of language complexity (MLU-w, clausal density, grammaticality), both MLU-w and overall grammaticality were positively related to chronological age, perceptions of bilingualism, and motivation to learn Spanish. The model predicting Spanish MLU words (age, perceptions of bilingualism, motivation to learn Spanish) accounted for 36-42% of the variance. Overall grammaticality in Spanish was predicted by age, perceptions of bilingualism, motivation to learn Spanish, and cumulative language exposure (i.e., age of first

exposure to English) and accounted for 33-49% of the variance in the model. Age, language attitudes, or exposure did not significantly correlate to clausal density.

Regarding Spanish language productivity (i.e., NTW, NDW) age, perceptions of bilingualism and motivation to learn Spanish predicted the number of total words used by bilingual Latinx adolescents and accounted for 11-16% of the variance in the model. For the number of different words used, the model (age, perceptions of bilingualism, motivation to learn Spanish, cumulative language exposure, and current language exposure) accounted for 35-41% of the variance. Recall that current language exposure refers to the amount of time adolescents report to spend hearing and using English (versus Spanish) during a typical week. Specifically, this finding suggests that the older adolescents are, the more positively they perceive bilingualism, the more motivated they are to learn Spanish, and the more time an adolescent spends hearing/speaking in Spanish, the more they will show lexical diversity in their Spanish. This finding suggests the various factors that contribute to home language development as maturity, and language attitudes and exposure all play essential roles in Latinx adolescents taking up their home language even in the face of adverse racio-linguistic broader social contexts.

Our results suggest that overall, Latinx adolescents with more positive attitudes toward multilingualism have greater and more diverse mastery of Spanish. This suggests that they are also more apt to use Spanish in their day-to-day communication and, thus, are more likely to demonstrate more word-level diversity and overall greater grammaticality. Regarding English, as posited in Perez et al. (2023), we cautiously take this to suggest that English skills emerge in U.S. educational contexts irrespective of how much non-English language an adolescent is exposed to or chooses to use; again, speaking to the hegemonic status of English and the devaluement of home languages in the broader social context. However, none of these results should be interpreted as causal.

Future research should explore additional factors to explain the heterogeneity in bilinguals' overall language skills. Longitudinal and qualitative work is needed to unpack the effects of attitudes toward bilingualism (Sicam & Lucas, 2016) as influenced by family and cultural contributions and academic linguistic environments on their language skills over time.

Conclusion

Our results exemplify bilingual Latinx adolescents' use of critical thinking language, language productivity, and complexity relating to their language attitudes and language experience. As a group, Latinx adolescents demonstrated more word-level diversity. They were more complex, productive, and grammatical in English than in Spanish, as indicated by their critical thinking language, language complexity, and productivity scores. Also, note that our participants demonstrated high individual variability in both languages, as evidenced by the wide range of scores in Spanish and English in all measures of critical thinking, complexity, and productivity. Exploring adolescents' language skills cross-linguistically revealed some slight but significant differences in the interpretive narrative task (discussing *Corridos* & Ballads) that appeared to favor English. This again aligns with prior work on bilingualism that has reported a shift towards English language use as bilinguals enter school (Kohnert, 2010) and shows a cross-over to greater English language proficiency in adolescence (Gámez, 2015; Tran, 2010).

Our results also yielded significant findings, mainly regarding language attitudes' role in how adolescents wage their language skills to express critical thinking while using diverse, complex, and grammatical productions in Spanish. The proportion of variance we could explain using experiential variables was modest, consistent with prior findings on the Spanish outcomes of bilingual adolescents (Perez et al., 2023). Theoretically, our results lend support to the Input-proficiency-use cycle (Pearson, 2007) of bilingual language acquisition, which suggests that language use and proficiency are a result of language attitudes that exist on a self-reinforcing

cycle; language attitudes elicit language use preferences, which prompt specific language interactions and thus increase practice and proficiency, ultimately reinforcing language attitudes. In this study, we found that language attitudes were mostly predictive of Spanish language outcomes and that language exposure mattered regarding diversifying and grammatically mastering the language. In terms of the input-proficiency-use cycle, this suggests that the continued internalization of Spanish requires positive attitudes and motivation to learn Spanish because this will breed more intentionality in taking opportunities to hear and use Spanish. Language prestige, community perceptions, and other experiential opportunities in school and peer-related exposure may be worth exploring, particularly among adolescents who are not embedded in their cultural communities and may be more acutely aware of social pressures to "fit in" with their peers (Laursen & Veenstra, 2021).

Regarding language exposure, these findings showed that bilingual Latinx English language skills do not appear to be negatively impacted by the amount of Spanish exposure they receive. Bilingual Latinx adolescents can engage in critical thinking tasks and use complex language, consistent with prior literature examining the same adolescent skills in English only (Nippold et al., 2017c; Nippold et al.,2020; Wallis et al., 2021). Noticeably, bilingual adolescents' critical language skills, language complexity, and productivity in English were not negatively impacted by their Spanish experience; instead, Spanish is additive in nature in that bilingual adolescents can engage in these conversations in both languages.

Clinical Implications

The present study explores the relationship between language attitudes, language exposure, and the use of critical thinking language, language complexity, and production outcomes. Results pose clinical implications for both educators and speech and language therapists who work with Latinx bilingual adolescents with and without language and

communication disabilities. Our findings suggest that supporting the development of positive heritage language attitudes and adolescents' hearing and using Spanish is essential, particularly in supporting language learning. Latinx adolescents with language and communication disabilities are often left out of the opportunity to learn their heritage language and participate in the cultural-linguistic practices of their community. Historically, parents of bilinguals with language and communication disabilities have been advised to stop speaking the home language and prioritize English learning (Guitierrez-Clellen, 1999). This misinformation is violent and harmful as it can further isolate disabled bilingual adolescents from their cultural-linguistic communities, which are a paramount source of identity development (Oh & Fuligni, 2010; Phinney et al., 2001).

Notably, we reproduced the finding that hearing and using more Spanish (and less English) had no relationship to our participants' English language outcomes (Perez et al., 2023). Thus, our results suggest that bilingual Latinx adolescents can be given opportunities to hear and use their heritage language without compromising their English use of critical thinking language and overall language complexity and productivity skills.

Opportunities to hear and use Spanish are even more paramount for Latinx adolescents with language and communication disabilities, as they will likely need more exposure to Spanish and cultural narratives than a neurotypical peer to acquire heritage language skills (Smolander et al., 2020). Adopting these clinical implications will improve culturally sensitive pedagogy and clinical praxis. It offers forward movement toward meeting the educational needs of this demographic.

Limitations

Our findings should be interpreted considering several limitations. One of the significant limitations of this study is that these measures of critical thinking and language production outcomes are not comprehensive. Instead, they are cursory measures of said skills. A deeper

look into the use of critical thinking language might be better reflected in evaluating the content of adolescents' ideas. However, this study does not describe critical thinking skills or language production outcomes comprehensively. Instead, it seeks to explore how language perceptions and motivation play a role in the language outcomes of Latinx bilingual adolescents. Secondly, this study is also limited in that our pool of participants is small, so generalizability may not be achievable. It should also be noted that this study does not reflect the many varieties of Spanish (i.e., Caribbean Spanish) and other Indigenous languages represented in the Latinx community. The adolescents in this study primarily used a variation of Spanish that is more closely aligned with "Chicano Spanish" (Mexican-American Spanish). Many Latinx adolescents speak heritage languages that are not Spanish. Thus, these results should be interpreted with the understanding that it does not reflect the experiences of all Latinx bilingual adolescents. Finally, the pool of participants in this study might present as two nested groups given that they will come from different instructional settings: language additive (e.g., dual language instruction) and language subtractive (e.g., English only instruction) settings.

In traditional U.S. educational institutions, the linguistic, ideological landscape has a pervasive deficit-based orientation that is aggressively imposed on Latinx bilingual adolescents. Many violent assumptions have been born of these deficit ideologies and have framed Latinx adolescents as culturally and linguistically "impoverished" (Lewis, 1959) and "deprived" (Bereiter & Engelmann, 1966). Schools are one of the many sites where racialized adolescents experience overt and subverted materialization of these racist ideologies. Overtly, Latinx adolescents are indoctrinated to change their home language practices in favor of "standardized" English. In more subverted and "liberal" ways, Latinx adolescents are told that their home practices are respectable and should be developed, just not in academic settings where only "grammatical and formal" language is acceptable for academic and professional tasks such as "formal" writing and speaking (Love-Nichols, 2018). This narrative assert that languages all have "equal standing," yet the underlying message is still deficit-based in that home languages are inappropriate for academic and professional contexts. Upon internalization, both lines of discourse have lasting effects that color Latinx adolescents' academic achievement (Lei, 2003), educational experience (Skiba et al., 2011), and sense of self (Alim, 2004).

Alternatively, sociolinguists have debunked deficit ideology and provided ample demonstrations of the complex cultural-linguistic environments in which racialized children are developing. This dissertation is written with an attempt to add to the body of literature that documents the linguistic assets that Latinx adolescents hold and wield as they navigate the various institutions that position them as culturally and linguistically inferior. In other words, and the words of Chicana feminist writer Gloria Anzaldúa, the studies in this dissertation are intended “to record what others erase when I (we) speak, to rewrite the stories others have miswritten about me, about you " (Anzaldúa & Moraga, 2003).

This dissertation is comprised of three exploratory studies that center the language experiences of Latinx (Spanish- English) bilingual adolescents by 1) highlighting their

perceptions about bilingualism and their motivations to learn their home language-Spanish, 2) examining their language of critical thinking and language complexity when they are interpreting culturally relevant narratives (*Corridos*- Mexican ballads) in "closed" v. "open" language conditions and by, 3) exploring the association of their language attitudes and language exposure to their language outcomes. Bilingual Latinx adolescents are unique because they navigate a complex developmental stage characterized by the pursuit of parental independence and an increased desire for approximation and acceptance of peer groups. All-the-while they are also navigating social-political contexts in which they are experiencing racialization for being Latinx and having different language practices than their majoritized monolingual peers. Understanding how these developmental and identity intersections manifest in language practices is necessary for those who work with this demographic and is an essential addition to various fields that use child language development literature to inform their praxis.

