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RESEARCH ARTICLE

# Same program, distinctive development: Exploring the biliteracy trajectories of two dual language schools

Alexandra Babino

University of North Texas

**ABSTRACT**
Using a mixed methods comparative case study, the researcher explored the dual language contexts at each school before examining the second- through fifth-grade Spanish and English reading biliteracy trajectories. While both campuses' students experienced positive trajectories toward biliteracy by the end of fifth grade, each campus was characterized by different rates of biliteracy development, correlations between Spanish and English reading levels, and percentage of students in the biliteracy zone at each grade. The split plot MANOVA revealed that only school of attendance and initial English oral language levels explained the variance in biliteracy trajectories for students at these campuses. Taken together, these results provide needed nuance on contemporary biliteracy theory, especially as it relates to differing emergent bilingual subgroups within dual language programs.

## Introduction

Literacy development is a complex process (Tracey & Morrow, 2012). It is doubly complex when one considers learning to read and write effectively in a second language (Escamilla, 2006; García, Makar, Starcevic, Terry, 2011). Its complexity exponentially grows when considering other factors like low socioeconomic status, increased academic standards, and high-stakes testing (August & Shanahan, 2006; Flores, Batalova, & Fix, 2012; Menken, 2008). Yet it is under this assortment of complexities that many students must learn their languages and literacies (Palmer, Henderson, Wall, Zúñiga, & Berthelsen, 2016).

Research confirms that development of an individual's native language provides a strong base for the development of a second language (Cummins, 1981; Thomas & Collier, 2002). In general, the more that one language is developed, the more potential there is for transfer into another language, since both languages share a common underlying proficiency (Cummins, 1979). This is especially true if teachers leverage students' oral language abilities to develop their literacy in each language (August & Shanahan, 2006); the more oral language domains are developed in one language, the greater potential for transfer to the language domains of reading and writing (Butvilofsky & Escamilla, 2011). Thus, students who are instructed in two languages have more opportunities to develop higher language proficiency and participate in complex literacy processes in another language (Mancilla-Martinez & Lesaux, 2010; Melby-Lervag & Lervag, 2011). Nevertheless, many bilingual and English as a Second Language (ESL) programs do not fully develop students' first language, as they do not provide instruction in two languages long term (Center of Applied Linguistics [CAL], 2013).

**CONTACT** Alexandra Babino Alexandra.Babino@unt.edu Language and Literacy, University of North Texas, 1155 Union Circle #310740, Denton, TX 76203-5017.

Alexandra Babino is affiliated with Language and Literacy, University of North Texas, Denton, TX.
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Dual language programs, however, can provide a compelling means to develop proficiency and literacy in two languages while maintaining high levels of academic achievement (De Jong, 2011; Thomas & Collier, 2012). As the strongest form of bilingual education (Baker, 2011), the primary goals of dual language programs are for students to achieve full bilingualism, biliteracy (Lessow-Hurley, 2013; Pérez & Torres-Guzmán, 2002), and positive cross-cultural attitudes in addition to at or above grade level achievement (López & Tápanes, 2011; Wright, 2010). Other benefits include the cognitive benefits of flexible and creative thinking (Guglielmi, 2008; Honigsfeld, 2009), higher self-esteem (Baker, 2011), and the preservation of the minority language (Rumbaut, Massey, & Bean, 2006). Thus, dual language graduates are more likely to be competitive in a transnational world.

These goals may be partially realized through the demographics of the program. Dual language programs can be *one-way*, where all students share the same native language, or *two-way*, with approximately half of the students sharing a native language in the program. Programs can also be *50/50*, where both languages are taught from kindergarten onward, or *90/10*, where one language (usually the minority language) is taught 90% of the time in kindergarten and the second language gradually increases until both languages are taught 50% of the time (Thomas & Collier, 2012). Additionally, programs vary in language allocation, distributing instruction in both languages over different days, times of day, or content areas.

Key to the program, no matter the method of language allocation, is that each language has a protected time to be developed (Warhol & Mayer, 2012). However, even the best-implemented dual language programs struggle to maintain parity of languages (Achugar & Pessoa, 2009; Volk & Angelova, 2007). Many times English is privileged in both academic and social contexts of the school (Babino & Stewart, 2015, 2016), whether the program is one way or two way, with native Spanish or native English speakers. In turn, the goals of bilingualism and biliteracy become increasingly more challenging to achieve.

## Theoretical framework

For the purposes of this work, I took a holistic view of bilingualism that views the bilingual's language proficiency as an integrated whole that "cannot easily be decomposed into two separate parts" (Grosjean, 2008). Instead, a bilingual's language proficiencies are dynamic, multidimensional, and fluid constructs that are qualitatively different from a monolingual of Language A and a monolingual of Language B (García, 2009, 2011; García et al., 2011). That is, a bilingual's linguistic configuration will be different from that of the corresponding monolinguals of the languages involved, resulting in mixed language competence and different language processing and production (Escamilla & Hopewell, 2010).

This holistic view of bilingualism extends to the terms used to describe these students. The term *English Language Learner* (*ELL)* could inherently suggest a subtractive view of the child, defining him or her in terms of what s/he is lacking in the second language (García, Kleifgen, & Falchi, 2008). Instead, I use the term *emergent bilinguals* (Escamilla, 2006; Thomas & Collier, 2012) to refer to young students (3 to 11 years old) "who speak a native language other than English and are in the dynamic process of developing bilingual and biliterate competencies [in this case in Spanish and English], with the support of their communities" (Reyes, 2006, p. 268). Subsequently, I will only use the term ELL in relating to state education agency data for the subgroup of emergent bilinguals who are not yet proficient in English according to the state's measures.

Because of the unique development of bilinguals, Grosjean (1998) duly advises researchers to be leery of comparing different types of bilingual students to monolingual students. Table 1, adapted from Escamilla et al. (2014), highlights the central differences in the holistic bilingual and parallel monolingual paradigms.

According to this holistic view of bilingualism, there are six academic implications for biliteracy classrooms in a biliteracy context. First, as explained by Grosjean (2008), bilinguals' languages are not two separate developing parts; they exist and develop in a unique relationship. Part of this

**Table 1.** Comparing paradigms.

| Academic Implication | Holistic Bilingualism | Parallel Monolingualism |
|---|---|---|
| 1. Treatment of Languages | Languages are viewed as mutually reinforcing with bidirectional transfer | Languages are strictly separated, as they develop independently. |
| 2. Administering and Analyzing Assessments | Assessments are administered separately but analyzed concurrently. | Assessments are administered and analyzed separately. |
| 3. Literacy Instruments | Are authentic, taking the unique linguistic features of each language into account. | Assessments are a translation of English literacy skills and strategies, rather than specific to the language assessed. |
| 4. Expectations of Proficiency | Students are expected to have different strengths of tasks in each language. | Students are expected to perform all tasks equally well in both languages. |
| 5. Treatment of Bilingual Strategies | Bilingual strategies are viewed as part of the normal developmental process of both languages. | Bilingual strategies are discouraged, viewed as indicators of low proficiency in one's languages. |
| 6. Point of Comparison | Students' development is measured against the unique standards of other emerging bilinguals. | Students' development is compared to the development of monolingual speakers of bilinguals' respective languages. |

unique relationship includes linguistic strategies unique to bilinguals such as code-switching, lexical borrowing, and bidirectional transfer. Subsequently, bilinguals' development should not be compared to the monolinguals of either language (Gathercole, 2013) but rather to other emergent bilinguals. Furthermore, it is imperative that proficiency expectations in and between languages reflect a dynamic, multidimensional, fluid understanding of biliteracy development. To have a slight dominance in one language over another or even having mixed dominance (showing strengths in subcategories of each language) is a normal phenomenon. Understanding that mixed dominance is a typical part of biliteracy development will then allow bilingual educators to develop, administer, and analyze the results of biliteracy assessments that reflect a holistic view of bilingualism.

As an extension of a holistic view of bilingualism, Escamilla et al. (2014) created grade-level benchmark ranges for emergent bilinguals' reading (Butvilofsky & Escamilla, 2011, 2012, 2013a, 2013b). Students whose Spanish and English reading levels fall within this grade-level range for each language are in what they call the *biliteracy zone*. The biliteracy zone refers to the range in reading scores on the Evaluación del desarrollo de lecto-escritura (EDL) and Developmental Reading Assessment (DRA), informal reading inventories originally normed on monolingual speakers of each language, that are considered grade-level scores for emergent bilinguals (Celebration Press, 2007a, 2007b). Table 2 displays the biliteracy zone by grade level.

According to the biliteracy zone, emergent bilinguals are expected to show more advanced reading growth in Spanish than English. By creating a range of scores, instead of one score that is considered on level, the researchers practically reinforce the dynamic nature of biliteracy growth for native Spanish-speaking bilinguals.

Subsequently, in response to the challenge of creating biliterate graduates in dual language programs, the purpose of this study was twofold: (a) to describe the dual language programs at each campus to set the context, and (b) to analyze the biliteracy trajectories of fifth-grade emergent bilinguals at each school. These biliteracy trajectories are the second- through fifth-grade Spanish and English informal reading scores, used to track biliteracy progress and make instructional decisions in the classroom.

**Table 2.** Biliteracy zone grade level benchmarks.

| Grade | EDL2 Level (Spanish) | DRA2 Level (English) |
|---|---|---|
| K | A–6 | A–2 |
| 1 | 12–16 | 8–10 |
| 2 | 18–28 | 12–16 |
| 3 | 30–38 | 18–28 |
| 4 | 40 | 30–38 |
| 5 | 50–60 | 40 + |

## Research questions

*RQ1: What is the school context for each campus's dual language program?*

*RQ2: What are the second- through fifth-grade Spanish and English reading biliteracy trajectories for the 2012–2013 fifth-grade emergent bilinguals at each school? Specifically,*

*(a) What are students' reading trajectories in Spanish and English?*
*(b) What is the correlation between Spanish and English reading levels in each grade?*
*(c) What percentage of students is in the biliteracy zone at each grade?*

*RQ3: How do students' biliteracy trajectories vary according to students' initial oral language in Spanish, English, and school of attendance?*

## Methods

This comparative case study is a part of a larger mixed-methods study (Babino, 2015) that included two campuses' dual language programs and students ($n$ = 93 for César Chávez and $n$ = 37 for Memorial). (School names are pseudonyms.) The study was mixed, according to Mertens's (2005) mixed-methods criteria, because it included both qualitative and quantitative methods with a total of two phases in the study. As such, it is considered a mixed-methods multistrand design (Teddlie & Tashakkori, 2009). There was a qualitative emphasis placed in the first phase (QUAL [quan]) that answered RQ1 and a quantitative emphasis placed on the second phase (QUAN) (Morse, 2003), which explored RQ2 and RQ3.

The purposes for this mixed-methods design were several. In Phase 1, the use of mixed methods was for triangulation, to corroborate and expand findings generated through key informant interviews (3), teacher surveys (33), teacher focus groups (2), and trend data from the state education agency (6) to create profiles for each of the cases. A second purpose was to expand the quantitative findings of both schools. In the second quantitatively focused phase, descriptive statistics and Pearson $r$ were used to examine the second- through fifth-grade Spanish and English reading trajectories for students at both schools. Since the Spanish and English reading trajectories are correlated, I used a split-plot MANOVA (instead of a growth curve model) to assess the variance of students' biliteracy trajectories due to school of attendance, initial Spanish oral language, and initial English oral language. Lastly, by creating a more comprehensive profile for each school, the study addresses the need for more demographic and program contextualization of dual language programs (Hornberger & Link, 2012).

## Instruments

### *Phase 1*

The following four methods were collected over a six-month period in the first phase of the study with the goal to create a school profile for each campus's dual language program.

#### *Key informant interviews*

Three educators were chosen based on their diverse professional experience to serve as key informants: Each key informant worked on both campuses in some capacity as well as has worked at other dual language programs inside and outside the district. These semistructured interviews consisted of three parts: (a) professional background of the informant, (b) general description of each school, and (c) successes and challenges of each school's dual language program.

#### *State education agency data*

I collected and analyzed the demographic and performance data of each school over the 2007–2013 school years, the six years of program implementation that include the 2012–2013 student cohort at each

campus. These reports included demographic data on each school's staff (including years of experience, ethnicity, positions) and student data (including ethnicity as well as scores on standardized tests).

### *Teacher surveys*

Dual language teachers ($n$ = 22 at César Chávez; $n$ = 11 at Memorial) of the cohort students answered an electronic survey consisting of four parts: (a) general teaching and dual language teaching background, (b) general dual language program questions, (c) professional development, and (d) instruction. The general teaching background and dual language program sections consisted of short-answer and extended-answer questions, while the sections on professional development and instruction included short-answer, extended-answer, 5-point Likert scale, and multiple-choice questions.

### *Teacher focus groups*

After a preliminary analysis of the key informant interviews and teacher surveys, I created a semistructured focus group questionnaire in order to reach saturation on emerging themes: management of classroom materials and coordinating with a partner teacher, professional development, support with resources, overall work load, and teacher retention. Each focus group ($n$ = 7 at César Chávez; $n$ = 8 at Memorial) included a combination of Spanish and English teachers, who have taught primary and intermediate grades, with a range of teaching experience in general and the dual language program in particular.

## *Phase 2*

The following two instruments were used in the second phase of the study, designed to assess the biliteracy trajectories of two cohorts of dual language students over the 2007–2013 school years, with possible reasons for variance in students' trajectories. Only students who had participated in all years of the program were included in the analysis.