Study one examined how Latinx bilingual adolescents perceive bilingualism and to understand the nature of their motivations to continue to learn their heritage language. This first study asks the following questions. a) How do the language perceptions of Spanish/ English bilingual adolescents from a language additive school model (dual immersion program) differ from the perceptions of students from a subtractive language school model (English-only program)? b) How do the language learning motivations of Spanish/ English bilingual adolescents from a language additive school model differ from those of students from a subtractive language school model? c) To what extent do adolescent language perceptions and language exposure relate to motivational perceptions?

Study two uses an alternative narrative, a *corrido* (Mexican ballad), which is culturally and linguistically familiar, to see how Latinx bilingual adolescents' express language of critical thinking (metacognitive language) and language production across both of their languages (Spanish- English) and when they translanguage. This study seeks to: a) Describe bilinguals'

critical thinking language in Spanish and English and when they translanguage. b) Describe bilinguals' language complexity and productivity outcomes in Spanish and English and when they are translanguage. c) Describe the similarities and differences that emerge in meta-cognitive language and language production outcomes when talking about *corridos* in language-restrictive conditions (i.e., Spanish or English) or open language conditions (i.e., translanguaging).

Study three ties the last two studies together to explore how perceptions of bilingualism and heritage language learning motivation are related to the use of critical thinking language and language production outcomes of Latinx bilingual adolescents. This study had two aims: a) To explore how the perceptions of bilingualism, motivation to learn Spanish, and language experience relate to bilingual Latinx adolescents' use of critical thinking language in Spanish and English. b) To explore how the perceptions of bilingualism, motivation to learn Spanish, and language experience relate to bilingual Latinx adolescents' language productivity and complexity in Spanish and English.

Study 1 results indicated that Latinx adolescents do not demonstrate a difference in their perceptions of bilingualism or motivation to learn Spanish between groups who attend a dual immersion language additive school and those who attend an English language restrictive school. Perceptions of bilingualism and language exposure are significant predictors of Spanish learning motivation, while the school language model was not. Living in multilingual communities where exposure is constant and multilingualism is robust may be a protective factor for adolescents' perceptions of bilingualism and, thus, motivation to learn their heritage language.

For study two, the findings revealed significant differences in the use of metacognitive language, which was more pronounced in translanguaging and English conditions than in

Spanish. Adolescents demonstrated higher levels of language complexity and productivity in the translanguaging condition than monolingual (Spanish or English) conditions, suggesting that open language environments and culturally relevant narratives facilitate richer linguistic output and deeper engagement with critical thinking. There was also an effect of age that showed that older children outperformed younger children in these various features of language.

Finally, study-three findings highlighted a significant variance in language outcomes influenced by participants' language attitudes and motivation to learn Spanish. Perceptions of bilingualism and motivation to learn Spanish were associated with higher language productivity and complexity in Spanish. However, these factors did not significantly impact English language outcomes, suggesting that the dominant language's pervasive influence might mitigate the effects of individual attitudes and motivations. The study also noted developmental trends, with older adolescents demonstrating more sophisticated language outcomes, possibly reflecting greater linguistic maturity.

Educational & Clinical Implications

Taken together, these three studies underscore the integral role of positive language attitudes, motivation, and the supportive influence of family, educators, and community in the bilingual development of Latinx adolescents. It reveals that regardless of the educational model in which they matriculate, Latinx youth desire to learn and maintain their heritage language, which is propelled by their language experiences and the linguistic environments they are exposed to inside and outside of the classroom. This work also emphasizes the effectiveness of translanguaging frameworks and culturally relevant materials, such as *Corridos*, in eliciting critical thinking and complex and productive language among these adolescents. Allowing students to draw on their entire linguistic repertoire facilitates their learning, allows for deeper engagement, and significantly benefits their meta-cognitive and linguistic development. Beyond

allowing students to access all forms of meaning-making, as educators and clinicians, we must think beyond simply "accepting and honoring" diverse communication practices. We need to recognize them as complex and intellectual tools that mediate learning and communication; thus, they are academic and formal (Nasir & Hand, 2006).

Using culturally significant narratives and tools further amplifies these benefits. Furthermore, it advocates for educational practices that view bilingualism as an asset rather than a deficit, urging educators and speech and language therapists to cultivate educational environments that honor and promote the linguistic diversity of Latinx students. Such approaches should leverage the intrinsic and extrinsic motivations for language learning, recognizing the crucial influence of positive bilingual perceptions and the linguistic resources Latinx adolescents bring into their educational setting. By doing so, it is possible to foster more inclusive educational experiences that support bilingual Latinx students' identities and equitable outcomes, thus enriching their learning experiences and promoting their bilingual development.

Future Directions

This dissertation consisted of a small pool of Latinx adolescents from Southern California. Extending this work to other regions of the country, where cultural-linguistic diversity is less prevalent, could shed light on other ways Latinx adolescents develop language perceptions and motivation to learn their heritage language(s). Additionally, this group of participants included children with varying disabilities; however, based on IRB regulations, we could not ask students what disabilities they experience or how it is supported on school campuses. Latinx adolescents with disabilities are often left out or unrecognized in language research, yet learning about their language attitudes, practices, and experiences is necessary for the continued pursuit of linguistic and disability justice.

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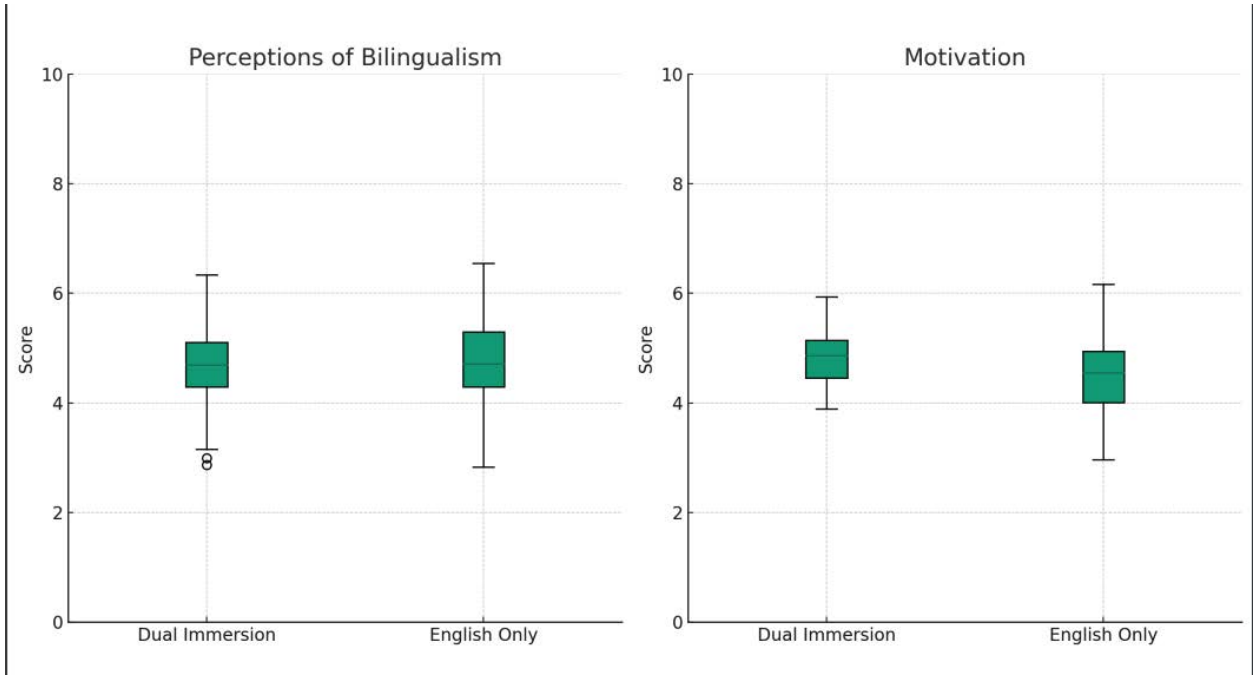
FIGURES & TABLES, STUDY 1

Figures

Figure 1.0.

Adolescent Language Attitudes: Perceptions & Motivation



TABLES

Table 1.0.

Demographics Information about Participants.

	(*n* = 51)						
	Dual Immersion (Language Additive) (*n* = 24)		English Only Instruction (Subtractive Language Model) (*n* = 27)				
	Mean (SD)	Range	Mean (SD)	Range	*t* (1, 49)	*p*	Cohen's *d*
Age (in years; months)	11.67 (1.00)	10-13 years	13.70 (2.14)	10-17 years			
Age of 1st English Experience (in years)	1.71 (2.33)	0-7 years	1.56 (2.36)	0-9 years			
Current English Input (% weekly)	61.34% (16.35)	7.29-86.75%	74.64% (14.00)	42.85-100%			

Current English Output (% weekly)	65.59% (19.37)	7.29-100.00%	79.17% (17.82)	40.99-100.00%			
Current English Total (% weekly)	63.47% (17.55)	7.29-90.86%	76.90% (15.22)	43.90-100.00%	-2.92	.005	0.82
Current Spanish Input (% weekly)	38.65% (16.35)	13.24-92.70%	25.35% (14.00)	0.00-57.14%			
Current Spanish Output (% weekly)	34.40% (19.37)	0.00-92.70%	20.82% (17.82)	0.00-59.00%			
Current Spanish Total (% weekly)	36.52% (17.55)	9.13-92.70%	23.09% (15.22)	0.00-56.09%	-2.92	.005	0.82
Perceptions of Bilingualism	4.70 (.61)	3.6-6.0	4.69 (.73)	2.8-5.70	-.02	.984	0.67
Motivation	4.81 (.51)	4.04-5.90	4.55 (.65)	2.63-5.50	-1.61	.115	0.59

Table 1.1.