### *EDL and DRA*

The Evaluación del desarrollo de lecto-escritura (EDL) (Celebration Press, 2007a) and Developmental Reading Assessment (DRA) (Celebration Press, 2007b) are informal reading inventories given to all bilingual students in the district at the beginning, middle, and end of each school year. In general, the assessments include three sections. The first section assesses reading engagement through questions the teacher asks students about their reading habits; the second section provides the teacher an opportunity to assess reading fluency through oral reading of a passage from a book from the test kit; the third section is comprised of comprehension questions. I collected the second- through fifth-grade Spanish and English scores from the district online data management system. By using the EDL and DRA, I am able to test biliteracy development theory from others using the same assessments (Escamilla & Hopewell, 2010; Hopewell & Escamilla, 2014; Sparrow, Butvilofsky, Escamilla, Hopewell, & Tolento, 2014).

### *Woodcock-Muñoz Language Survey–Revised (WMLS-R)*

This norm-referenced test battery assesses bilingual students' cognitive academic language proficiency (CALP) in Spanish and English upon entering school and then at the end of each school year (Woodcock, Muñoz-Sandoval, Ruef, & Alvarado, 2005). During assessment, students are called one at a time to be orally evaluated in each language in a quiet room by a trained bilingual aide. Students can receive a score of 0–6 at .5 increments for their oral proficiency level. A score of 4 is considered proficient in each language. Because the WMLS-R's norming sample includes over 100 diverse communities representative of the U.S. population, it is an appropriate assessment for the study's data on oral language development.

## Data analysis

To create the school profiles for RQ1, I used grounded theory (Corbin & Strauss, 2008) as my general analytic strategy to code the key informant interviews (3), state education agency data (12),

teacher surveys (33), and teacher focus groups (2). Then, I created a chain of evidence from multiple sources (Yin, 2014), resulting in a narrative for each campus. For the second phase of the study answering RQ2 and RQ3, I solely used quantitative methods. I conducted descriptive statistics for each language (Spanish and English) for each grade (second through fifth) for each campus (César Chávez and Memorial), before conducting descriptive statistics for individual students at each campus. Then I ran a correlation coefficient (Pearson *r*) in order to assess the relationship between Spanish and English reading development for each grade level. Afterwards, I gathered descriptive statistics for the percentage of students in each grade at each school who are in the biliteracy zone, as defined by Escamilla et al. (2014). Lastly, I examined the variance of students' biliteracy trajectories by conducting a split-plot MANOVA for the following variables: initial oral language level in Spanish, English, and school of attendance.

## Findings

### *Research question 1*

RQ1 explored the school context of each school's dual language program from the perspective of key informants (who have worked at both schools as campus administrators or teachers), state education agency data, teacher surveys, and focus groups.

### *District profile*

The study took place in a suburban school district in the southwest region of the United States. Covering over 13 municipalities and 70 campuses, the district is large and diverse. As part of a pilot program, the district chose to implement a 50/50, one-way dual language program, with a one-teacher/one-language model. That is, students received literacy and content area instruction from kindergarten to fifth grade in both languages, with one teacher for Spanish instruction and another teacher for English instruction. The frequency in which students switched languages and teachers depended on their grade level. In kindergarten and first grade, students switched languages every day; in second grade, students switched every two days, and in third through fifth grades, students switched languages (and teachers) every week.

Furthermore, within the district dual language model was a specific simultaneous balanced biliteracy model, including the following components in daily instruction: shared reading (10 minutes); interactive read aloud (45 minutes); guided reading/literacy workstations (45 minutes); instruction in language structure (10 minutes); word work (10 minutes); independent reading (10–15); and writer's workshop (30 minutes). By implementing this balanced biliteracy model, the district aimed for students to be at or above grade level in each language by the end of fifth grade. While both campuses in this study shared the basic dual language and simultaneous balanced biliteracy features of the district, each presents unique differences to be discussed in the following profiles.

### *Campus profile: César Chávez, a unique, homogeneous case with high needs*

César Chávez Elementary is the oldest, largest, and lowest socioeconomic status school in its area. According to the state education agency's academic performance reports (2007–2013), over the past six years César Chávez has served between 892 and 1,122 students, with an average of 93% Latino students; additionally, an average of 85% of the school population pre-K–fifth grade are classified as ELLs, and an average of 91% qualify for the free and reduced-price lunch program. As such, César Chávez serves a large, relatively homogenous population. Six out of seven classrooms in each grade level are dual language classrooms for all years of implementation. Part of what makes the campus unique is its size; it is the largest elementary school in the district by 200 students and larger than 13 of 15 middle schools in

its district. Another distinguishing factor of César Chávez is its students. The campus has the highest concentration of ELLs in the district, with most students being first-generation immigrants from Mexico who live in two major area trailer parks and two apartment complexes.

Furthermore, teachers and administrators through interviews, surveys, and focus groups emphasized the cultural distinctiveness of the campus. Key informant Ms. De los Santos, who currently works at César Chávez, further explains, "We are a very unique campus. There is no one like us in our district and I would dare say [in the region]. The school is like a celebration of culture. You immediately feel that walking in the door." As such, what makes the campus distinct from others in its district is a sense of Latino culture that emanates from the dominant Latino-identifying students. Teachers explain that this culture can be seen through the languages being spoken and displayed in the hallways to the rosaries the students wear around their necks and the parents who bring food from their native country to share with their children at lunch. Most students also enter school Spanish dominant with little or no exposure and proficiency in English. The average beginning oral language scores for students at César Chávez are 3.4 in Spanish and 1.75 in English, using WMLS-R's (2005) 6-point scale.

Furthermore, in addition to a large, dominant Latino student population, another distinguishing factor at César Chávez is the teacher demographics, with an average of 40% Latino and 60% White teachers and administrators. There are more Latino and/or bilingual teachers at César Chávez than any other school in the district. Staff demographics are shown in Table 3 for six years of instruction for the cohort of student biliteracy trajectories explored in this study.

Moreover, the staff is also a relatively new one, with about 30% of its total faculty in its first five years of the profession. While the staff demographics show that between 20%–39% of staff have 11 or more years of experience, the vast majority of staff with this experience are paraprofessionals, administrators, specials, and specialists who are not assigned an academic content area for instruction. In addition to having a newer staff, teachers and administrators note that there is also a high level of turnover for both teachers and administrators, distinct from other schools in which they've worked. In the span of the study, the campus has had three principals and eight different assistant principals. At any time, about half of the administrators were Latino and/or bilingual. For each of the six years under study, anywhere between 15 to 35 teachers left campus at the end of each school year, providing another round of new teaches to train and serve students at César Chávez.