Principal Component Analysis for the Perceptions of Bilingualism survey.

Component	Initial Eigenvalues	% of Variance	Cumulative %
1	3.726	37.255	37.255
2	1.357	13.569	50.825
3	1.103	11.029	61.854

Note: Only components with eigenvalues over 1 are displayed.

Table 1.2.

Principal Component Analysis for the Expectancy- Value- motivation survey.

Component	Initial Eigenvalues	% of Variance	Cumulative %
1	10.506	37.295	37.295
2	3.424	12.153	49.448
3	2.985	10.594	60.042

Note: Only components with eigenvalues over 1 are displayed.

Table 1.3.

Model Summaries of Regressions Predicting Motivation to Learn Spanish.

Variable	β	R^2	R^2 change	*t*	95% Confidence Interval
Step 1		.21	.21***		
PoBs	.46			3.6	.19 - .68
Step 2		.41	.20***		
PoBs	.35			3.21	.13 - .56
Average English in/output	-.46			-4.01	-.04 - -.01
Step 3		.46	.05*		
PoBs	.32			2.83	.08 - .52
Average English in/output	-.60			-4.63	-.05 - -.02
Age of First English Exposure	-.26			-2.07	-.23 - -.00
Step 4		.46	.00		
PoBs	.32			2.77	.08 - .52
Average English in/output	-.60			-4.21	-.05 - -.02
Age of First English Exposure	-.27			-2.05	-.24 - -.002
School Type	-.02			-.17	-.55 - .46

*p < .05; ** p < .01, ***p < .001. PoBs = Average score of Perceptions of Bilingualism Survey (Luk & Surrain, 2019)

FIGURES & TABLES, STUDY 2

Figures

Figure 2.0.

Performance on Language of Critical Thinking Across Language Conditions

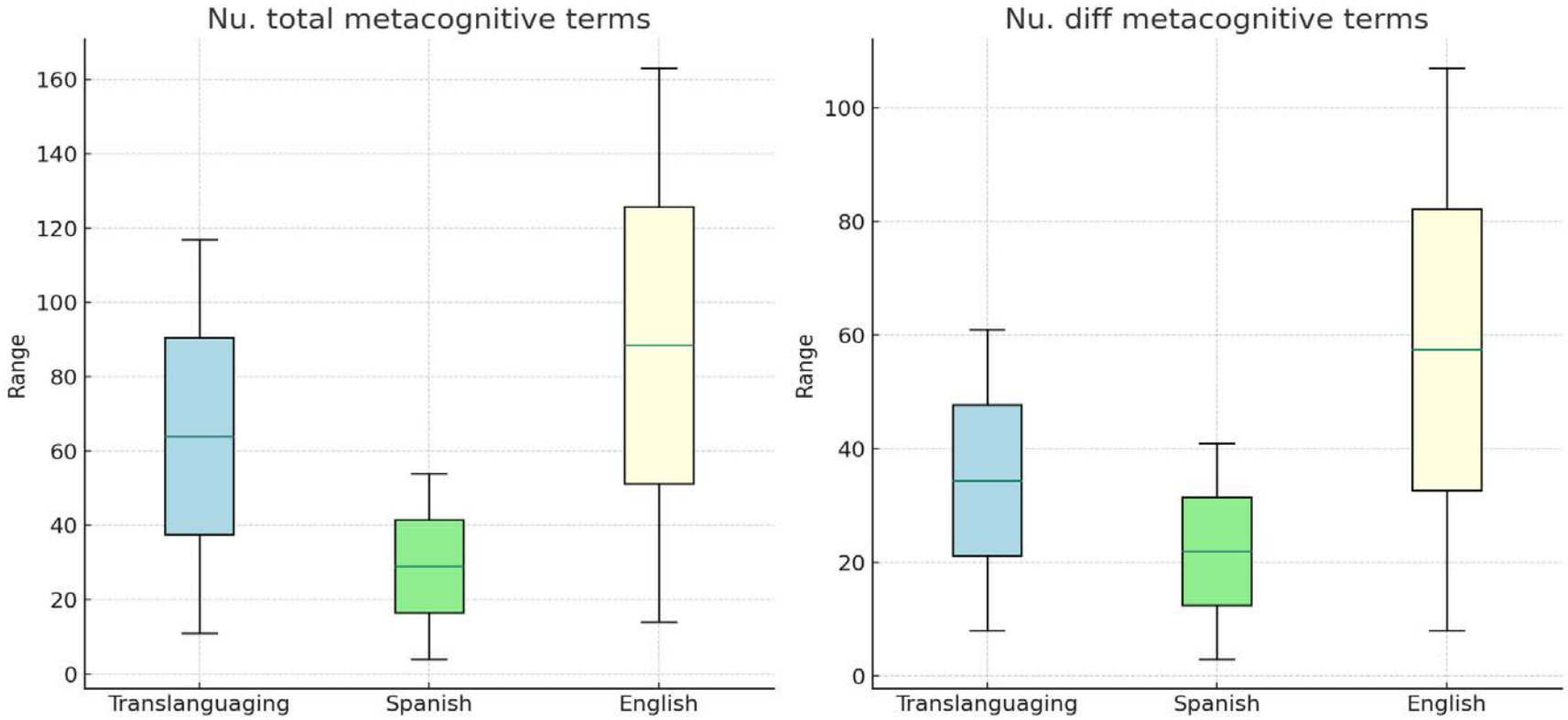


Figure 2.1.

Performance on Language Complexity Across Language Conditions

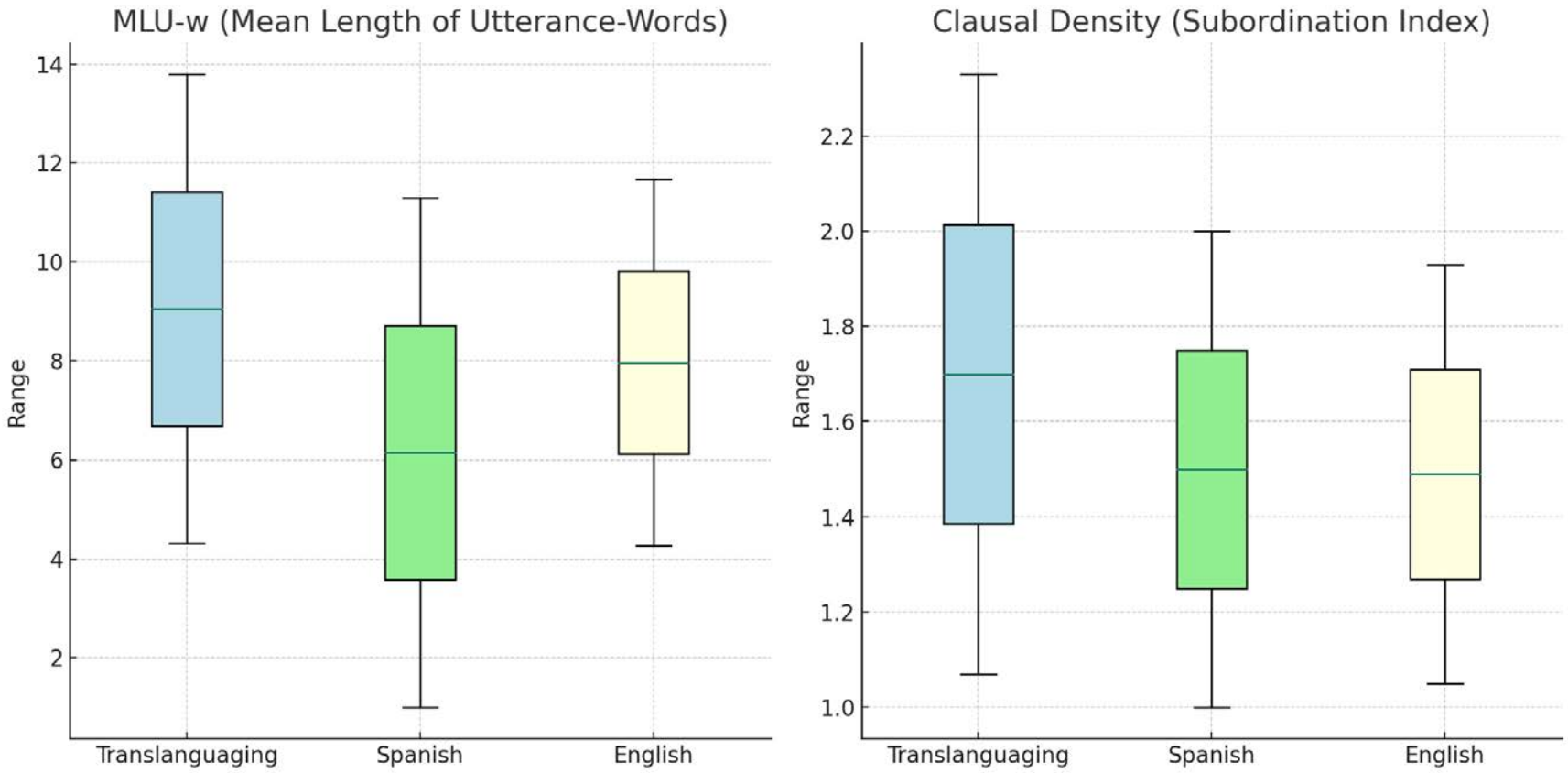
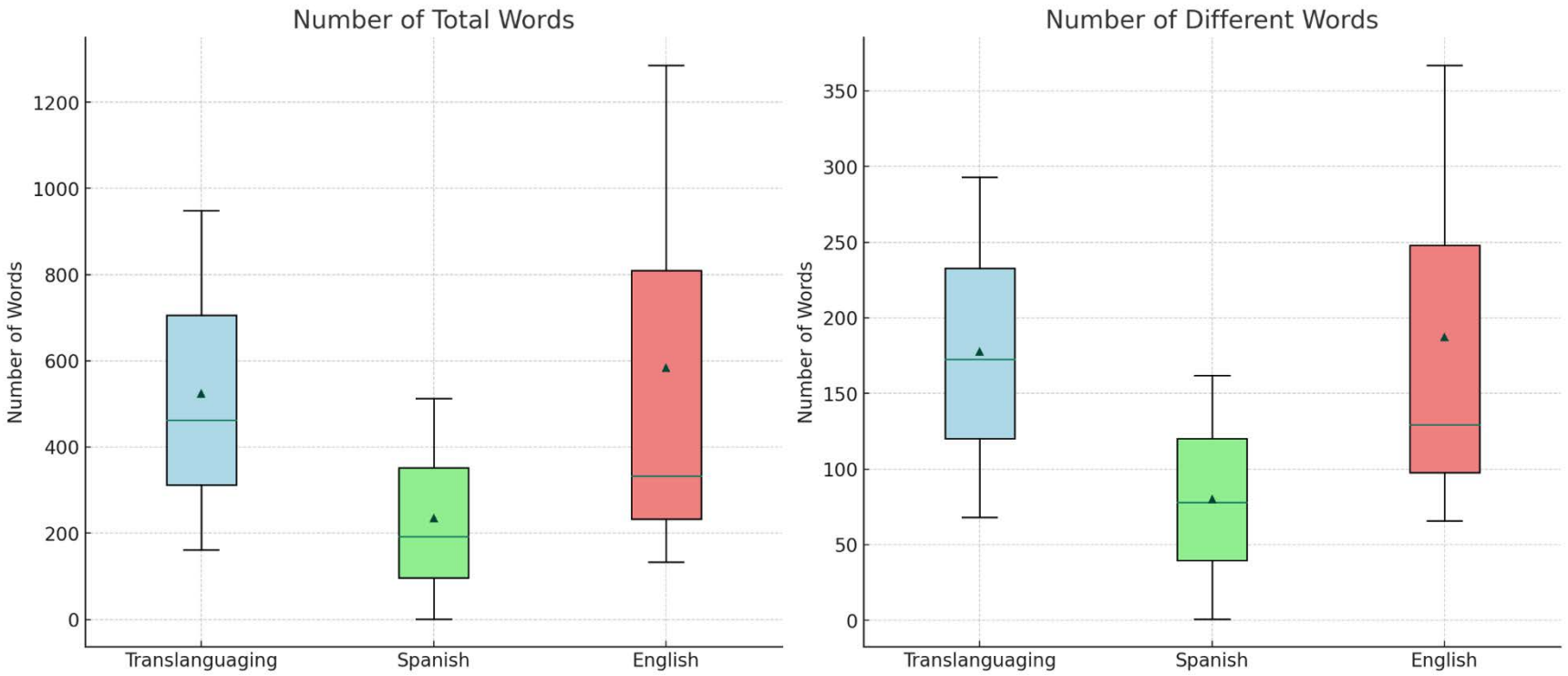


Figure 2.2.

Performance on Language Productivity Across Language Conditions



TABLES

Table 2.0.

Demographic Information about Participants

	(*n* = 50)		
	Mean	SD	Range
Demographics			
Age (in years ; months)	12;76	1;99	10.00-17.00
Age of 1st English exposure (in years)	1.66	2.33	0.00-9.00
Current Spanish exposure (% weekly)	29.33%	17.72	0.00-92.71%
Current English exposure (% weekly)	70.67%	17.72	7.29-100%

Table 2.1.

Descriptive Information: Language Performance per Language Condition.

	Translanguaging			Spanish			English		
	M	*SD*	Range	*M*	*SD*	Range	*M*	*SD*	Range
Nu. total metacognitive terms	43.38	21.63	11-117	20.92	12.53	4-54	41.14	26.40	14-163
Nu. diff metacognitive terms	28.32	12.73	8-61	15.58	9.37	3-41	26.94	16.31	8-107
MLU-w	7.84	1.88	4.31-13.79	5.52	2.82	1.00-11.29	7.09	1.61	4.26-11.67
Clausal Density (subordination Index)	1.47	.26	1.07-2.33	1.27	.25	1.00-2.00	1.39	.18	1.05-1.93
Nu. total words	462.98	184.30	162-949	192.10	146.95	1-513	333.02	197.92	133-1,286
Nu. diff words	172.48	51.59	68-293	78.20	51.02	1-162	129.32	49.96	66-367

Note. Nu.= Number; diff = Different; MLU-w = Mean Length of Utterance-Words.

*$p < .05$, **$p < .01$, ***$p < .001$, two-tailed

Table 2.2.

Univariate Effects for Language Condition, **Within and Between Subjects Effect**

	Repeated Measures MANOVA			
Effect	*F* ratio	*df*	*p*	η_p^2
Within-Subjects: Language Condition				
Nu. total metacognitive terms	27.95***	1, 42	<.001	.433
Nu. diff metacognitive terms	22.62***	1, 42	<.001	.392
MLU-w	33.18***	1, 42	<.001	.396
Clausal Density	17.14***	1, 42	<.001	.256
Nu. total words	54.93***	1, 42	<.001	.572
Nu. diff words	93.90***	1, 42	<.001	.683
Between Subjects: Age				
Nu. total metacognitive terms	1.80	7, 42	.112	.231
Nu. diff metacognitive terms	2.76 *	7, 42	.018	.316
MLU-w	5.097***	7, 42	<.001	.459
Clausal Density	2.62*	7, 42	.024	.304
Nu. total words	1.99	7, 42	.078	.250
Nu. diff words	3.56**	7, 42	.004	.372

Note. Nu.= Number; diff = Different; MLU-w = Mean Length of Utterance-Words.

*$p < .05$, **$p < .01$, ***$p < .001$, two-tailed.

FIGURES & TABLES, STUDY 3

Figures

Figure 3.0.

Performance on Spanish-English, Language of Critical Thinking

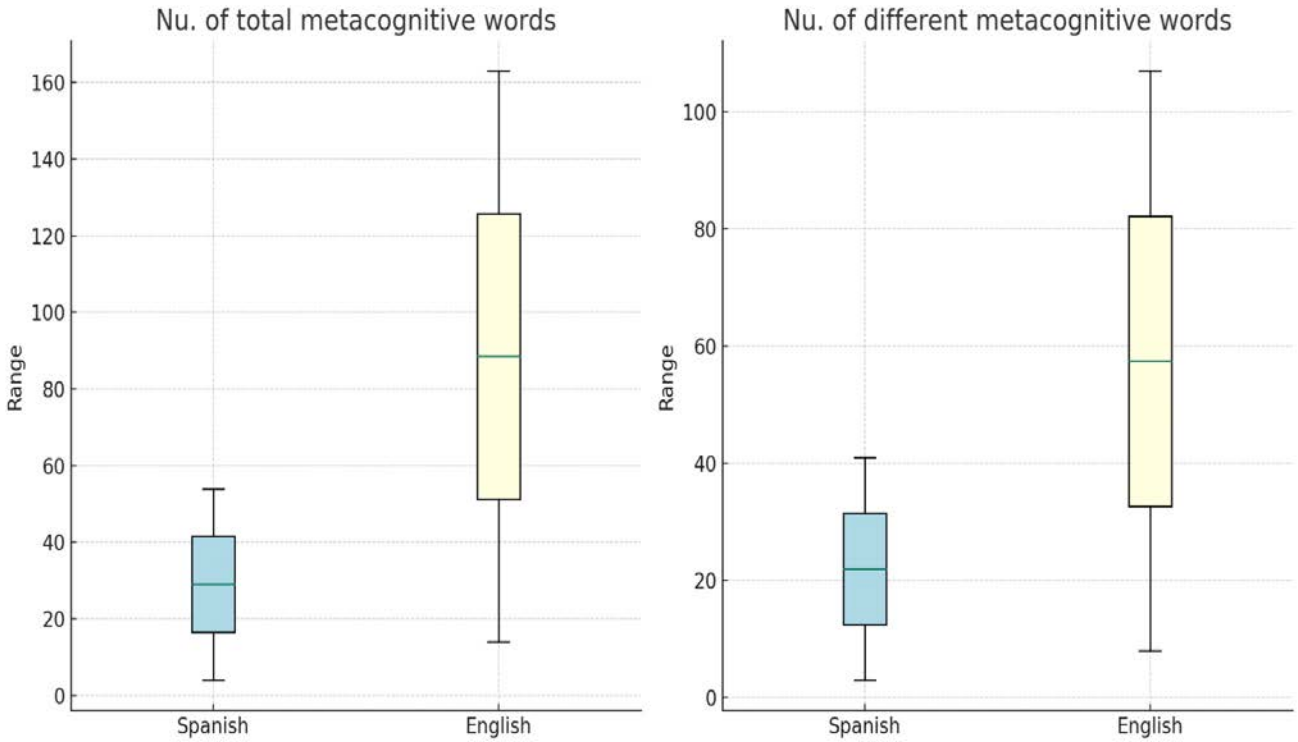


Figure 3.1.