When asked about the high turnover, teachers cited the heavy workload, emanating from student demographics. Teachers not only have two classes of students (most have around 44 students) but also claim to have students who need extra linguistic and academic support. Ms. Sánchez, a third-year, bilingual, first-grade teacher explains, "[it] is disheartening being a teacher, knowing that so

**Table 3.** César Chávez staff demographics.

| Cohort Group's Grade Levels by Year | 2007–2008 | 2008–2009 | 2009–2010 | 2010–2011 | 2011–2012 | 2012–2013 |
|---|---|---|---|---|---|---|
| | Kinder | First | Second | Third | Fourth | Fifth |
| # Staff | 107 | 97.1 | 79.7 | 91.3 | 86.8 | 89.7 |
| # Teachers | 80.2 | 71.2 | 70.2 | 66.3 | 63.8 | 63.6 |
| # Paras | 17 | 16 | 1.5 | 16 | 13 | 16 |
| # Admin | 4 | 4 | 3 | 4 | 3 | 3 |
| #Hispanic | 32 (39.9%) | 30 (42.1%) | 27.3 (38.9%) | 26 (39.2%) | 26 (40.7%) | 26 (40.9%) |
| #White | 43.2 (53.9%) | 35.2 (49.4%) | 38.9 (55.4%) | 38.3 (57.8%) | 35.8 (56.1%) | 36.4 (57.3%) |
| # Beginning | 6 (7.5%) | 6 (8.4%) | 7 (10%) | 4 (6%) | 1 (1.6%) | 3.1 (4.9%) |
| # 1–5 yrs. | 22 (27.4%) | 19 (26.7%) | 21 (29.9%) | 32 (48.3%) | 32.4 (50.8%) | 32.2 (50.7%) |
| # 6–10 yrs. | 19 (23.7%) | 21 (29.5%) | 18.5 (26.4%) | 12.6 (19%) | 13 (20.4%) | 12.1 (19.1%) |
| #11–20 | 22 (27.4%) | 17 (23.9%) | 15.3 (21.8%) | 11 (16.6%) | 11.4 (17.9%) | 8 (12.6%) |
| # 20+ | 11.2 (14%) | 8.2 (11.5%) | 8.4 (12%) | 6.7 (10.1%) | 6 (9.4%) | 8.1 (12.7%) |
| Average Yrs of Experience | 10.6 | 9.5 | 9.1 | 7.5 | 8.1 | 8.5 |
| Mean English Reading Level (DRA) | N/A | N/A | 20 | 30 | 40 | 60 |
| Mean Spanish Reading Level (EDL) | N/A | N/A | 24 | 34 | 40 | 60 |

many kids are low. [...] And I think that does discourage a lot of teachers and that is a reason they leave." All six teachers in the focus group affirmed the difficulties of serving two whole classes of students new to the United States, with little or no schooling in their countries of origin. She continues, "I don't feel successful as a teacher because 10 kids are reading at a c [kindergarten level]." Taken together, both student and teacher demographics make César Chávez a distinct campus: Its large, almost homogenous population of Mexican-American immigrants with many linguistic and academic needs create a heavy work load that is difficult for new teachers and administrators to serve long term.

### *Campus profile: Memorial, a heterogeneous case, struggling against English instruction hegemony*

Memorial Elementary, located on the other side of the district, serves as the sole bilingual school for students in its area. It has a large, Spanish-English bilingual, Latino population. According to the state education agency's academic performance reports (2007–2013), over the past six years Memorial has served between 617 and 792 students, with an average of 70% who are Latino; additionally, an average of 55% of the school population pre-K–fifth grade are classified as ELLs, and an average of 70% qualify for the free and reduced-price lunch program. Memorial shares similar demographics in regards to overall size, number of ELLs, and students receiving free and reduced-price lunch at three other elementary school campuses in the district.

While Memorial shares many similar demographic features with César Chávez, a closer analysis through interviews, surveys, and focus groups reveals that this campus is more heterogeneous than César Chávez. Most of the Latino families at Memorial are of Mexican heritage, yet there are more students from other Spanish-speaking countries as well. Additionally, most of the Latino students are first-language bilinguals—that is, they've grown up speaking Spanish and English to varying degrees and as a result are not all classified as ELLs. Those who are ELLs at Memorial have average initial oral language scores of 3.0 in Spanish and 1.5 in English, using Woodcock et al.'s (2005) 6-point scale. Another difference between the two campuses, according to key informant Ms. De los Santos, who has worked at Memorial and currently works at César Chávez, is "a cultural piece ... where as there [referring to Memorial] the kids are more Americanized than at César Chávez." Other teachers from the focus group expanded on this sentiment, sharing how students—while speaking Spanish at home—have "American" values, seen in students' hobbies and parents' language choices. Furthermore, Memorial's staff is also more heterogeneous than that at César Chávez. There are approximately 10% fewer Latino teachers at Memorial than César Chávez up until the 2012–2013 school year. Staff demographics are shown below in Table 4 for six years of instruction.

**Table 4.** Memorial's staff demographics.

| Cohort Group's Grade Levels by Year | 2007–2008 | 2008–2009 | 2009–2010 | 2010–2011 | 2011–2012 | 2012–2013 |
|---|---|---|---|---|---|---|
| | Kinder | First | Second | Third | Fourth | Fifth |
| # Staff | 67 | 69.4 | 67 | 71 | 68 | 77 |
| # Teachers | 49 | 51.3 | 48 | 54 | 53 | 56 |
| # Paras | 3 | 10.5 | 12 | 11 | 10 | 12 |
| # Admin | 3 | 3 | 2 | 3 | 2 | 3 |
| #Hispanic | 14 (28.5%) | 15 (29.2%) | 15 (31.2%) | 15 (27.8%) | 16 (30.2%) | 21 (37.5%) |
| #White | 32 (65.4%) | 34.3 (66.9%) | 31 (64.6%) | 36 (66.7%) | 35 (66%) | 33 (58.9%) |
| # Beginning | 3 (6%) | 3 (5.8%) | 1 (2.1%) | 3 (5.6%) | 1 (1.9%) | 2 (3.6%) |
| # 1–5 years | 14 (28.6%) | 12 (23.4%) | 11 (22.9%) | 15 (27.8%) | 16 (30.2%) | 14 (25%) |
| # 6–10 years | 11 (22.5)% | 11.4 (22.3%) | 10 (20.8%) | 11 (20.4%) | 11 (20.8%) | 14 (25%) |
| #11–20 | 15 (30%) | 16.9 (32.9%) | 18 (37.5%) | 18 (33.3%) | 18 (34%) | 23 (41%) |
| # 20+ | 6 (12.2%) | 8 (15.7%) | 8 (16.7%) | 7 (13%) | 7 (13.2%) | 3 (5.4%) |
| Average Years of Experience | 10.4 | 11.7 | 11.8 | 11 | 11.4 | 10.3 |
| Mean English Reading Level (DRA) | N/A | N/A | 30 | 38 | 50 | 60 |
| Mean Spanish Reading Level (EDL) | N/A | N/A | 30 | 38 | 50 | 60 |

According to Memorial's administration, this difference in staff demographics may be partially due to the change in the dual language program at Memorial. In the early years, the dual language program began as a strand within the school, with only two dual language classes out of six per grade level. In the 2011–2013 school year, Memorial opened one cohort (consisting of two classrooms of students) of two-way dual language students. Then, by the 2012–2013 school year, the dual language program expanded to include more sections within each grade level, creating a greater need for Spanish-speaking (and many times) Latino teachers. What's more, all three key informants who have worked intimately on both campuses note that until the past several years, Memorial has experienced a mostly stable staff with little turnover and high teacher retention. Memorial also has more staff with six or more years of experience than César Chávez does. Additionally, the principal has served the staff for over 20 years as both a teacher and campus principal. In fact, Ms. Wright opened the dual language program on campus. Although she admits she is not bilingual, she states she wholeheartedly supports the dual language program on campus.