Performance on Spanish-English, Language Complexity

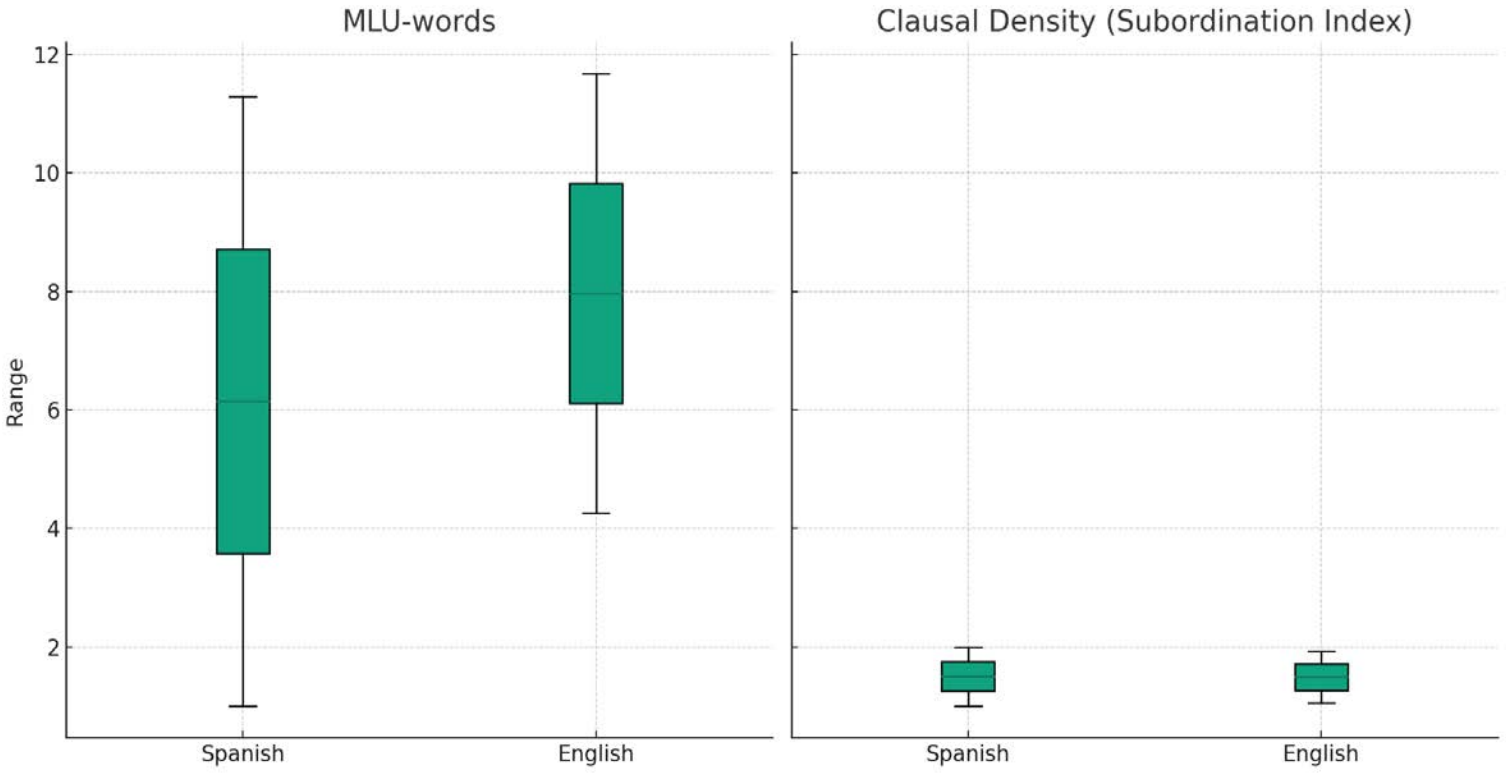


Figure 3.2.

Performance on Spanish-English, Language Productivity

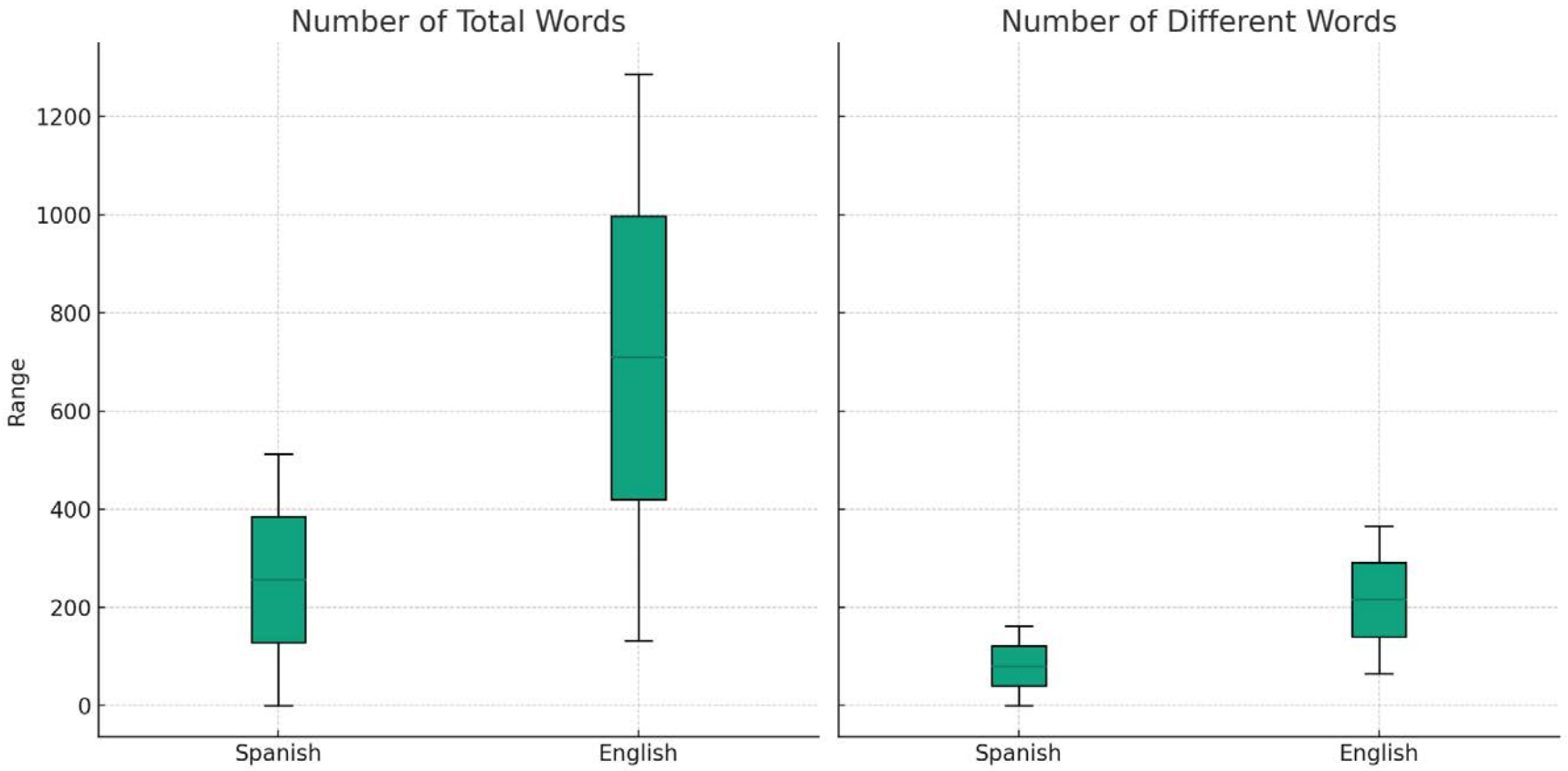
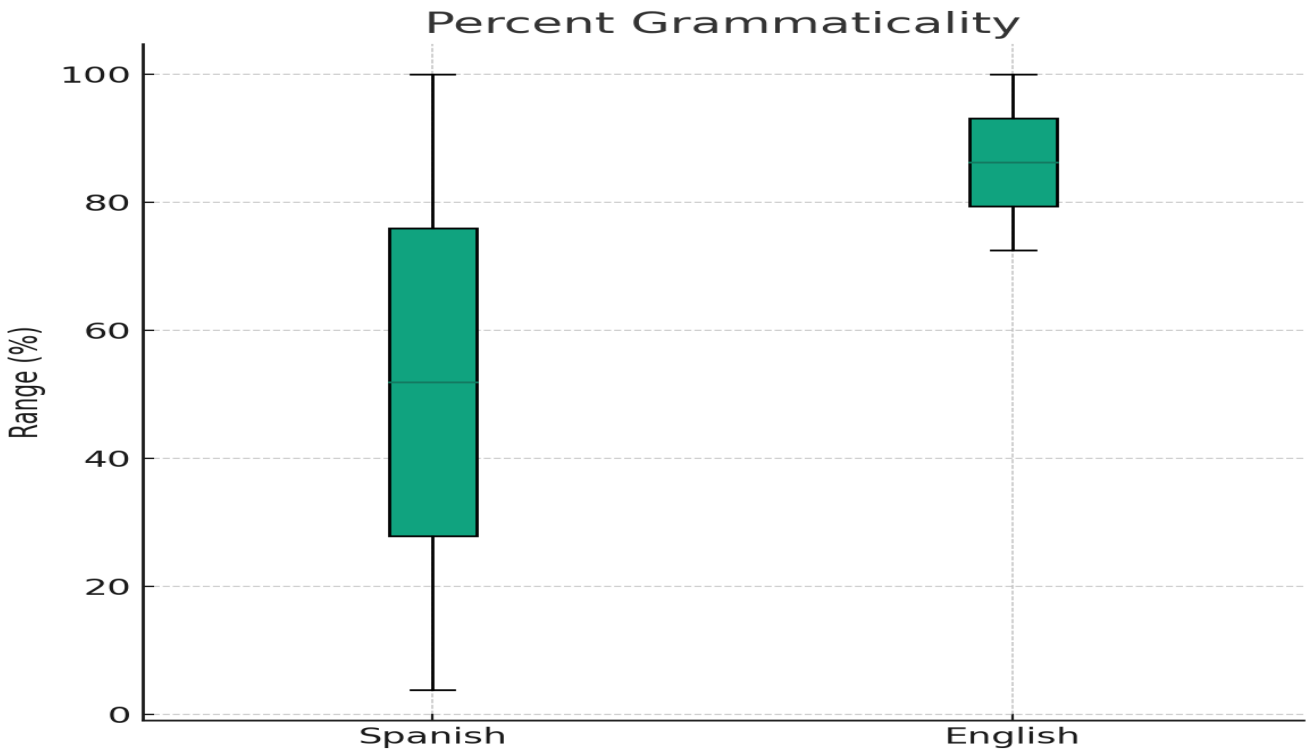


Figure 3.3.

Performance on Spanish-English, Overall Grammaticality



Tables

Table 3.0.

Descriptive Demographic Information about Participants.

	(*n* = 50)		
	Mean	SD	Range
Demographics			
Age (in years; months)	12;76	1;99	10.00-17.00
Age of 1st English exposure (in years)	1.66	2.33	0.00-9.00
Current Spanish exposure (% weekly)	29.33%	17.72	0.00-92.71%
Current English exposure (% weekly)	70.67%	17.72	7.29-100%

Table 3.1.

Critical Thinking Terms & Language Productivity / Complexity Performance by Language.

	Spanish		English		
	M (SD)	Range	*M* (SD)	Range	*t*
Nu. of total metacognitive words	20.92 (12.53)	4-54	41.14 (26.40)	14-163	-6.18***
Nu. of different metacognitive words	15.58 (9.37)	3-41	26.94 (16.31)	8-107	-5.70 ***
MLU-words	5.52 (2.82)	1.00-11.29	7.09 (1.62)	4.26-11.67	-4.44 ***
Clausal Density (subordination Index)	1.27 (.25)	1.00-2.00	1.39 (.18)	1.05-1.93	-3.32**
Nu. of total words	192.10 (146.95)	1-513	333.02 (197.92)	133-1,286	-5.24 ***
Nu. of different words	78.20 (51.02)	1-162	129.32 (49.96)	66-367	-6.70 ***

% Grammaticality	57.32 (28.60)%	3.85-100.00%	91.87 (7.19)%	72.50-100.00%	-8.52 ***

Note. Nu = Number; %Grammaticality = Percent Grammaticality.

*p < .05, **p < .01, ***p < .001, two-tailed.

Table 3.2.

Bivariate Correlations: Effects of Perceptions, Motivation and Language Experience on Narrative Performance.

	Perceptions	Motivation	Age	Age of First Exposure	Current Eng. Exposure
Spanish					
Number of total meta-cognitive words	-.21	-.04	.26	.19	-.06
Number of different meta-cognitive words	-.15	.07	.30*	.30*	-.22
MLU-words	.27	.41**	.27	.26	-.56**
Clausal Density (subordination Index)	.19	.26	.18	.20	-.39**
Nu. total words	.05	.29*	.15	.27	-.46**
Nu. Different words	.08	.37**	.18	.35*	-.58**
% Grammaticality	.28**	.44**	.12	.40**	-.56**
English					
Nu. of total metacognitive words	-.03	-.01	.21	-.13	.07
Nu. of different metacognitive words	-.02	.02	.29*	-.11	.05
MLU-words	.39**	.07	.35*	-.08	.06

Clausal Density (subordination Index)	.28**	-.07	.30*	-.07	-.02
Nu. of total words	.05	.07	.19	-.13	.07
Nu. of different words	.05	.07	.25	-.08	.03
% Grammaticality	.09	-.08	.17	.35	-.05

Note. Nu = Number; MLU-w = Mean Length of Utterance-Words; %Grammaticality = Percent Grammaticality.

*$p < .05$, **$p < .01$, ***$p < .001$, two-tailed.

Table 3.3.

Model Summaries of Regressions Predicting Critical Thinking Language.

	Total number of metacognitive terms			Number of Different metacognitive terms		
	β	R^2	R^2 change	β	R^2	R^2 change
Spanish						
Step 1		.07	.07		.09	.09*
Age	.263			.297		
Step 2		.15	.08*		.14	.05
Age	.335			.355		
Perceptions of bilingualism	-.290			-.237		
Step 3		.19	.04		.23	.09*
Age	.411			.472		
Perceptions of bilingualism	-.412			-.426		
Motivation to learn Spanish	.230			.355		
Step 4		.19	.00		.26	.03
Age	.384			.415		
Perceptions of bilingualism	-.398			-.395		
Motivation to learn Spanish	.218			.330		

Age of 1st Exposure to English	.086			.183		
Step 5		.19	.00		.26	.00
Age	.384			.414		
Perceptions of bilingualism	-.401			-.392		
Motivation to learn Spanish	.254			.299		
Age of 1st exposure to English	.117			.158		
Current exposure to English	.064			-.053		
English						
Step 1		.046	.046		.083	.083*
Age	.215			.289		
Step 2		.053	.007		.091	.008
Age	.236			.311		
Perceptions of bilingualism	-.086			-.093		
Step 3		.061	.008		.338	.023
Age	.272			.371		
Perceptions of bilingualism	-.144			-.190		
Motivation to learn Spanish	.108			.182		
Step 4		.105	.044		.399	.044

Age	.340			.440		
Perceptions of bilingualism	-.181			-.228		
Motivation to learn Spanish	.139			.214		
Age of 1st exposure to English	-.219			-.220		
Step 5		.105	.000		.399	.000
Age	.340			.440		
Perceptions of bilingualism	-.182			-.229		
Motivation to learn Spanish	.147			.227		
Age of 1st exposure to English	-.212			-.209		
Current exposure to English	.014			.023		

* = $p < .05$; ** = $p < .01$; *** = $p < .001$, two-tailed.

Table 3.4.

Model Summaries of Regressions Predicting Language Complexity.

	MLU-w			Clausal Density		
	β	R^2	R^2 change	β	R^2	R^2 change
Spanish						
Step 1		.07	.07		.03	.03
Age	.27			.18		
Step 2		.12	.04		.06	.02
Age	.22			.14		
Perceptions of bilingualism	.21			.16		
Step 3		.30	.18***		.12	.06
Age	.39			.24		
Perceptions of bilingualism	-.06			.00		
Motivation to learn Spanish	.51			.31		
Step 4		.33	.03		.14	.02
Age	.33			.20		
Perceptions of bilingualism	-.03			.02		
Motivation to learn Spanish	.49			.28		
Age of 1st Exposure to English	.18			.15		

Step 5		.42	.10**		.19	.05
Age	.33			.19		
Perceptions of bilingualism	-.01			.04		
Motivation to learn Spanish	.22			.09		
Age of 1st exposure to English	-.04			-.01		
Current exposure to English	-.46			-.33		
English						
Step 1		.12	.12*		.09	.09*
Age	.35			.30		
Step 2		.22	.10*		.14	.05
Age	.27			.25		
Perceptions of bilingualism	.33			.22		
Step 3		.22	.00		.16	.20
Age	.26			.20		
Perceptions of bilingualism	.34			.31		
Motivation to learn Spanish	-.03			-.17		
Step 4		.24	.02		.17	.01
Age	.30			.23		
Perceptions of bilingualism	.32			.29		

Motivation to learn Spanish	-.01			-.15		
Age of 1st exposure to English	-.15			-.11		
Step 5		.25	.01		.19	.02
Age	.30			.23		
Perceptions of bilingualism	.33			.30		
Motivation to learn Spanish	-.10			-.28		
Age of 1st exposure to English	-.22			-.22		
Current exposure to English	-.16			-.23		

Note. MLU-w = Mean Length of Utterance-Words.

* = $p < .05$; ** = $p < .01$; *** = $p < .001$, two-tailed.

Table 3.5.

Model Summaries of Regressions Predicting Productivity.

	Nu. of Total Words			Nu. of Different Words			% Grammaticality		
	β	R^2	R^2 change	β	R^2	R^2 change	β	R^2	R^2 change
Spanish									
Step 1		.20	.20		.03	.03		.02	.02
Age	.15			.18			.12		
Step 2		.02	.00		.04	.00		.08	.07
Age	.15			.18			.06		
Perceptions of bilingualism	.02			.03			.27		
Step 3		.16	.14**		.26	.22***		.24	.15**
Age	.29			.36			.21		
Perceptions of bilingualism	-.22			-.27			.02		
Motivation to learn Spanish	.45			.56			.47		
Step 4		.20	.04		.33	.07*		.36	.13**
Age	.23			.27			.10		
Perceptions of bilingualism	-.19			-.22			.08		
Motivation to learn Spanish	.42			.52			.42		

Age of 1st Exposure to English	.21			.28			.37	
Step 5		.26	.06		.41	.09*	.40	.04
Age	.23			.27			.09	
Perceptions of bilingualism	-.17			-.20			.10	
Motivation to learn Spanish	.20			.27			.25	
Age of 1st exposure to English	-.03			.07			.24	
Current exposure to English	-.04			-.43			-.29	
English								
Step 1		.03	.03		.06	.06	.03	.03
Age	.19			.25			.17	
Step 2		.03	.00		.06	.00	.03	.00
Age	.19			.25			.16	
Perceptions of bilingualism	.00			-.10			.05	
Step 3		.05	.02		.08	.02	.04	.01
Age	.23			.30			.12	
Perceptions of bilingualism	-.08			-.10			.11	
Motivation to learn Spanish	.15			.17			-.10	
Step 4		.09	.00		.11	.00	.12	.06

Age	.30			.36			.18	
Perceptions of bilingualism	-.11			-.13			.08	
Motivation to learn Spanish	.18			.20			-.08	
Age of 1st exposure to English	-.21			-.17			-.17	
Step 5		.09	.00		.11	.00	.12	.06
Age	.30			.36			.17	
Perceptions of bilingualism	-.12			-.13			.10	
Motivation to learn Spanish	.23			.23			-.28	
Age of 1st exposure to English	-.16			-.14			-.34	
Current exposure to English	.09			.06			-.35	

Note. Nu. = Number; %Grammaticality = Percent Grammaticality.

* = $p < .05$; ** = $p < .01$; *** = $p < .001$, two-tailed.

Appendix

Appendix A

Summary Description of Variables for Study 1

Outcome Variables	**Grades Assessed**	**Description**
EVT-Language Motivation Survey	5th-12th	1= Strongly disagree to 6= Strongly agree
Predictor Variables		
Perceptions of Bilingualism	5th-12th	1= Strongly disagree to 6= Strongly agree
Age of First Exposure to Spanish	5th-12th	Continuous indicator
Current Exposure to Spanish	5th-12th	Continuous indicator
Language Additive School Program	5th-12th	Dichotomous indicator (1=BILINGUAL)
Covariates		

Child-level: Age of first exposure to English/ Spanish, Current Exposure to English/Spanish in the home.