A major theme that cut across surveys, focus groups, and interviews was the use of linguistic strategies for Spanish learners and the dominance of English in the program.

Assistant principal Ms. Sanders explains that while she notices that the kindergarten bilingual teachers show strengths in making content comprehensible for Spanish learners, it remains an area for growth campuswide. Classroom teachers in the focus group expressed similar concerns on how to maintain high levels of Spanish instruction. For various reasons, whether due to students' language dominance or pressure of high-stakes testing, focus group teachers explain that there is more English discourse in the classroom than the 50/50 program ideal describes. When asking campus teachers if teaching Spanish during Spanish instruction was nonnegotiable, Ms. Pérez, a fourth-grade bilingual teacher, responded, "It's a nonnegotiable, but they still do it. It's especially disheartening if their first language is Spanish."

Ms. Gómez, a key informant who was also present at the focus group, speaks of how English instruction during the Spanish time affects students over the course of the program:

> It is a teacher thing [choosing to instruct in English rather than Spanish during Spanish instruction]. A teacher should know that I need to scaffold for this, and I need to assess maybe a little differently. So maybe one year, this child will get a teacher that helps them in Spanish and scaffolds and in English, and it's a great year for that child. But then they go to the next year and [the teacher is] teaching mostly in English.

Taken together, the surveys and focus group show a discontent with the English dominance in the program, while still demonstrating a belief in the potential of the program. As such, teachers feel like the program is a work in progress, largely due to its Spanish instruction.

## *Research question 2*

RQ2 examined the biliteracy trajectories of each campus, including students' second- to fifth-grade Spanish and English reading scores. This question also examined the correlation between Spanish and English reading scores at each grade, before ascertaining the percent of students in the biliteracy zone, according to Escamilla et al.'s (2014) biliteracy zone benchmarks by grade.

## *César Chávez's biliteracy trajectory*

Figure 1 displays the mean Spanish and English biliteracy trajectories for César Chávez Elementary ($n$ = 93) from second to fifth grade.

Overall, the mean biliteracy trajectory at César Chávez shows higher Spanish reading scores in second and third grade, with identical mean reading scores in Spanish and English by the fourth and fifth grades. Mean Spanish (EDL) reading scores for second-grade students at César Chávez elementary are slightly higher than English reading scores but still fall within the grade-level targets set by the biliteracy zone in second and third grade with Spanish EDL scores of 24 and 34

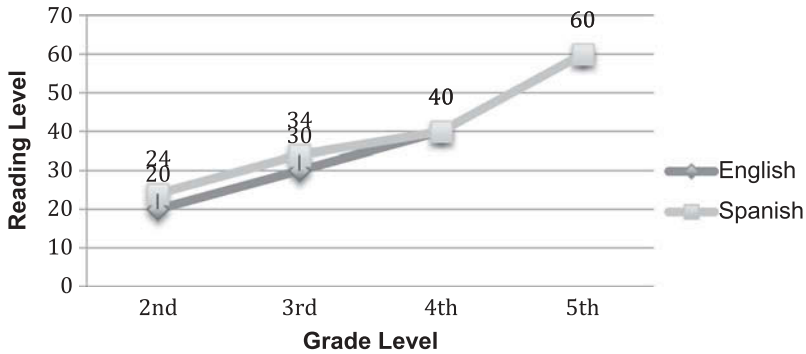


**Figure 1.** César Chávez's biliteracy trajectory.

respectively. Moreover, the mean English (DRA) reading score for the end of second grade is a level 20 (equivalent to the middle of second grade), followed by a mean score of 30 (equivalent to beginning of third grade), 40 (equivalent to the end of third grade) and 60 (equivalent to the end of fifth grade) at the end of third, fourth, and fifth grades.

Mean fourth- and fifth-grade Spanish scores are identical to fourth- and fifth-grade English scores (40 and 60 respectively), with mean student reading scores being on level by fifth grade. According to Escamilla et al.'s (2014) grade-level benchmarks with a holistic view of emergent bilinguals, César Chávez's biliteracy scores are on or above target in each grade level. Thus, the mean biliteracy trajectory at César Chávez confirms the assumption undergirding Escamilla et al.'s (2014) biliteracy zone with the DRA and EDL: Students' reading scores in Spanish will be slightly higher than their English scores in the primary grades.

The student-by-student analysis of biliteracy growth shows a greater range in Spanish and English scores for second and third grade and less variation in fourth and fifth grades, as shown in Figure 2 and Figure 3.

Spanish scores demonstrate a range for each grade level, with the greatest range in third grade, spanning eight reading levels and the least variance in fifth grade with four reading levels. For English, second grade shows the greatest range in reading scores, with 11 different reading levels, while fifth-grade English reading scores show the least variance, spanning seven reading levels. Overall, there is significantly less variation in the Spanish reading scores when compared to English reading scores at César Chávez, possibly due to Spanish being the dominant language for its students.

### *Memorial's biliteracy trajectory*

Overall, the biliteracy trajectory at Memorial ($n$ = 37) shows identical means in Spanish and English reading scores in second through fifth grades (see Figure 4). Mean Spanish (EDL) and English

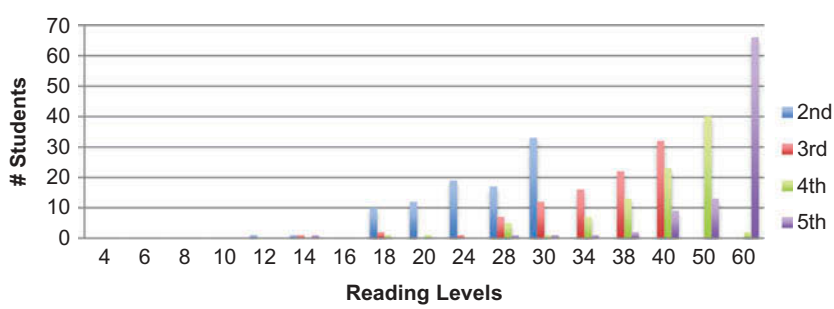


**Figure 2.** César Chávez Spanish reading distribution.

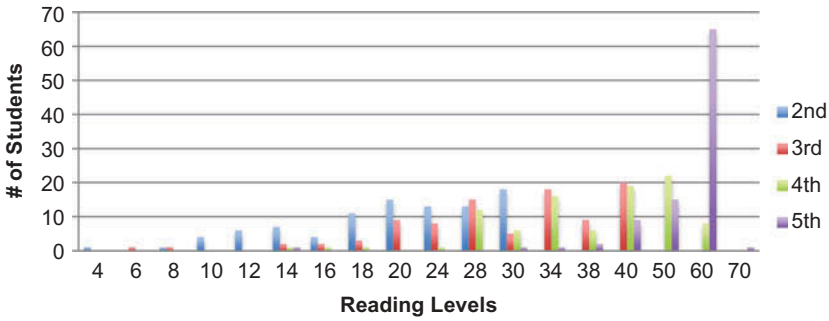


**Figure 3.** César Chávez's English reading distribution.

(DRA) reading scores for second grade are a level 30 (equivalent to the end of second grade or beginning of third grade), followed by reading scores of 38, 50, and 60 at the end of third, fourth, and fifth grades (equivalencies are the end of third grade, end of fourth grade, and the end of fifth grade reading levels respectively). According to Escamilla's Biliteracy Zone chart, Memorial's biliteracy scores are at or above grade level in both Spanish and English, as seen in Figure 4.

Subsequently, the mean biliteracy trajectory at Memorial Elementary does not follow the assumption underlying the biliteracy zone chart, with Spanish reading scores being slightly higher than English reading scores. Instead, there is no mean difference in scores.

The student-by-student analysis of biliteracy growth shows a greater range in Spanish and English scores for second and third grade and less variation in fourth and fifth grades, as shown in Figure 5 and Figure 6.

Spanish scores demonstrate a range for each grade level, with the greatest range in second grade, spanning six reading levels and equal ranges of scores in third, fourth, and fifth grades, each spanning five reading levels. For English, second grade shows the greatest range in reading scores, with eight different reading levels, while fourth- and fifth-grade English reading scores show the least variance, spanning five reading levels. Like the scores at César Chávez, there is significantly more variation in second-grade English scores when compared to Spanish reading scores.

Overall, each school demonstrates distinct mean biliteracy trajectories, with descriptive analyses of individual biliteracy trajectories at each school shedding additional light on each school's biliteracy development. The biliteracy trajectories at both campuses show a range of reading scores in Spanish and English at each grade level, with greater variations in English student reading levels in second grade and less variation in each language in fourth and fifth grades. This aligns with the literature describing the distinct, dynamic nature of biliteracy growth for emergent bilinguals.

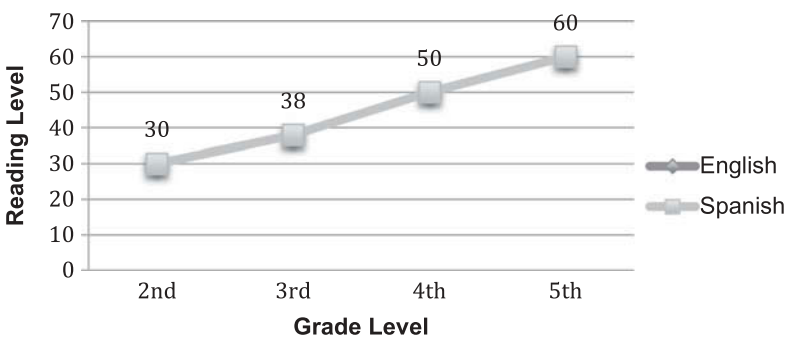


**Figure 4.** Memorial's biliteracy trajectory.

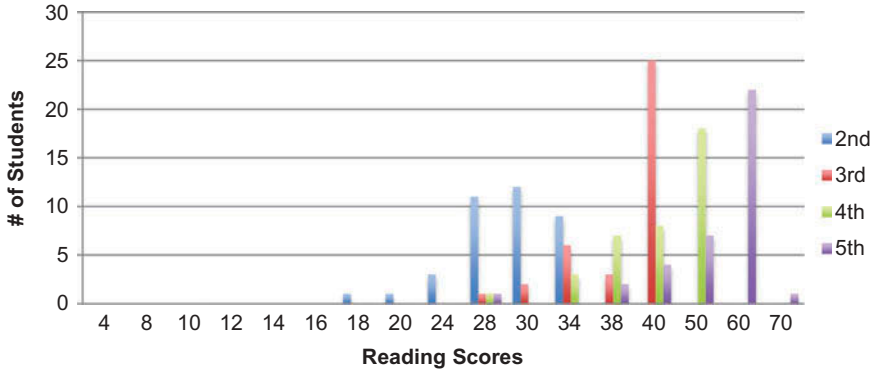


**Figure 5.** Memorial's Spanish reading distribution.

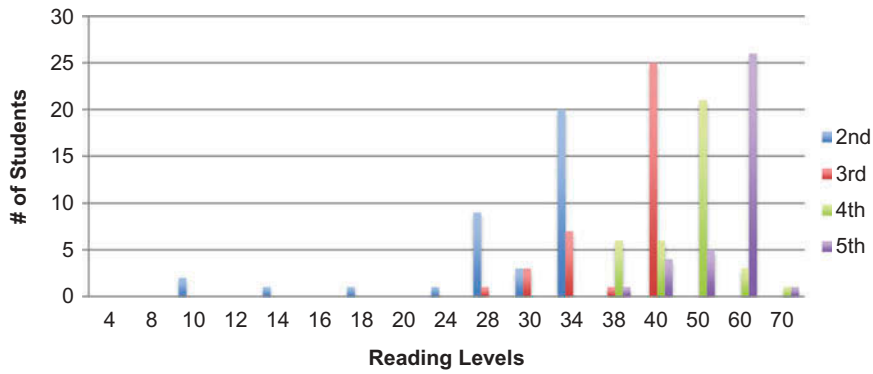


**Figure 6.** Memorial's English reading distribution.

### *Spanish and English reading correlations*

In addition to examining the biliteracy trajectories at each campus, RQ2 explored the correlation between Spanish and English reading scores at each grade. Table 5 shows the correlations for each campus by grade.

Generally, Spanish and English reading scores are highly correlated at César Chávez Elementary ($n$ = 93), with high correlations in second and third grade, $r(91) = .76$, fourth grade, $r(91) = .78$, and a very high correlation in fifth grade, $r(91) = .96$, $p < .01$ (Dancey & Reidy, 2004). On the other hand, the Spanish and English reading scores are generally moderately correlated at Memorial Elementary

**Table 5.** Spanish and English reading correlations.

| School | Grade | r | r2* |
|---|---|---|---|
| César Chávez | 2 | 0.76 | 0.58 |
| | 3 | 0.76 | 0.58 |
| | 4 | 0.78 | 0.61 |
| | 5 | 0.96 | 0.99 |
| Memorial | 2 | 0.54 | 0.29 |
| | 3 | 0.7 | 0.48 |
| | 4 | 0.57 | 0.33 |
| | 5 | 0.62 | 0.38 |

*All significant at $p$ <.01.