School-level: Language additive model or Language subtractive model, Current Exposure to English/Spanish in the school.

Note. * Language additive program is a two-way Dual Language, developmental, transitional or maintenance of heritage language program. Language subtractive program is an English-immersion program and includes Sheltered English as a Second Language (ESL), and or English Language Development (ELD) programs.

Appendix B

Perception of Bilingualism Survey Items (Luk & Surrain, 2019).

Question No.	Questions
PoB 1	The ability to speak more than one language is highly valued in the United States.
PoB 2	The United States should have more than one official language.
PoB 3	Languages in addition to English should be taught in public elementary schools.
PoB 4	People who speak more than one language should earn more money in the United States.
PoB 5	To be successful in the United States you need to speak more than one language.
PoB 6	Teachers, doctors, lawyers and police officers in the United States should speak a language in addition to English so they can communicate with the people they serve.
PoB 7	Parents whose native language is not English should teach their native language to their children.
PoB 8	Learning a second language helps a person think more creatively.
PoB 9	I wish I spoke another language (in addition to the language(s) I speak at this time.
PoB 10	Speaking more than one language helps a person understand people from different cultural backgrounds.

Scale: 1= Strongly disagree / muy en desacuerdo. 2 = Disagree/ en desacuerdo. 3 =Somewhat disagree / algo en desacuerdo. 4 = Somewhat agree / algo de acuerdo. 5 = Agree / de acuerdo. 6 = Strongly agree / muy de acuerdo

Appendix C

EVT Language Motivation Survey Adapted from Nagles, 2021.

Construct Variables	**Original Questionnaire**	**Adapted Questions**	**Scale**
	N/A	Are you currently taking a Spanish class?	1. Yes 2. No
Expectations of success			
	I am certain that I can master the content in the Spanish course I am taking this semester.	If I was taking a Spanish class, I am certain that I could master the content in the Spanish course.	**1** = Very uncertain/ muy incierto/a/x. **2** = uncertain/incierto/a/x. **3** = Somewhat uncertain / algo incierto/a/x. **4** = Somewhat certain / algo cierto/a/x. **5** = certain / cierto/a/x. **6** = Strongly certain / muy cierto/a/x
	I will be able to master the content in even the most challenging Spanish course if I try.	If I was taking a Spanish class, I would be able to master the content in even the most challenging Spanish course if I tried.	**1** = Very unable/ muy incapaz. **2** = unable/incapaz. **3** = Somewhat unable / algo incapaz. **4** = Somewhat able / algo capaz. **5** = able / capaz. **6** = Strongly able/ muy capaz.

	I am certain that I can earn a good grade in my Spanish course.	If I was taking a Spanish class, I am certain that I could earn a good grade in my Spanish course.	**1** = Very uncertain/ muy incierto/a/x. **2** = uncertain/incierto/a/x. **3** = Somewhat uncertain / algo incierto/a/x. **4** = Somewhat certain / algo cierto/a/x. **5** = certain / cierto/a/x. **6** = Strongly certain / muy cierto/a/x
Attainment value			
	Being someone who is good at learning Spanish is important to me.		**1** = Very unimportant/ muy sin importancia. **2** = unimportant/ sin importancia. **3** = Somewhat unimportant / algo sin importancia. **4** = Somewhat important/ algo importante. **5** = important /importante. **6** = Very important / muy importante.
	Being good at learning Spanish is an important part of who I am.		**1** = Very unimportant/ muy sin importancia. **2** = unimportant/ sin importancia. **3** = Somewhat unimportant / algo sin importancia. **4** = Somewhat important/ algo importante. **5** = important /importante.

			6 = Very important / muy importante.
	Being involved in Spanish related activities is a key part of who I am.		1 = Definitely not a key part of who I am / Definitivamente no es parte esencial de quien soy. 2 = Not a key part of who I am /no es parte esencial de quien soy. 3 = Somewhat not a key part of who I am / Algo- no es parte esencial de quien soy. 4 = Somewhat a key part of who I am / algo parte esencial de quien soy. 5 = Key part of who I am/ es parte esencial de quien soy 6 = Definitely a key part of who I am / Definitivamente es parte esencial de quien soy.
Intrinsic value			
	I enjoy learning Spanish.		1 = Strongly disagree / muy en desacuerdo. 2 = Disagree/ en desacuerdo. 3 = Somewhat disagree / algo en desacuerdo. 4 = Somewhat agree / algo de acuerdo. 5 = Agree / de acuerdo.

			6 = Strongly agree / muy de acuerdo.
	Learning Spanish is exciting to me.		1 = Strongly disagree / muy en desacuerdo. 2 = Disagree/ en desacuerdo. 3 = Somewhat disagree / algo en desacuerdo. 4 = Somewhat agree / algo de acuerdo. 5 = Agree / de acuerdo. 6 = Strongly agree / muy de acuerdo.
	I would like to take more Spanish courses.		1 = Strongly disagree / muy en desacuerdo. 2 = Disagree/ en desacuerdo. 3 = Somewhat disagree / algo en desacuerdo. 4 = Somewhat agree / algo de acuerdo. 5 = Agree / de acuerdo. 6 = Strongly agree / muy de acuerdo.
Utility value			
	Learning Spanish is valuable because it will help me in the future (like when I get a job, go to graduate school, etc.).		1 = Definitely not valuable/ definitivamente no tiene valor. 2 = Not valuable /no tiene valor.

			3 = Somewhat not valuable / algo sin valor. 4 = Somewhat valuable/ algo de valor. 5 = valuable / tiene valor. 6 = Definitely very valuable / definitivamente tiene mucho valor
	Spanish will be useful for me later in life.		1 = Definitely not useful/ definitivamente no tiene uso. 2 = Not useful /no tiene uso. 3 = Somewhat not useful/ algo sin uso. 4 = Somewhat useful/ algo de uso. 5 = useful / tiene use. 6 = Definitely very useful / definitivamente tiene mucho uso.
	Spanish is practical for me to know.		1 = Definitely not practical/ definitivamente no es práctico. 2 = Not practical /no es práctico. 3 = Somewhat not practical/ algo no practico. 4 = Somewhat practical/ algo practico. 5 = practical / practico. 6 = Definitely very practical / definitivamente muy práctico.

Effort cost			
	When I think about the hard work needed to be successful in Spanish, I am not sure that studying Spanish is going to be worth it in the end.		1 = Definitely not worth it/ definitivamente no vale la pena. 2 = Not worth it /no vale la pena. 3 = Somewhat not worth it/ algo de que no vale la pena. 4 = Somewhat worth it/ algo de que si vale la pena. 5 = worth it / vale la pena. 6 = Definitely very worth it / definitivamente si vale mucho la pena
	Learning Spanish will require more effort than I am willing to put in.		1 = Strongly disagree / muy en desacuerdo. 2 = Disagree/ en desacuerdo. 3 = Somewhat disagree / algo en desacuerdo. 4 = Somewhat agree / algo de acuerdo. 5 = Agree / de acuerdo. 6 = Strongly agree / muy de acuerdo.
	For me, learning Spanish may not be worth the effort.		1 = Definitely not worth it/ definitivamente no vale la pena. 2 = Not worth it /no vale la pena.

			3 = Somewhat not worth it/ algo de que no vale la pena. 4 = Somewhat worth it/ algo de que si vale la pena. 5 = worth it / vale la pena. 6 = Definitely very worth it / definitivamente si vale mucho la pena.
L2 Learning Experience			
	I like the atmosphere of my Spanish class.	I like the atmosphere of where I learn Spanish.	1 = Strongly disagree / muy en desacuerdo. 2 = Disagree/ en desacuerdo. 3 = Somewhat disagree / algo en desacuerdo. 4 = Somewhat agree / algo de acuerdo. 5 = Agree / de acuerdo. 6 = Strongly agree / muy de acuerdo.
	I like my professor's teaching style.	I like my parent's Spanish teaching style.	1 = Strongly disagree / muy en desacuerdo. 2 = Disagree/ en desacuerdo. 3 = Somewhat disagree / algo en desacuerdo. 4 = Somewhat agree / algo de acuerdo. 5 = Agree / de acuerdo.

			6 = Strongly agree / muy de acuerdo.
	My professor gives informative feedback on my Spanish skills.	My parents give informative feedback on my Spanish skills.	1 = Strongly disagree / muy en desacuerdo. 2 = Disagree/ en desacuerdo. 3 = Somewhat disagree / algo en desacuerdo. 4 = Somewhat agree / algo de acuerdo. 5 = Agree / de acuerdo. 6 = Strongly agree / muy de acuerdo.
Willingness to Communicate			
	I would start a conversation in Spanish with my classmates about my weekend plans.		1 = Definitely would not/ definitivamente que no. 2 = Would not / no. 3 = Probably not/ Probablemente que no. 4 = Probably would/ Probablement que si. 5 = would /si. 6 = Definitely would / definitivamente que si.
	I would talk to a friend during class in Spanish about my day.		1 = Definitely would not/ definitivamente que no. 2 = Would not / no.

			3 = Probably not/ Probablemente que no. 4 = Probably would/ Probablement que si. 5 = would /si. 6 = Definitely would / definitivamente que si.
	I would speak to my professor in Spanish about my homework.		1 = Definitely would not/ definitivamente que no. 2 = Would not / no. 3 = Probably not/ Probablemente que no. 4 = Probably would/ Probablement que si. 5 = would /si. 6 = Definitely would / definitivamente que si.
	If I were confused about a task, I would ask for clarification in Spanish.		1 = Definitely would not/ definitivamente que no. 2 = Would not / no. 3 = Probably not/ Probablemente que no. 4 = Probably would/ Probablemente que si. 5 = would /si. 6 = Definitely would / definitivamente que si.