($n$ = 37), with moderate correlations in second grade, $r(35) = .54$, a high correlation in third grade, $r(35) = .7$, and moderate correlations in fourth, $r(35) = .57$, and fifth grades, $r(35) = .62$, $p < .01$. Subsequently, both schools' biliteracy trajectories show Spanish and English reading correlations that are in line with current research about biliteracy development. César Chávez's very high correlation of reading scores in fifth grade will be further explored in the discussion.

## Biliteracy zones

With an understanding of the biliteracy trajectories at each campus and the correlation between Spanish and English reading scores, the second to last subquestion in RQ2 examines the percentage of students who are in the biliteracy zone at each grade at both campuses, as shown in Table 6.

Overall, many students are in the biliteracy zone on each campus, with a greater percentage of students reading in the biliteracy zone in second grade at both campuses. In fourth and fifth grades, both campuses experience marked changes in the percentage of students in the biliteracy zone, with the greatest decrease occurring from third to fourth grade (−15% for César Chávez and −27% for Memorial). By fifth grade, increases at both campuses (+16% for César Chávez and +11% for Memorial) result in a comparable percentage of students in the biliteracy zone.

Furthermore, a student-by-student analysis for the biliteracy zone reveals that the biliteracy trajectories of students at César Chávez ($n$ = 93) confirm the assumption of Escamilla et al.'s (2014) biliteracy zone: Emergent bilinguals who speak Spanish at home will have slightly higher Spanish reading scores than English reading scores. However, nine students at Memorial ($n$ = 37) fall outside the biliteracy zone in fourth grade, with only four returning back to the biliteracy zone in fifth grade (see Table 7). The discussion includes possible reasons for this phenomenon.

## Research question 3

Since Spanish and English reading scores are theoretically and practically correlated (evidenced by the Pearson $r$ coefficients in this study), I performed a slit-plot MANOVA analysis using Spanish and English reading scores to determine if the difference in biliteracy trajectories at each campus was statistically significant. Mauchly's test of sphericity was significant for Spanish reading, W = .54, $x^2$ (5) = 67.60,

**Table 6.** Biliteracy zone by school.

| César Chávez's Biliteracy Zone | | | | Memorial's Biliteracy Zone | | | |
|---|---|---|---|---|---|---|---|
| Grade | Total N | BZ n | % | Grade | Total N | BZ n | % |
| 2 | 93 | 87 | 94% | 2 | 37 | 35 | 96% |
| 3 | 93 | 79 | 85% | 3 | 37 | 37 | 100% |
| 4 | 93 | 65 | 70% | 4 | 37 | 27 | 73% |
| 5 | 93 | 80 | 86% | 5 | 37 | 31 | 84% |

**Table 7.** Memorial's student biliteracy trajectories that don't follow the BZ assumption.

| Student | 2nd E. | 2nd Sp. | 3rd E. | 3rd Sp. | 4th E. | 4th Sp. | 5th E. | 5th Sp. |
|---|---|---|---|---|---|---|---|---|
| 106 | 34 | 28 | 40 | 40 | 50 | 38* | 60 | 50 |
| 107 | 10* | 24 | 30 | 28 | 38 | 34* | 40 | 38* |
| 108 | 18 | 18 | 28 | 30 | 38 | 34* | 50 | 40* |
| 114 | 14 | 28 | 30 | 34 | 40 | 38* | 50 | 38* |
| 118 | 28 | 28 | 34 | 34 | 38 | 38* | 50 | 50 |
| 121 | 28 | 28 | 38 | 40 | 40 | 34* | 60 | 40* |
| 122 | 34 | 28 | 40 | 34 | 50 | 38* | 60 | 50 |
| 123 | 28 | 28 | 34 | 34 | 40 | 38* | 60 | 50 |
| 126 | 34 | 34 | 40 | 40 | 50 | 38* | 60 | 50 |
| 128 | 24 | 24 | 34 | 30 | 40 | 28* | 40 | 28* |

*indicates a score that does not fall in the biliteracy zone.

**Table 8.** Repeated measures multiple analysis of variance for grade and interactions (Greenhouse-Geisser epsilon correction).

| Effect | | df | Mean Square | F |
|---|---|---|---|---|
| Grade | Spanish | 2.214 | 291.047 | 11.298* |
| | English | 2.034 | 558.585 | 17.971* |
| Grade * Initial_EOL | Spanish | 2.214 | 26.587 | 1.032 |
| | English | 2.034 | 22.128 | .712 |
| Grade * Initial_SOL | Spanish | 2.214 | 25.182 | .978 |
| | English | 2.034 | 23.424 | .754 |
| Grade * School | Spanish | 2.214 | 65.633 | 2.548 |
| | English | 2.034 | 376.641 | 12.117* |
| Error (Grade) | Spanish | 248.022 | 25.760 | |
| | English | 227.806 | 31.083 | |

*Note*. *$p < .001$.

**Table 9.** Split-plot repeated measures of analysis of variance.

| Effect | Pillai's Trace | F | $df_1$ | $df_2$ | $\eta^2$ |
|---|---|---|---|---|---|
| Initial EOL | .06 | 3.53** | 2 | 111 | .06 |
| Initial SOL | .05 | 2.75 | 2 | 111 | .05 |
| School | .32 | 25.64* | 2 | 111 | .32 |
| Grade | .33 | 8.69* | 6 | 107 | .33 |
| Grade * Initial EOL | .59 | 1.13 | 6 | 107 | .06 |
| Grade * Initial SOL | .03 | .60 | 6 | 107 | .03 |
| Grade * School | .20 | 4.38* | 6 | 107 | .19 |

*Significant at $p < .001$; **$p < .05$.

$p < .001$, and English reading, W = .40, $x^2$ (5) = 102.24, $p < .001$. The test of sphericity assesses the approximate equality of the model implied and the sample variance-covariance matrices. A significant test of sphericity violates the assumption that both variance-covariance matrices are equal; therefore, the Greenhouse-Geisser corrections are interpreted. Table 8 displays the Greenhouse-Geisser corrections for grade and interactions for Spanish and English performance scores.

The results revealed that there is a significant change in Spanish, $F(2.214, 248.022) = 11.298$, $p < .001$, and English, $F(2.034, 227.806) = 17.971$, $p < .001$, across the four grades. This is expected in a dual language program that aims for students to progress in each language. Yet there was also a significant interaction effect between grades and the school type for English scores, $F(2.034, 227.806) = 12.117$, $p < .001$. This suggests that the effect of grade across time for English scores is different for Memorial and César Chávez Elementary; reasons for possible differences will be explored in the discussion. Furthermore, I used Pillai's Trace to correct for type-one errors instead of Wilk's Lambda, because Box's *M* was statistically significant (Tabachnick & Fidell, 2001). Table 9 summarizes the results of the split-plot MANOVA analyses.

The analysis revealed a main effect for initial English oral language, F(2,111) = 3.53, $p < .03$, $\eta^2 = .06$, and school, F(2, 111) = 25.64, $p < .001$, $\eta^2 = .32$. The $\eta^2$ suggests that 6% of the variation in biliteracy trajectories is explained by students' initial English oral language scores and 32% of the variation in biliteracy trajectories is explained by school of attendance. Additionally, there was an interaction effect for grade and school, F(6, 107) = 4.38, $p < .001$, $\eta^2 = .19$, showing that the variables of grade level and school account for 20% of the variance in students' biliteracy trajectories. Differences in initial Spanish oral language are not a statistically significant indicator of student biliteracy development across schools.

## Discussion

Participating students at both campuses demonstrated positive yet distinct trajectories toward biliteracy, after participating in a 50/50 dual language model with paired literacy instruction from kindergarten to fifth grade. While initial Spanish oral language did not contribute to the differences in student biliteracy

trajectories, initial English oral language did, attributing 6% of biliteracy trajectory variance. Since the school of attendance explains 32% of the variance in students' Spanish-English reading scores, a deeper analysis of each school's demographics and programming is integral to refining an understanding of biliteracy development. Even with small sample sizes that are not generalizable, these case studies provide a critical test (Yin, 2014) of contemporary biliteracy theory that acknowledges the unique, dynamic of biliteracy growth by utilizing measures normed on other bilinguals.

## Biliteracy contexts

Of particular importance are the school contexts that situate the students' biliteracy developments. Both campuses share the same program design, yet differences in student demographics, staff demographics, and program implementation provide greater insight into the contexts of biliteracy (Hornberger & Link, 2012) that encourage, discourage, or send mixed messages in biliteracy development (Palmer et al., 2015). Teachers, key informants, and administrators note that César Chávez embodies a clear appreciation for the minority culture, while Memorial, though affirming the minority culture, is holistically more "Americanized." This is evident not only in the distinct student populations both schools serve but also in the teacher demographics and dual language programming. An average of 40% of school personnel are Latino at César Chávez, and 30% are Latino at Memorial; moreover, six out of seven class sections are dual language at César Chávez, while two out of six class sections are dual language at Memorial.

Possible reasons that contribute to these differences in biliteracy contexts is that students at Memorial experience limited language exposure as first-language bilinguals (McCardle & Hoff, 2006) in addition to the leakage of English as the language of power in schools (Freeman, 1998), and a host of individual identity factors interact with students' social networks (Norton, 2013). Certainly educators' languages and teaching experiences contribute to their curriculum selection, instruction, and language choices over the course of the program that send the message (or mixed messages) of biliteracy's value (Palmer et al., 2015). Still, no matter the contributing factor, common across both campuses was that fostering biliteracy development was a challenging ideal.

## Biliteracy trajectories

### Similarities across cases

As evidenced by the average reading levels by fifth grade, Spanish literacy development is integral to the biliteracy development for emergent bilinguals at both schools. This is in line with current biliteracy theory that paired literacy instruction from kindergarten leads to most students being in the bilingual zone throughout elementary school and at or above grade level in both languages by fifth grade. By the end of the program, 86% and 84% (César Chávez and Memorial respectively) of students' reading scores were in the biliteracy zone. Additionally, the student-by-student analysis confirms that both campuses' students' scores develop at different rates in each language—especially in second and third grades, where student reading levels span six to 11 levels across both languages and schools.

### Differences across cases

However, the rate of and correlation between Spanish and English reading are markedly different for emergent bilinguals at César Chávez, as first-generation Mexican Americans or Mexican immigrants with Spanish dominance upon entering school. This is especially demonstrated by the .96 correlation between English and Spanish reading scores in fifth grade and the trend of higher Spanish reading scores in second, third, and fourth grades for César Chávez's students. Memorial's emergent bilinguals, on the other hand, as second- and third-generation Latinos from an early bilingual background, show moderate correlations between Spanish and English reading levels (average $r = .61$), with identical reading means from second through fifth grade (30, 38, 50, 60 respectively).

As these two groups show, it is possible that Latino Spanish/English bilinguals may not always show an initial reading strength in Spanish, as previously conceived (Butvilofsky & Escamilla, 2011, 2012, 2013a, 2013b).

### *Implications for theory and practice*

Though typically grouped together as Latino bilingual students, the differences in biliteracy trajectories beg the question if demographic nuances within the Latino bilingual population may lead to fundamental campus-based program adjustments. Subsequently, the primary issue facing practitioners is how to adjust the dual language programs at each campus. For instance, César Chávez can capitalize on Spanish literacy development by not disassembling the program midway in third or fourth grades, where—from a monolingual view—it may seem that the program is not achieving grade-level English reading scores for its students. It could be tempting under the pressure of standardized tests for stakeholders at campuses like César Chávez to interpret the biliteracy growth in second, third, and fourth grades as evidence of the ineffectiveness of dual language programs. Yet, as the biliteracy trajectories at César Chávez eventually show, ultimate English and Spanish literacy development are not only highly correlated but very highly correlated by fifth grade. Thus, by disassembling a dual language program that is seemingly ineffective, stakeholders could diminish the full biliteracy potential of its emergent bilinguals by fifth grade and beyond.

Though more subtle, there are also distinct dual language program implications for Memorial. As shown by the subgroup of students becoming English dominant (and falling out of the biliteracy zone in fourth grade), it cannot be assumed that Spanish literacy will be maintained throughout the program. Memorial must examine how to protect and promote the minority language (Beaudrie & Fairclough, 2012; Medina, 2012) even within a 50/50 model. By having an explicitly strategic focus on promoting continued Spanish literacy development, Memorial may further foster positive bicultural identities and investments that lead to long-term language maintenance (Norton, 2013). Although students at Memorial are considered "on grade level" from a monolingual view in English, monolingual literacy is not the goal of dual language programs. A more dynamic biliteracy can be achieved when both languages and literacies are fostered in the classroom (Cummins, 2000) with campus and district support.

## Conclusion

In sum, the paired biliteracy programs at both dual language schools provide ripe opportunities for most of its emergent bilinguals to develop high levels of biliteracy. Still, this study shows that even seemingly similar demographics may have distinct trends in language development. This in turn affects not only how we conceptualize the nature of biliteracy development but also how practitioners adjust programs to meet students' needs. By more closely investigating student demographics and site-specific dual language program implementation challenges, dual language stakeholders may more fully understand and realize the unmitigated impact of these promising programs.

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