Appendix D

Summary of Variable Description of the Repeated Measures ANOVA's - Study 2

With-In Subjects Factors	Grades Assessed	Description
Spanish Critical Thinking	5th-12th	indicators: # of Metacognitive verbs/ sample and different # of Metacognitive verbs/sample
English Critical Thinking	5th-12th	indicators: # of Metacognitive verbs/ sample and different # of Metacognitive verbs/sample
Translanguaging Critical Thinking	5th-12th	Composite indicators: # of Metacognitive verbs/ sample and different # of Metacognitive verbs/sample

With-In Subjects Factors	Grades Assessed	Description
Spanish Language Complexity/ Production Outcomes	5th-12th	MLU-w, clausal density, total number of words, total number of different words, grammaticality.
English Language Complexity/Production	5th-12th	MLU-w, clausal density, total number of words,

Outcomes		total number of different words, grammaticality.
Translanguaging Complexity/Production Language Outcomes	5th-12th	MLU-w, clausal density, total number of words, total number of different words, grammaticality.

Note. MLU-w = mean length of utterance, words.

Appendix E

Formulas for Flesch Reading Ease and Fernández-Huerta Calculation and the Corresponding Reading Grade Level.

Readability	**Equation**
Flesch Reading Ease Calculation	readability= 206.835 − 1.015 (Total words/total sentences) − 84.6 (Total syllables/total words)
Fernández-Huerta Calculation	readability= 206.84 − (0.6 × Total number of syllables) − (1.02 × Total number of words)
Flesch Reading Ease/ Fernández-Huerta Score	**Corresponding Reading Grade-Level**
90-100	5th grade
80-90	6th grade
70-80	7th grade
60-70	8th / 9th grade

50-60	10th - 12th grade
30-50	College
0-30	College Graduate

Appendix F

Order Delivery of the Language Conditions, *Corridos and Their Corresponding Narrative and Readability Scores*.

Language Condition	**Corrido /Ballad (Readability Score)**	**Narrative**
1. Spanish Practice	*Golpes de la Vida - Natanael Cano* **(93- 5th grade)**	This details the story of a young, up and coming artist who arose from hardships and poverty. He describes the values of hard work and *"echarle ganas"* which is both a lesson he learned culturally and from his parents. Through collective efforts, he and his family are now in a better financial situation, and he is enjoying the privileges afforded to him by his fame.
2. Spanish Testing	*El Deportado - Los Terribles del Norte* **(98- 5th grade)**	This is the story of the person who was deported and upon calling his son, in the United States, the parent reflects on the separation of his family, at the hands of immigration laws. The singer talks about missing his son and wife and hopes that when his son is old enough to travel alone, he will come visit him, assuming his son still feels love towards his father. The message of this song is about the devastating realities of family separation and taps into values of family unity in the Latinx culture.
3. English Practice	*Feeling Good as Hell - Lizzo* **(100- 5th grade)**	In this song, a young woman is describing recovering from a difficult relationship and breakup. She sings about investing in self-discovery and the experiences that bring her joy.
4. English Testing	*I Love Me -Demi Lovato*	This English ballad speaks to the singer's internal battles and insecurities about themselves and speaks to arriving at a place of self-love. The message in this song is about becoming aware of messages that are internalized from popular media and

	(91- 5th grade)	countering the narratives that invite self-hate and shame.
5. Translanguage Practice	*Desde Morro- Justin Morales* **(90- 5th grade)**	This song tells the story of a young man who from a very young age begins to internalize experiences and lessons related to friendship. His parents teach him that there will be many folks who will call themselves your friend but few who will demonstrate genuine friendship. Just as his parents predicted, Justin the singer, recalls the few who he has felt have been his true friends.
6. Tanslanguage Testing: Spanish	*La Jaula de Oro- Los Tigres del Norte* **(90- 5th grade)**	This corrido details the sentimental experience of a father who is undocumented in the U.S. He expresses feeling jailed in a golden cell because although he is in the US, he does not have the freedoms of a U.S. citizen. Moreover, he feels his children do not understand or feel pride in their cultural background.
7. Translanguage Testing: English	*Keep Ya Head Up- Tupac Shakur* **(96- 5th grade)**	This song is a ballad of encouragement to young single mothers. In this song Tupac describes the struggles he's witnessed single mothers and their children endure. As a message in this song, he calls on men to do better by women and their children.

Appendix G

Critical Thinking Practice and Test Questions- Study 2.

Study 2 Practice Prompts		
***Golpes de la Vida -Natanael Cano* (Spanish Practice)**		
	Comprehension Items	
		¿De quién está hablando esta canción?
		¿Cuál es la idea central o el mensaje de esta canción?
		¿Cuál es el problema en esta canción?
	Target Items	
	Contingency Item	¿Qué hubiese pasado si Natanael, el cantante, no hubiese luchado por sus sueños?
	Critical thinking Items	
		"¿Estás de acuerdo con el mensaje de esta canción?"
		"Dime porque?"

		“Puedes pensar en una situación donde esta lección aplique a la vida real o a tu vida?”
		“¿Me quieres decir o puedes decirme algo más sobre esta canción o la lección de esta canción?”
<u>Feeling Good As Hell - Lizzo</u> (English Practice)		
	Comprehension Items	
		Who is this song talking about?
		What is the main idea/message of this song?
		What concern or problem is the singer singing about?
	Target Items	
	Contingency Item	If Lizzo had not “dusted” her shoulders off and “focused on herself” then, what could have happened?”
	Critical thinking Items	
		“Do you agree with the message of this song?”
		“Tell me why?”

		"Can you think of a situation in real life where the moral or lesson would apply?"
		"Can you tell me anything else about the moral or the situation?"
Desde Morro- Justin Morales (Translanguaging practice)		
	Comprehension Items	
		Who is this song talking about?
		What is the main idea/ o el mensaje of this song?
		Que problema or situation is the singer singing about?
	Target Items	
	Contingency Item	"If Justin, el cantante de esta canción, did not appreciate or feel orgullo about his familia and close friends, what could happen? "
	Critical thinking Items	
		"Do you agree with the message of this corrido?"
		"Dime porque, tell me why?"

		"Can you think of a situation in real life en cual the lesson or moral would apply?"
		"Can you tell me anything else or algo mas about the moral or the situation?"

Study 2 Test Prompts		
El Deportado - Los Terribles del Norte (Spanish test)		
	Comprehension Items	
		¿De quién está hablando esta canción?
		¿Cuál es la idea central o el mensaje de esta canción?
		¿Cuál es el problema en esta canción?
	Target Items	
	Contingency Item	¿Cómo piensas que hubiera sido la relación del cantante y su hijo/ esposa, si no lo hubieran deportado?
	Critical thinking Items	

		"¿Estás de acuerdo con el mensaje de esta canción?"
		"Dime porque?"
		"Puedes pensar en una situación donde esta lección aplique a la vida real o a tu vida?"
		"¿Me quieres decir o puedes decirme algo más sobre esta canción o la lección de esta canción?"
<u>I Love Me -Demi Lovato</u> (English test)		
	Comprehension Items	
		Who is this song talking about?
		What is the main idea/message of this song?
		What concern or problem is the singer singing about?
	Target Items	
	Contingency Item	"If Demi, the singer, continues to question her self-worth, what could happen?"
	Critical thinking Items	

		"Do you agree with the message of this song?"
		"Tell me why?"
		"Can you think of a situation in real life where the moral would apply?"
		"Can you tell me anything else about the moral or the situation?"
***La Jaula de Oro- Los Tigres del Norte* (Translanguaging test- S)**		
	Comprehension Items	
		Who is this corrido talking about?
		What is the main idea/ o el mensaje of this corrido?
		De que situacion is the singer singing about?
	Target Items	
	Contingency Item	If the singer was not considered an "illegal" or had already "arreglado sus papeles" how might his life or the life of his family be different?
	Critical thinking Items	
		"Do you agree with the message of this corrido?"

		"Dime porque, tell me why?"
		"Can you think of a situation in real life en cual the lesson or moral would apply?"
		"Can you tell me anything else or algo mas about the moral or the situation?"
<u>Keep Ya Head Up- Tupac Shakur</u> (Translanguaging test- E)		
	Comprehension Items	
		Who is this corrido talking about?
		What is the main idea/ o el mensaje of this corrido?
		De que situacion is the singer singing about?
	Target Items	
	Contingency Item	Tupac le canta al las madres who raise children on their own y les da porras for enduring the struggles that they go through. Como piensas que the experience of these mother's might be different if they had a partner to help them?
	Critical thinking Items	
		"Do you agree with the message of this song?"

		“Dime porque, tell me why?”
		“Can you think of a situation in real life en cual the lesson or moral would apply?”
		“Can you tell me anything else or algo mas about the moral or the situation?”

Appendix H

Summary Description of Variables for- Study 3

Outcome Variables	**Grades Assessed**	**Description**
Spanish Critical Thinking	5th-12th	Indicators: # of Metacognitive verbs/ sample and different # of Metacognitive verbs/sample
Spanish Language Outcomes	5th-12th	MLU-w, clausal density, total number of words, total number of different words, grammaticality.
English Critical Thinking	5th-12th	Indicators: # of Metacognitive verbs/ sample and different # of Metacognitive verbs/sample
English Language Outcomes	5th-12th	MLU-w, clausal density, total number of words, total number of different words, grammaticality.
Predictor Variables		
Perceptions of Bilingualism	5th-12th	1= Strongly disagree to 6= Strongly agree
EVT-Language Motivation Survey	5th-12th	1= Strongly disagree to 6= Strongly agree
Age of First Exposure to Spanish	5th-12th	Continuous indicator
Current Exposure to Spanish	5th-12th	Continuous indicator

Covariates

Child-level: Age of first exposure to English/ Spanish, Current Exposure to English/Spanish in the home.

Note. MLU-w = mean length of utterance- words.